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Make Your Farm Pay

A Practical Guide for Midwest Farm Operators

Carl C. Malone

Farm Management Specialist
Iowa State College

1950

THE IOWA STATE COLLEGE PRESS

Press Building, Ames, Iowa

PREFACE

THIS BOOK IS WRITTEN SPECIFICALLY for farmers and those who help them with their management problems. Its main emphasis is on the problem of making decisions about the farm business, and carrying out those decisions in such a way that the farm business will become a more profitable venture.

Though there is a certain sequence running through the book, especially chapters 3 to 10, it is not necessary to read the whole book at one time. The part or parts which deal with the problems at hand may be read first. The rest of the book may be studied as other problems need answering or may be read in sequence, whichever suits the individual purpose.

The heart of the book will be found in Chapter 3, which discusses the basic principles for successful farming. These principles are neither easy to set down nor simple to understand. If they were, most farmers would already know them and there would be no occasion for writing this book.

These principles apply to all farmers, young, middle-aged, and old; to the small operator and the large one; to the owner and the tenant. Most people will find it necessary to read Chapter 3 more than once before they fully understand it. But the man who masters these principles and applies them will be well repaid not only with a more profitable farm business but also with the feeling of accomplishment that always comes with improvement.

Chapter 13 discusses successful living as well as successful farming. Farming, being a family affair, means that the problems of the farm and the family cannot and should not be studied separately. Chapter 13 recognizes that fact.

Other helpful aids for all those interested in farm management are the *Midwest Farm Handbook* by the Staff of Iowa State College, *Better Farm Accounting,* and *Your Family Finances* by Dorothy Simmons and H. B. Howell.

CARL C. MALONE

January, 1950

ACKNOWLEDGMENTS

TO OTHERS I OWE A GREAT DEAL. Most of all, I am indebted to Leland G. Allbaugh. He has, for a long time, been a leader in improving farm income and family living among rural people. Without the training, stimulation, and guidance that he has freely given over the years, this book could not have been undertaken.

Much is due my colleagues. L. J. Bodensteiner, Earl O. Heady, H. B. Howell, Wallace E. Ogg, and J. J. Wallace of Iowa State College have been of much assistance, as has Robert K. Buck, formerly on the Iowa State College staff. Wallace Ogg gave special help on Chapter 3. J. Carroll Bottum of Purdue University and Paul W. Griffith of Kansas State College gave valuable counsel. Miss Dorothy F. Simmons of the University of Minnesota assisted with Chapter 13. Ronald L. Valline and my daughter, Katherine, helped with the editing and proofreading.

The hundreds of farm men and women with whom I have worked through the years have taught me much that I know about improved methods of managing farms and the basis for successful family living.

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CHAPTER 1 Who Should Farm

If I were a cobbler, it would be my pride
The best of all cobblers to be;
If I were a tinker, no tinker beside
Should mend an old kettle like me.
Old Song

PEOPLE WHO WANT TO FARM OUGHT to like farm work and farm life—both man and wife should take pride in being farmers. But as competent farmers well know, liking to farm in itself is not enough for success.

Farming is a varied occupation. For some it means the raising of grain and hay and keeping cows, pigs, and chickens. For others it is the operation of a cattle or sheep ranch or maybe a large-scale wheat farm. For still others it is the business of raising vegetables or tobacco or cotton or fruit or other products. And as to size, a farm may be anything from a few acres with many neighbors nearby to a ranch of thousands of acres with the nearest neighbor many miles away.

A Rewarding Occupation

Farming is a way of life as well as a profit-making business. There's a freedom in farming that is found in few other occupations. Working hours are not run by the clock. Nor does a foreman or other superior constantly check over the work being done. If the farmer wants to take time off, he can do so. His income may suffer if time is taken off at busy periods, of course, but the choice lies with the family and the family alone. In their work and planning, the family learns a tolerance and self-discipline that comes only from working together, and with nature. And farm people reap the rich rewards, too, of neighborliness—typically a rural virtue.

Of course farming has its disadvantages. For some, the daily chore routine is a hard taskmaster. Work must be done in heat and storm and winter's wind as well as in pleasant weather. Since much farm work must be done by an individual working alone, people who are unhappy when working by themselves seldom enjoy farm life. Moreover, in some areas thousands of farm families still are semi-isolated on poor roads or at a considerable distance from their neighbors.

Working with both an uncertain nature and an unstable economic system makes farm income vary greatly from year to year. Many conveniences—roads, electricity, running water—may cost more than they do in the city. It's probable, too, that farm families on the average do not have quite as high an income as city families of equal ability. And because of the great, continuing need for business capital, the farm family's living standard may be somewhat below what it could be in some other occupation.

But those who love the land and rural living find a satisfaction and freedom in farming that income alone does not measure. They prefer farming as a way of life. And who is to say that such a decision is not a wise one?

What You Need to Succeed

No one person will have all of the best qualifications for success as a farmer. Nor is that necessary. But the beginner should have a fair average if he expects to be successful.

Knowledge of farming and farm practices, judgment, and skill—these three he will need in reasonable amount even as a beginner. Some feel they can succeed if they have enough determination and "stick-to-it-iveness." It is true that these are partial substitutes for knowledge and experience. But with the larger farms and scientific methods now being used, hard work and willingness to sacrifice are not enough for success.

In a very real sense, today's beginner must start where older farmers leave off. A beginner competes with farmers having knowledge, judgment, skill, and experience, so even if the beginner has a good deal of capital it is important for him not to start too far behind in his knowledge of farming if he hopes to be able to hold his place.

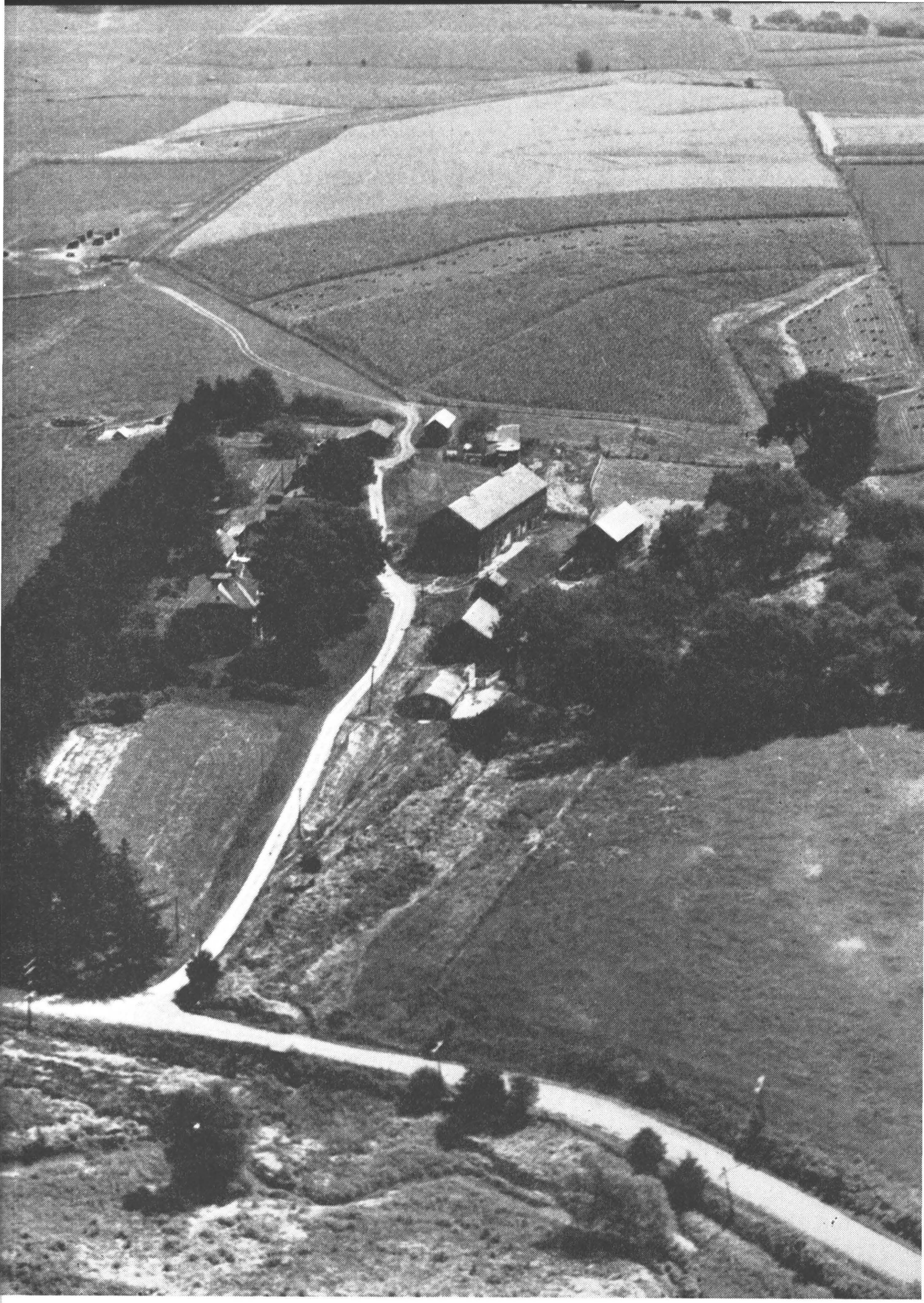

FIG. 1—This scene is typical of the commercial, family-size farms in the Midwest. Located near the Mississippi river in the hog-dairy part of the Corn Belt, the operator and his family on this stock-share rented farm enjoys the comforts of modern life. Note the comfortable home, landscaped grounds with windbreak, well-kept buildings and hogs on clean ground pasture in upper left. Photo by "Parma."

This should not discourage those who have ability and a real interest in being farmers. But it means that they should consider carefully the requirements for successful farming before deciding whether they qualify. The advice and counsel of others with experience and judgment can be of much help. The final decision, however, should be made by the farmer and his wife. If after a thorough study of themselves and of farming the answer in their own minds is to go ahead, let them do so with confidence and a determination to succeed. The many adjustments that must be made can be met as time goes on.

Five Personal Requirements

The most important personal requirements for success have been studied in the Midwest. They are:

1. Ambition to succeed.
2. Knowledge of the details of modern farming.
3. Wife's interest and help.
4. Liking for farming as a life work.
5. Business judgment.

Some factors apparently have little influence on success—inheritance of property, for example. Many who seemed to have a "good start" found later that the challenge to develop themselves was not as great as it was to those who started with less money. Neither is nationality background important. Nor is previous job experience, although most farmers are sons of farm families. In earlier days, having children to help with the farm work was considered important for success. Now, however, the number of children at home has little influence on earnings. This doesn't mean that the farm is not a good place to raise a family. It is.

Farming Is a Family Affair

Farming is an occupation that can make use of the best talents of the family. In return, it can develop the family both as productive workers and worth-while citizens.

Most farming in the Midwest is a family enterprise. There are some large scale "factory farms," of course, but most are family farms, operated and managed as a family enterprise and large enough to provide a good level of family living. Most of the work is done by the family, although some seasonal labor may be hired. Most likely the wife and children take part in the farm work, at least in helping with the garden and chores or in going to town for repairs and the like. Probably they also take part in decisions about operating the farm.

Farming, therefore, is quite in contrast with city living. Few city women have any direct part in their husbands' businesses, and if city children have after-school or vacation-time jobs, their work seldom is directly connected with that of their fathers.

Three Sources of Income

A farm that supports a modern standard of living is a business enterprise. One part of the income is the result of backwork and headwork, labor and management; a second part comes from the use of capital in machinery, livestock and feed; a third part from the use of land and buildings. A study of one Midwest farming area showed that about one-third of the farm income was from each of these three.

It's plain to see that a farmer must be a businessman. And some of the things that make for his success as a businessman are quite different from those important to wage or salary workers. Few city workers, for example, furnish the buildings they work in, the tools or materials they work with, or the desks they work at. In other words, they furnish little capital of their own.

Farmers, on the other hand, usually furnish part or all of the capital they use. They buy livestock, machinery, tools, and other things. Together, these add up to a great deal of capital per worker. Although young farmers often work with an older person who furnishes most of the capital, they generally prefer to have their own machinery, their own livestock, and eventually their own farm.

Decision-Making, Risk-Taking

However important capital may be, the fact that the farmer must decide how to set up and run the business is more important. Decision-making is the crux of being a businessman in any kind of business, farming included. The farmer must not only be willing to *make* decisions and carry them out, he also must be willing to *live by* the decisions he makes. If he makes good decisions, he will likely be more successful than his neighbors. But if he makes too many unwise decisions, he may end in failure.

Because conditions related to farming are constantly changing, the farmer's decision-making must be guided to a great extent

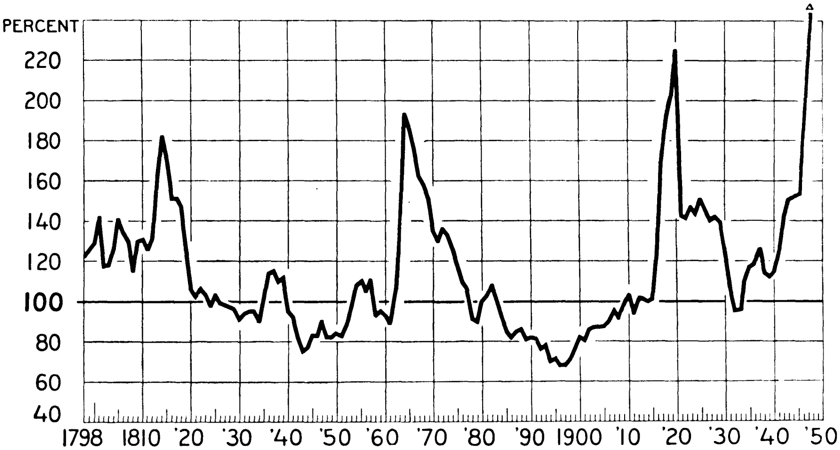

FIG. 2—Wholesale prices of all commodities, United States, 1798–1948. (Index numbers—1910–14 = 100.) A sharp price rise has occurred at each of the four war periods. A downward readjustment follows but these differ in extent and duration. Farm profits come easier in a period of rising prices while money making requires much better management when prices are moving downward.

by the risk he takes. Between 1914 and mid-century, for example, farmers saw two war booms as well as two depressions. Much of a person's success during these years depended upon when he happened to start farming. If he started at or near the peak of a boom and didn't have plenty of his own capital, he may have been wiped out or greatly handicapped by the business and price decline that followed.

As one farmer put it, "I started farming right after I got back from World War I. I thought I could pay off the bank notes that I signed to get started as soon as I sold my first year's crop. The banker thought I could too. But prices broke before the crop was ready. It took seven years to get 'even with the world' because I started the wrong year." This was an exceptional case, to be sure. Many another man started just before the boom and benefited by the unusually good prices and income. But it illustrates the risk of ups and downs in the business cycle, a risk that farmers as well as other businessmen must constantly keep in mind.

There are other kinds of risks, too. More than one farmer has been forced out by drouth, hail, storm, flood, or a series of bad years before he got a good foothold in farming. Naturally there are good years as well as bad, but if the farmer is to make wise decisions he must study the risks that are part of his business. In farming, these risks are not uniform over the Midwest, nor are they uniform from year to year.

Farming Compared to Other Occupations

Many say they like farming because it offers independence—a freedom they can't always find in other occupations. Of course, doctors, lawyers, veterinarians, and other professional men enjoy independence, too, but a long period of specialized training is required for such work. In a sense, professional workers invest a good deal of capital in themselves rather than investing it in a business as farmers do.

In the vast majority of nonfarm occupations, far more people work for someone else than work for themselves. Their employer may be an individual, or they may work for a partnership, cooperative, or corporation. The wages they get are set by the skill and training required for a particular job, how steady the work is, and how many workers want such jobs. Industrial workers, unlike farmers, also have both their wages and the supply of workers influenced heavily by the strength of labor unions. Table 1 shows the average annual pay for fully employed workers in a few major industries as well as the net income of typical farm operators in the Midwest. These figures point out income differences between workers and businessmen. But because of differences in risk, capital, and management, wages and profits cannot be directly compared.

The risk faced by wage workers is mostly that of unemployment, although some occupations are physically more dangerous than others. Many skilled workers had to take work relief jobs during the depression of the thirties, and at almost any time construction workers have unsteady employment. For example, in the mid-thirties there were jobs for only 60 full-time workers

TABLE 1

Income Per Year—Two Periods *

Fully Employed Workers †	Moderate Depression ‡	Boom Period §	Comments
Textile Industry	*$ 965*	*$1,700*	*Pay is rather low, many* women workers.
Coal Mining	1,150	2,325	Some physical danger.
Construction	1,250	2,500	Work is irregular.
Auto Industry	1,725	2,950	Machine skill is needed.
Federal Government	1,850	2,575	Many have special training.
On Work Relief	950		
Typical Farm Operators ¶			
N. Dakota Wheat–Livestock farm	$ 685	$4,920	Rainfall uncertain.
Kansas Wheat farm	690	7,680	Rainfall uncertain.
South Corn Belt Hog–Beef Raising	905	3,700	Businesses are rather small.
South Wisconsin Dairy	1,120	3,830	Have steadier income.
Corn Belt Hog-Beef Feeder	1,315	5,700	Use productive land.
Corn Belt Cash Grain	1,660	5,900	Use productive land.

* Before income taxes.
† From Department of Commerce.
‡ 1936–40 average.
§ 1942–46 average.
¶ From B.A.E. report F.M.55.

for each 100 normal jobs in the construction industry in good (not boom) years. The auto industry needed only 80 full-time workers during a moderate depression for each 100 in good times.

In farming, on the other hand, the *work* is steady but the *income* is not. During depressions the actual work of farming goes on but farm income drops fast. It rises just as rapidly during booms.

In sizing up the farmer's income with that of wage and salaried groups one should keep in mind that family income for workers during depressions may be as low as that of farmers or lower. But the important thing is that wage earners do not have to risk their capital as farmers do.

Estimating Farm Income

Since farming may be only one choice of an occupation, it may help to estimate the minimum net income that the family feels is an acceptable amount. This figure will vary with families, of course. For some, $800 in cash a year would be ample. For others, $3,000 might be too little.

Suppose, however, a family decides that $2,000 is a reasonable amount for cash living costs and something for savings as an average over a period of years. This may seem small to a city man. But on a farm, house rent usually is not a separate expense as it would be in town or city. Also, much of the family's food is furnished by the farm and does not take cash directly. Thus $2,000 a year net cash income from farming before living expenses are paid will be as much as a considerably larger salary in the city.

For a family that accepts this amount, the question would be: What is the minimum size of farm business that will likely bring in $2,000 cash after expenses are paid? On the average, farm expenses absorb from 40 to 60 per cent of the gross farm income, with even wider variations among individual farms. Because these are only average figures, estimates for individual farms must be made carefully.

Here is an example of one family's estimate:

Average Gross Income Expected (Cash items)	$4,400	
Likely Farm Expenses (Cash and depreciation)	2,400	
Remainder		$2,000
Non-cash Income Items (Meat, milk, etc. for family)		400
Expected Net Farm Income for Average Year		$2,400

This family must decide whether to try to set up a farm business that will gross an average of $4,400 with farm expenses averaging $2,400 annually—or at least one that would average a margin of $2,000 between gross income and expenses. If the risk is too great, some other business or occupation may seem the better choice.

The size of farm necessary to bring in a given gross income depends on many factors: location, productivity, skill of the manager, type of farming, the level of farm prices, and similar things. These will have to be taken into account in making any estimate of gross and net income possibilities.

What Sort of Farm?

The 1945 census divided farms into three main groups: *family farms* (three sizes), *large farms*, and *small farms* (two types). The first two are commercial types, the latter noncommercial. Table 2 shows what one would find if he visited 1,000 farms scattered at random over each state.

Commercial Size Farms

The man who is looking for a small or medium size family farm to operate will have a wide range of choice. Many families like this size of farm because less operating capital is required

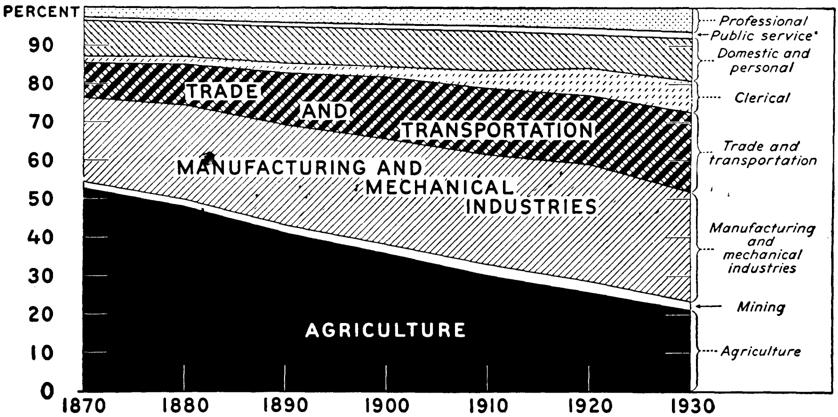

Fig. 3—Shifts in occupations 1870–1930. Percentage of all persons over 16 years of age engaged in each major group of occupations. A farm family on the average, could furnish enough farm products for itself and one other family in 1870. By 1950, farm production per worker had risen so much that one family could supply itself and five others.

than for larger farms and it may be somewhat easier to become an owner. Also, such farms are easier to manage and there is less risk than on larger farms.

Naturally the bigger farms make more profit for the man who has the capital and skill to manage them properly. And living conditions, too, usually are better on larger farms. It isn't uncommon for the men who operate large farms to own one and rent another.

In any case, whatever a man's range of capital and ability might be, there is a commercial size farm available for him. The ambitious man who wants to be a large operator can find a farm to his liking. There are farms for those who want a "small place." And there are the in-between sizes.

Part-Time Farms, Small Holdings

Most part-time farms are found in the more densely populated areas. They fit best around the larger towns and cities where dependable off-farm jobs are to be had within a reasonable driving distance. As the figures in Table 3 show, a part-time farmer ordinarily cannot plan on very much farm production. Usually his other job is the main source of income. But the part-time farm can furnish much of the family food supply as well as "a place to live in the country." Obviously, a part-time farmer should not expect to invest much in machinery for his small farm output.

The small holdings have the least to recommend them. They are too small to give an able man worth-while, income-producing work. Nor will they provide a family with more than a subsistence living in most cases, even in good times. Usually they are too far from good job opportunities for the man to have much outside income. Occasional jobs may be available, but such work doesn't go far toward supporting a family. For

TABLE 2

NUMBER OF FARMS OF VARIOUS SIZES PER THOUSAND FARMS IN EACH STATE*

	Commercial Type Farms				Non-Commercial Type	
	Family Farms				Small Farms	
Area and State	Small	Medium	Large	Big Farms	Part-Time	Small Holdings
Corn Belt						
Ohio	315	309	75	9	160	132
Indiana	324	308	105	13	133	117
Illinois	230	315	250	46	73	86
Iowa	203	445	250	32	25	45
Missouri	420	230	46	8	96	200
Lake States						
Michigan	394	270	45	7	146	138
Wisconsin	325	470	70	4	70	61
Minnesota	327	448	90	8	53	74
Plains States						
North Dakota	218	512	190	21	13	46
South Dakota	297	486	125	11	13	68
Nebraska	260	468	166	29	23	54
Kansas	314	342	162	33	53	96

* Rural residences, institutional farms, and the like omitted. From 1945 Census of Agriculture.

TABLE 3

SIZE—CAPITAL—INCOME—WORKERS—CONVENIENCES ON MIDWEST FARMS*

Kind and Location	Size: Total A.	Size: Crop A.	Capital: Land–Bldgs.	Capital: Machinery	Farm Income†	Workers‡	Houses with Running Water
Family Farms							(%)
Small—							
Corn Belt	120	56	$ 8,000	$ 850	$ 1,350	1.3	22
Lakes States	120	54	6,200	1,150	1,450	1.4	26
Plains	300	140	7,200	1,100	1,650	1.2	12
Medium—							
Corn Belt	170	100	14,000	1,700	3,750	1.4	33
Lake States	170	96	11,000	2,200	3,600	1.7	43
Plains	460	310	13,000	2,000	4,100	1.4	20
Large—							
Corn Belt	280	180	30,000	3,000	7,200	1.8	50
Lake States	270	166	22,000	4,000	7,700	2.1	60
Plains	900	400	25,000	3,500	8,500	1.6	40
Big Farms							
Corn Belt	520	330	63,000	6,000	22,000	2.9	70
Lake States	540	310	49,000	8,500	30,000	3.5	80
Plains	3,200	810	55,000	6,800	23,000	2.3	70
Small Farms							
Part Time							
Corn Belt	40	16	3,100	360	320	1.3	28
Lake States	50	16	3,100	440	340	1.3	35
Plains	60	30	2,600	330	420	1.3	25
Small Holdings							
Corn Belt	74	28	3,500	360	540	1.2	25
Lake States	84	30	3,200	450	600	1.2	17
Plains	180	80	3,600	600	640	1.0	13

* From Special Census of Agr. 1945. Figures are for prices at that time: Corn, $1.00 per bu.; wheat, $1.45 per bu.; hogs, $13.30 cwt.; milk, $2.90 cwt.; eggs, 32c doz.

† Total income less cost of feed, livestock, fertilizer, lime, and seed bought.

older people who are semiretired though, the small holdings may fit very well. Only a relatively small amount of capital is required to own one, and it furnishes plenty of work for the older man who wants to keep active. Since many of these farms are located in the poorer land sections, the houses usually don't have many conveniences. Probably the Midwest could do with fewer farms of this sort.

Workers, Land, and Capital

Table 3 shows the capital, income, and labor supply on the various types of farms. It also shows whether the houses have running water, a rough index of the conveniences to be found in the farm homes.

Table 3 discloses that as the size of business increases, the amount of capital used increases much faster than the number of workers. This is typical in a commercial farming area whether the farms are owned or rented. A higher percentage of the smaller farms are *owned* by the operator, while a good deal of land usually is *rented* where farms are large.

The small family farms might be called one-man farms, the medium size mostly one and one-half man farms. Large family farms might be described as two-man farms on the average, while big farms use about three men's work. More workers are needed in the dairy area than in the Plains where large machinery is well adapted, a fact that's generally true of dairy farms compared to grain farms. The amount of capital needed to produce about the same income doesn't change much anywhere in the Midwest.

What Is Your Rating?

Here is a scorecard that will enable those who want to farm to check up on themselves.

	YOUR RATING		
	Good	*Fair*	*Poor*
1. Ambition to succeed	____	____	____
2. Ability to organize a business	____	____	____
3. My liking for farm work	____	____	____
4. My wife's liking for farm work	____	____	____

5. Do we agree on most business matters?	____	____	____
6. Do we have enough capital and credit?	____	____	____
7. Our attitude toward using income for living vs. adding capital to the business	____	____	____
8. Our willingness to accept necessary risks	____	____	____
9. Do I fit the kind of farming carried on locally?	____	____	____
10. My present knowledge of modern farming	____	____	____
11. Do I try to find and use new ideas?	____	____	____
12. How do others rate my judgment?	____	____	____

CHAPTER 2 Where Should You Farm?

MOST MEN START FARMING NEAR the place where they grew up. Usually this is best because they already know many of the things important to success in their own community. They can more easily use the "pool of common farming knowledge" accepted by farmers in each locality. They also can get counsel and suggestions easily from competent local farmers.

Most young men probably know something about the variations in farms and soils in the community, and the crops adapted to them. They also will have a fair idea of how the more successful farms are operated.

Normally they have acquired a certain standing in business affairs. Their skills, habits of work, and thrift are known. If they show promise as farm operators, responsible people in the community will give them help. People always like to see their energetic young men get started in business for themselves.

Opportunity—Nearby or Far Away?

Most people expect to find opportunities when they move to a new community. This is an American tradition. In pioneer days new farming opportunities always were open and still are for those who have ability and really want to start in a new community. But persistence is needed.

Before deciding upon a certain community, the young man can look around a bit by getting a job as a farm hand in the area that seems interesting to him. He can learn about farming methods there and, if he works for a skillful farmer, also can pick up ideas that will help him later on. Such training and experience should pay good dividends.

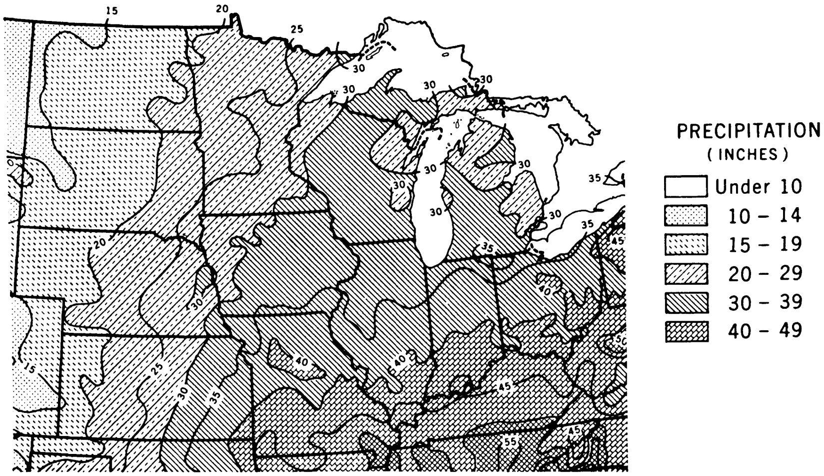

Fig. 4—Average annual precipitation. Rainfall varies greatly in the Midwest. Crop yields are usually higher and more dependable east of the 25-inch rainfall line, and a greater variety of crops can be grown. *Bureau of Agricultural Economics and the Weather Bureau.*

In the Midwest—the North Central States—the different areas relate to each other in certain respects, and many local variations make for success in each of them. Variety always is found in farming, sometimes within a few miles. Usually, though, the kind of farming that is most successful falls into a few typical patterns in any given area.

Four Main Farming Areas

Climate and soil variations separate the Midwest into four natural divisions. These are:

The Corn Belt. More accurately, this is the feed grain and livestock belt.

The Dairy Area. This extends along the northern border of the Corn Belt.

The General Farming Area. A less fertile area to the south of the Corn Belt.

The Wheat and Grazing Area. This is part of the Great Plains that borders the Corn Belt on the west.

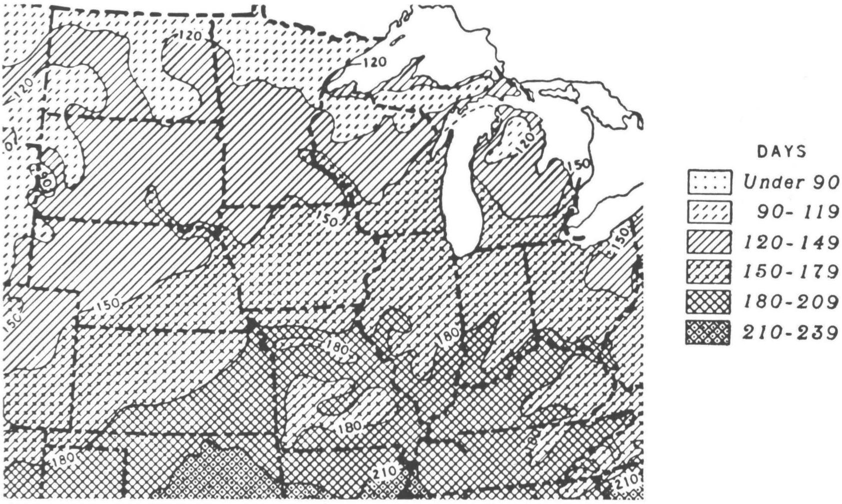

FIG. 5—Average length of frost-free season. The kinds and varieties of crops must be adapted to the growing season which varies more than 60 days in length in different parts of the Midwest. *Bureau of Agricultural Economics.*

Although the farming pattern is somewhat similar in each of these broad areas, successful farmers fit their farming plans to natural local conditions.

Climate—Many Midwest Variations

The amount and dependability of rainfall and length of growing seasons vary greatly in the Midwest. Farm plans, therefore, must be made with climatic conditions in mind. Figure 4 shows how rainfall varies over the North Central States.

In the Plains States to the west annual rainfall is 20 inches or less and most of it falls during the growing season. Year to year variations in rainfall are great, making dry seasons quite common, especially in the extreme west.

In states east of the Plains Area, more rain falls, but in the southern part of these states late summer drouths are more frequent and often interfere with late maturing crops. The need for rain may vary because of soil differences and crops grown.

Western Nebraska has a small irrigated area where farming is very different from that a few miles away. The Flint Hills in east central Kansas differ from the area on either side because of major soil differences. Other specialized areas are broad Red River Valley between Minnesota and North Dakota, the fruit growing section on the east shore of Lake Michigan, the cherry growing county in northeast Wisconsin, and so on. Each of these varies according to local climatic or soil conditions and each differs to a greater or lesser degree from the general pattern of the area around it.

A farmer who lives near the Canadian border can count on a frost-free growing season of only three or four months. But in the southern part of the Midwest states and in some areas along the Great Lakes, farmers can plan on frost-free seasons of six months or more. The longer growing season gives them many more choices in their cropping program and a much shorter feeding season for their livestock.

Around a city the farms produce such bulky products as whole milk or fresh vegetables. In small areas where such unusual soil conditions exist as peat, muck, bog, or sand, the farming will differ radically from that in surrounding areas because only certain kinds of crops are adaptable to those soils.

Differences in Gross Incomes, Costs

Type of farming, size, and tenure conditions also differ in various Midwest areas, as well as productivity of the land and intensity of production. These differences have some bearing on the choice of a location. A potential farmer needs a reasonably

TABLE 4

Gross Income and Farm Expenses Per Acre of Crop Land Harvested—By Areas, Recent Years

Area	Gross Income		Farm Expenses		Remainder		Expense to Income	
	1939–40	1943–44	1939–40	1943–44	1939–40	1943–44	1939–40	1943–44
							(%)	(%)
Five Corn Belt States....	$34.60	$74.10	$20.00	$34.30	$14.60	$39.80	58	46
Three Lake States......	30.70	65.80	16.90	27.80	13.80	38.00	55	42
Four Plains States......	12.35	31.80	7.95	15.90	4.40	15.90	64	50

Derived from B.A.E. data.

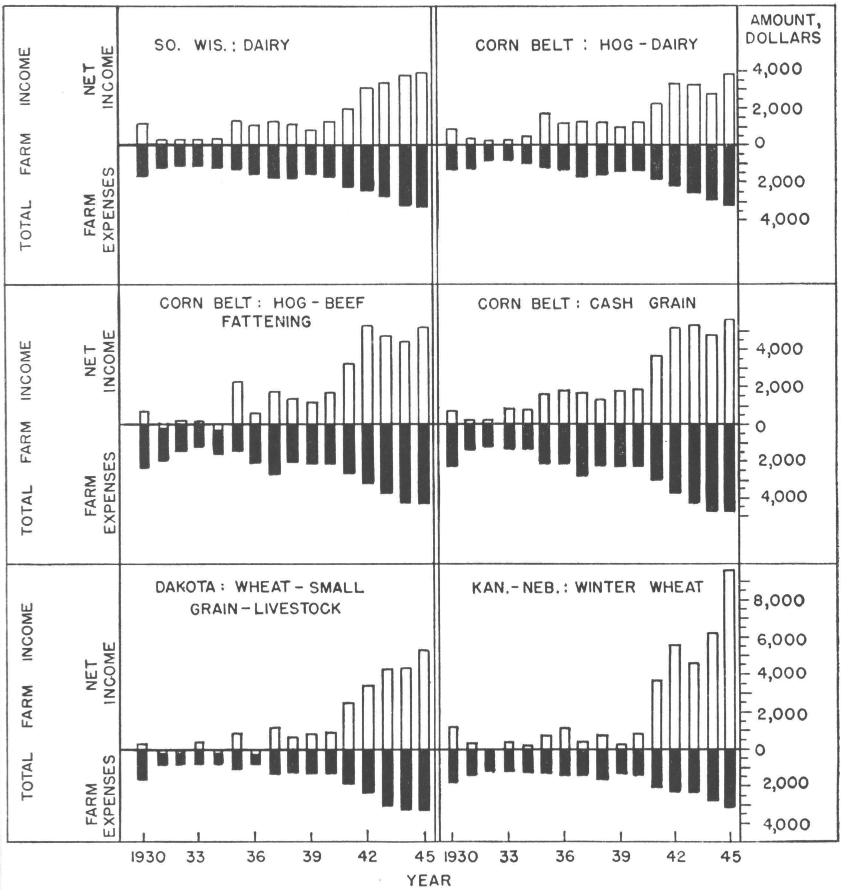

FIG. 6—Farm income on typical Midwest farm, 1930–45. The income effects of the long depression and the wartime boom show plainly for all types of farms. Income on dairy farms is the most stable, on farms in the plains most erratic. Note the much greater stability of costs than of net income for all types. *Bureau of Agricultural Economics.*

good knowledge of what makes up a desirable *size* of farm and *type* of farming. He needs to know how these two are influenced by the quality of land, rainfall, and the length of growing season. Also important are products produced in an area and their future outlook. Table 4 summarizes some over-all effects of these factors on income and expenses in three major areas.

Note the fairly high gross income per acre in the Corn Belt and Lake States and the good margin between income and expenses compared to that of the Plains Area. While the difference is due mostly to larger production per acre of cropland, it also is affected by the type and intensity of farming. This explains why a fairly large acreage is needed where returns per acre are low. A smaller farm can be successful in the more productive areas.

Table 4 also shows that the narrow margin above costs in the Plains States can be easily wiped out. The gross per acre not only is lower, but a larger part of it goes for farm expenses.

TABLE 5

HOW A DROP IN GROSS INCOME AFFECTS THE NET—BY AREAS

	Corn Belt	Lake States	Plains States
Original gross per crop acre	$53.90	$46.80	$21.10
Less 30% due to bad year	16.20	14.00	6.30
Gross, poor year	$37.70	$32.80	$14.80
Expenses for year	27.00	22.00	12.00
Remainder per acre, year of reduced gross	$10.70	$10.80	$ 2.80
Remainder per acre, year of original gross	$26.90	$24.80	$ 9.10
Per cent drop in net income	60%	56%	69%

A 30 per cent drop in production per acre, if not offset by higher prices or lower costs, would almost wipe out the net return. Such a reduction is not uncommon in high risk areas. In most of the Corn Belt and Lake States production seldom falls more than 20 per cent below average so risks of this kind are not so great.

This does not mean that farming in the Plains Area cannot be successful. It does mean, however, that farm operators must know how conditions in their own area affect gross and net income, and be aware of the adjustments that are necessary to meet them.

To illustrate this economic risk, take an example in each of the areas using 1941–42 figures as a base. Suppose a farmer suffers a 30 per cent reduction in gross income in a certain year due to a poor crop on his farm, losses in livestock, or such other causes. Table 5 shows what would happen.

Like all average figures, the figures in Table 5 are not exactly like those of an individual farmer in any of the areas. But they illustrate a general truth that must be reckoned with in farming: Farming costs are high in the Midwest commercialized farming system. Any big drop in income that is not offset by lower costs soon can squeeze most of the profit out of farming for an individual farmer or for farmers in an area. The expenses shown in Table 5 include no allowance for the value of the farmer's own labor, that of unpaid family members, or any charge for interest on the farmer's own capital.

Look at Personal Factors, Too

The young man not yet established should consider carefully the best location and type of farming. And he should examine the location in relation to his interests and ability as a manager.

In choosing a location the individual family has the problem of selecting a community in which to live as well as a particular farm. The family must consider housing conditions, whether roads are good or bad, modern conveniences, and the health, educational, social, and religious services that are available. Finally, the question of risk must not be overlooked, whether it is in the field of prices or of weather.

An area-by-area survey of farming conditions in the Midwest will help the family decide where to begin their farming career.

The Corn Belt

Through the center of the Midwest runs the Corn Belt, one of the largest and most important farming areas in the world. It has a generally fertile soil with a high proportion of plowland. Most of the land is level to moderately rolling. The soil is productive and crop yields are good, but rolling land needs erosion control practices and crop rotations that reduce soil loss.

The growing season is from 140 to 180 days. Summer days and nights are warm. From 18 to 26 inches of rain falls during the growing season and 24 to 40 inches during the year. These conditions make this a "corn country," no widely grown crop surpassing corn in net income per acre. The farming system is built around corn and it dominates the rotation on practically all farms.

About half of the land is devoted to feed grain production with high yields per acre. From 1 to 7 tons of feed grain are produced for each ton of hay. The best rotations include a legume acreage, part of it often used for pasture. Other land is in permanent pasture. Both roughage and grain-using livestock are found on most farms.

Corn Governs Farming Plan

With corn as the basic crop, farmers have a wide choice in the type of farming that can be followed successfully. Cash crop farms are common in the more fertile and level areas including river bottoms. Corn is the main cash crop followed by soybeans, oats, and wheat. More than half of the farms use the corn as feed and have livestock as their main source of income.

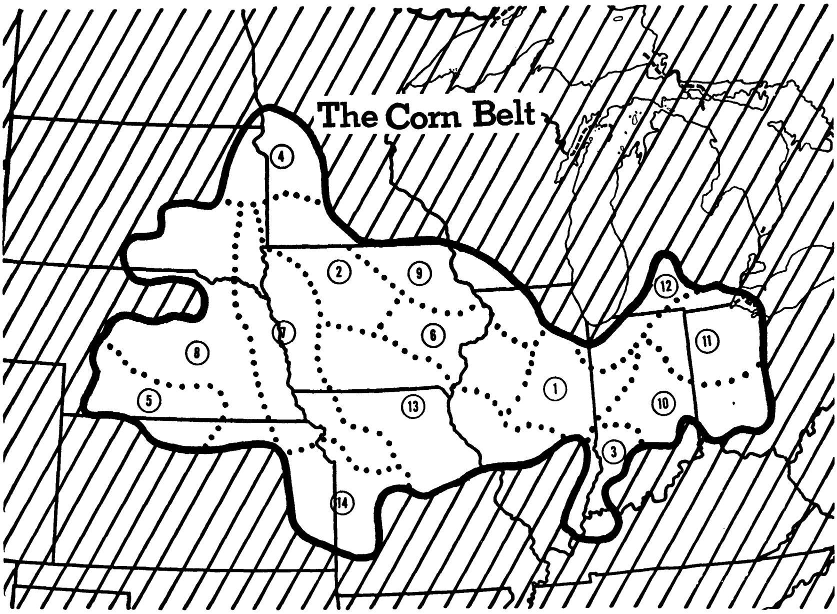

FIG. 7—Corn is the key crop in all of the Corn Belt. The pattern of the 14 smaller areas follows the differences in soil productivity, climate and distance from markets. Most farms are of the family type and provide a good income in prosperous times.

Since corn is a fattening feed, meat animals predominate. In total tonnage among livestock, more hogs are produced than anything else. Hogs can be produced as cheaply here as anywhere in the world, and are expected to dominate the livestock economy of this area for a long time to come.

Beef occupies second place among meat animals. However, beef production is not as simple as hog raising. Some beef is produced by farmers who raise and sell beef calves. Other beef raisers sell feeder cattle to farmers or sell grass-fat cattle to killers. But a large majority of farmers grain-feed their cattle and sell them as medium to choice corn-fed beef. Many producers buy part or all of their cattle. About two million head of stockers and feeders are shipped in each year from the range states for growing and fattening, the principal cattle enterprise on many farms.

Another important enterprise in the area is dairying, although it tends to be on a small to moderate scale on any one farm. Since many young dairy animals are raised, dairy farms produce some beef as a by-product. Nearly all farmers keep milk cows, either of the dairy or the beef-and-milk (dual purpose) type. The latter type does not produce as much milk per cow but allows the farmer more flexibility in handling the cattle enterprise. He can emphasize milk or beef to suit his labor supply or the comparative price situation.

Sheep are much less important than cattle although many farmers keep a small flock. The feeding of western lambs is an important business on many farms, two million head of feeder lambs being shipped in annually for fattening. However, lamb feeding is concentrated on a small number of farms and is a more specialized business than cattle feeding.

There is a place for chickens on nearly every farm. Most farm flocks are a small to moderate size enterprise rather than a large scale one. Few farmers keep more than 300 hens in the laying flock and usually the number is less. Chickens for meat as well as eggs add to the poultry income. The usual plan is to sell the cockerels and keep the pullets for the laying flock. The raising of both cockerels and pullets rather than buying sexed chicks fits in with the liberal supply of corn as a fattening feed.

Farm Size and Make-Up

Family size farms of from 80 to 320 acres are the rule in the Corn Belt. Many farmers who do not have family labor or who farm a somewhat larger acreage hire part-time or full-time workers. But it is an unusual farmer who has more than one steady hired man.

Acreage, however, is only one measure of a farm's size. Among the other factors which must be considered in determining the size of any farm are land productivity, climate, number of buildings, and so on.

Although Corn Belt land is priced higher than the United States average, normally the price is not especially high com-

TABLE 6

THE CORN BELT FARMING PATTERN

	More Cash Grain Sold					**More Meat**
	Area 1	Area 2	Area 3	Area 4	Area 5	**Area 6**
Per 100 acres of farm land						
Capital						
Land and buildings	$14,400	$11,700	$ 6,800	$ 5,100	$ 3,400	**$12,300**
Livestock	1,060	1,480	860	1,010	540	**2,290**
Machinery	1,200	1,200	810	920	380	**1,150**
Total	$16,660	$14,380	$ 8,470	$ 7,030	$ 4,320	**$15,740**
Acres needed for $4,000 gross	130	150	220	270	470	**150**
Average farm in area						
Acres in farm	210	200	170	260	460	**190**
People per farm	4.4	4.2	4.8	3.9	3.7	**4.2**
Capital per farm	$35,000	$28,800	$14,400	$18,300	$19,900	**$29,900**
Number of livestock per farm						
Milk cows	4	4	5	3	5	**6**
Stock cows	4	6	2	8	9	**6**
Other cattle	8	16	5	13	18	**21**
Pigs raised	46	72	36	47	24	**125**
Ewes kept	....	6	....	8	....	....
Chickens kept	125	200	120	190	125	**145**
Raised per farm						
Corn, bu.	3,900	4,120	1,730	2,080	1,260	**3,700**
Hay, tons	19	22	16	29	29	**30**
Yield per acre						
Corn, bu.	49	52	39	35	12	**57**
Soybeans, bu.	20	17	15	....	....	**22**
Oats, bu.	41	39	29	38	20	**35**
Wheat, bu.						
Hay, tons	1.5	1.6	1.2	1.3	1.6	**1.6**
Per 100 farms in area						
Full owners	34	38	53	32	26	**42**
Part owners	18	15	23	20	31	**12**
Tenants	47	47	24	48	43	**45**
Crop farms	61	24	21	19	54	**12**
Livestock farms	18	42	33	36	21	**69**
General farms	16	28	29	39	21	**14**
Dairy farms	2	1	4	1	1	**1**
Poultry farms	2	3	6	4	2	**2**
Size, usual range, acres	120–400	120–360	80–400	160–540	160–800	**80–320**

TABLE 6 (*continued*)
THE CORN BELT FARMING PATTERN

Animals Fattened		Smaller Farms—More Cows Milked				More Hay and Pasture	
Area 7	Area 8	Area 9	Area 10	Area 11	Area 12	Area 13	Area 14
$ 9,200	$ 4,200	$ 8,900	$11,000	$ 9,700	$ 6,700	$ 5,200	$ 5,700
1,700	940	2,290	1,500	1,250	1,060	1,210	1,070
960	460	1,130	1,110	1,150	870	470	530
$11,860	$ 5,600	$12,320	$13,610	$12,100	$ 8,630	$ 6,880	$ 7,300
180	370	155	150	160	250	330	290
200	370	180	150	135	180	190	190
4.2	4.4	4.3	4.7	4.4	4.5	3.8	4.0
$23,700	$20,700	$22,200	$20,400	$16,300	$15,500	$13,100	$13,900
4	5	13	6	7	5	4	6
6	7	4	3	1	4	6	6
20	22	14	8	5	7	10	10
70	52	110	76	30	32	46	32
....	....	4	8	7	4	10	4
160	150	180	110	110	100	125	120
2,660	1,410	2,090	1,990	1,420	1,730	1,160	950
26	34	48	21	24	20	26	28
35	15	53	49	50	40	38	26
....	....	....	19	....	....	15	11
32	24	36	36	42	34	30	27
		19	25	22	19	16	16
1.6	1.0	1.9	1.4	1.5	1.3	1.3	1.4
38	28	49	55	53	63	55	47
16	23	10	14	20	13	15	18
45	49	40	31	27	23	30	34
18	22	4	15	19	17	7	14
53	43	51	44	26	30	66	42
21	30	27	28	35	29	18	24
2	1	15	8	15	16	2	11
3	3	2	3	4	6	4	5
80–320	160–600	80–320	60–280	60–240	60–320	120–400	120–400

pared to its productivity. At 1940 prices a large share of the farms for sale could be purchased within a range of $50 to $150 per acre. By 1949 the price had almost doubled. It is not likely that land prices will return to the level of the late thirties.

Two farms out of every five are rented. Many landlords are retired farmers or business men who hold a farm as an investment. Other landlords are women, who own perhaps one-fourth of all rented farms. The large number of rented farms is an advantage to the young farmer of limited capital because he may find a farm of desirable size and good productivity even if his capital is small.

The people of the area come largely from central and northern European ancestry and older American stocks. They are thrifty, progressive, and a large number are highly skilled farmers. Most farms are well mechanized and farm income usually is good when farm prices are favorable. Few commercial farmers do much work outside of farming, but many part-time farmers live around the cities and other industrial areas.

Many Variations in the Corn Belt

The Corn Belt covers all or parts of eleven Midwest states. Such a large area has many variations within it. Some general facts about the fourteen smaller areas set out on the map of the Corn Belt are given in Table 6.[1]

Where More Cash Grain Is Sold

In areas 1 through 5, many farmers sell grain to provide a large part of their income. Some sell practically all of their grain, others feed most of it. In fact, some raise and feed so many livestock that they must buy extra grain from neighboring farms. Each man adopts the plan that seems best for his particular situation.

Many farms are owned by landowners and the tenancy rate is high. The most common rental plan is to give a share of the

[1]Tables 6 to 9 give some of the more important facts about the type-of-farming subareas in the Midwest. The data are approximate as they are taken from a sample of counties in each area. Much variation is found even within these areas. The average size of farm omits very small farms. Land use is that of 1944. More grain and less hay than usual was being grown that year. Yields are the five-year average, 1938-42, for the most part, and generally were good during these years. The acreage needed to bring in $4,000 is based on 1944 prices, income, and yields. The cost of feed and livestock purchased was deducted before the gross income was figured. The number given to the subarea is the same as the one shown on the map.

crop for the rent, usually one-half on good farms. The landlord ordinarily sells his share of the grain even though the tenant may feed most or all of his. The tenant often pays cash for the hay and pasture land.

Corn, of course, is the important cash crop in areas one through five. Soybeans are second in the areas where they fit, and oats, wheat, and flax are other cash crops.

Most of the land is level or gently rolling and high in native fertility. A large percentage of the land can be kept in grain crops, although some hay is raised. Legumes, especially sweet clover, often are plowed under for green manure. Crop residues also are plowed under to help maintain fertility and in many areas the soil needs to be limed. If the area has been farmed very long it pays to use commercial fertilizer. Grain takes plant food from the soil, but with good management cash grain farmers on good land can keep crop yields high for a long time.

One man may care for 80 to 200 acres of crops where few livestock are kept. But on smaller farms one man will care for more livestock since grain raising alone does not keep him well occupied.

1. *Illinois-Indiana Cash Grain Area*—This is the most intensive cash grain area in the Corn Belt. Capital required to own a good farm runs into money, so many farms are rented. About one acre of soybeans is grown for each two acres of corn. The corn yield in normal years is about 50 bushels per acre, although good farmers get 60 to 80 bushels. Nearly 7 tons of feed grain are raised for each ton of hay, the most in the Corn Belt. The value of crops on the average farm in 1944 was $6,750.

2. *Iowa-Minnesota Cash Grain and Livestock*—A lot of cash corn is shipped out of this area, though less than in the cash grain area of Illinois. More livestock are raised, especially hogs. In fact, more livestock are kept per square mile than are found in many strictly livestock areas. Grain production of about 70 tons per 100 acres of farm land provides large supplies of cash grain for sale as well as feed for a good many livestock. About five acres of corn are grown to one of soybeans. Typically, corn yields 50 bushels per acre or better and yields of 60 to 90 bushels are not uncommon.

Some 6 tons of feed grain are raised for each ton of hay. The value of harvested crops on the average farm in 1944 was $5,360.

3. *Wabash Valley*—Quite a bit of cash grain is raised here, especially on bottom land farms. Most upland farms are livestock or general type farms. About four acres of corn are grown to one of soybeans. Wheat is the common small grain crop in the rotation. The average yield of corn is about 40 bushels per acre with much higher yields on well-managed farms. About 3 tons of feed grain are raised for each ton of hay. Crop value in 1944 on the average farm was $3,530.

4. *Northwest Corn Belt Fringe*—The acreage of small grain and flax exceeds that of corn in this section. Rainfall is more erratic, the season for corn is short, and yields per acre are lower. But corn still makes a good cash or feed crop and 40 to 80 acres are grown on typical farms. Something over 3 tons of feed grain are grown for each ton of hay. The value of harvested crops per farm was $4,070 in 1944.

5. *Southwest Corn Belt Fringe*—Here too the Corn Belt is shading off into more of a wheat country. Rainfall is quite erratic and yields are lowest of the Corn Belt area. Grain sorghums are used on many farms to replace corn as they are more drouth resistant. Cattle are common but hog production varies from year to year with the corn crop. An average of 1½ tons of feed grain are raised per ton of hay. Crop value per farm in 1944 was $4,320.

Livestock Feeding Areas

Although growing and fattening of meat animals is well distributed over the Corn Belt, the following three areas specialize more than the others. Two of these, the Mississippi and Missouri River Valley areas, are particularly important. A large supply of feed grain, hay, and pasture is typical with much of the grain being corn.

6. *Mississippi River Valley Meat Area*—This is one of the most intensive meat producing areas in the world, especially of hogs. Cattle fattening also is important, both of shipped-in and native cattle. Dairying and poultry usually are supplementary enterprises, but some farmers find that more milking

fits their situation best. Corn yields are the highest in the Corn Belt. With the many enterprises and the degree of specialization usually found, skill in management and in farm operation is needed. About 4 tons of feed grain are raised per ton of hay. Value of harvested crops per farm in 1944 was $5,700.

7. *Missouri Valley Meat Area*—Both hog raising and cattle feeding are important in this section, the latter more so than in area 6. The area occupies the rolling country on either side of the Missouri River in the main Corn Belt. Pigs usually are spring farrowed and sold at heavy weights. A great many cattle are shipped in for fattening from the range country to the west, but some are raised. Cash crop farms are found throughout the area, especially in the river bottoms. About 3½ tons of grain are raised for each ton of hay. Crops per farm were worth $4,570 in 1944.

8. *Nebraska-South Dakota Corn Belt Fringe*—Since less rain falls in this area and crop yields are lower, farms need to be about twice as large as in areas 6 and 7 (See Table 6 for comparison) to make a family unit. Crop yields are erratic. Both livestock and general type farms are common with many of the cash crop type found, especially on rented farms. Hogs are important and cattle feeding is fairly heavy, especially following good corn years. Many farmers keep cows although herds are not very large. Usually several cows are milked, especially when farm income is less favorable. About 2 tons of grain are raised for each ton of hay. Crops per farm in 1944 were worth $4,050.

Dairying and General Farming

In areas 9 through 12 of the Corn Belt the average farm is somewhat smaller than those discussed in the first eight areas. With more labor available and a good deal of hay and pasture, many farmers in these areas turn to dairying along with hog raising and chickens to increase their incomes.

Lying more in the eastern part of the Corn Belt, these areas are nearer the large centers of population, which gives an added incentive to dairying. However, other farming types are found: Many general type farms, some cash crop farms, a few cattle feeding farms, and occasional specialized types.

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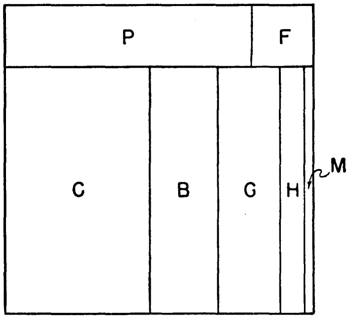
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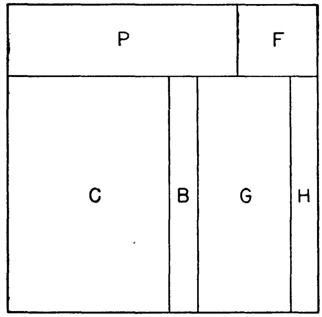
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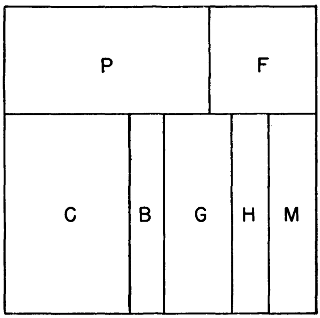
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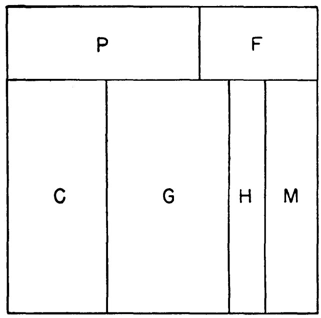
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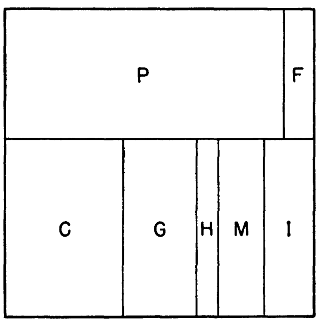
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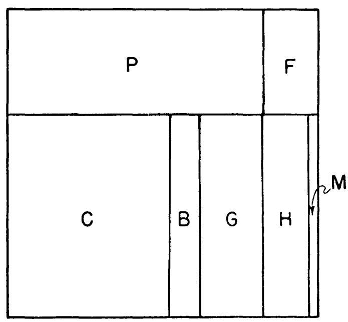
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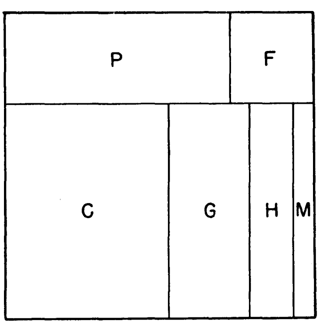
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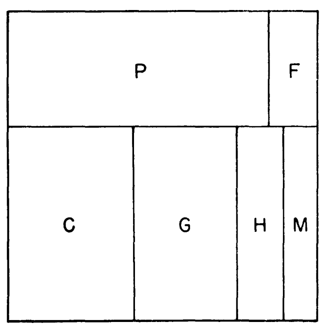
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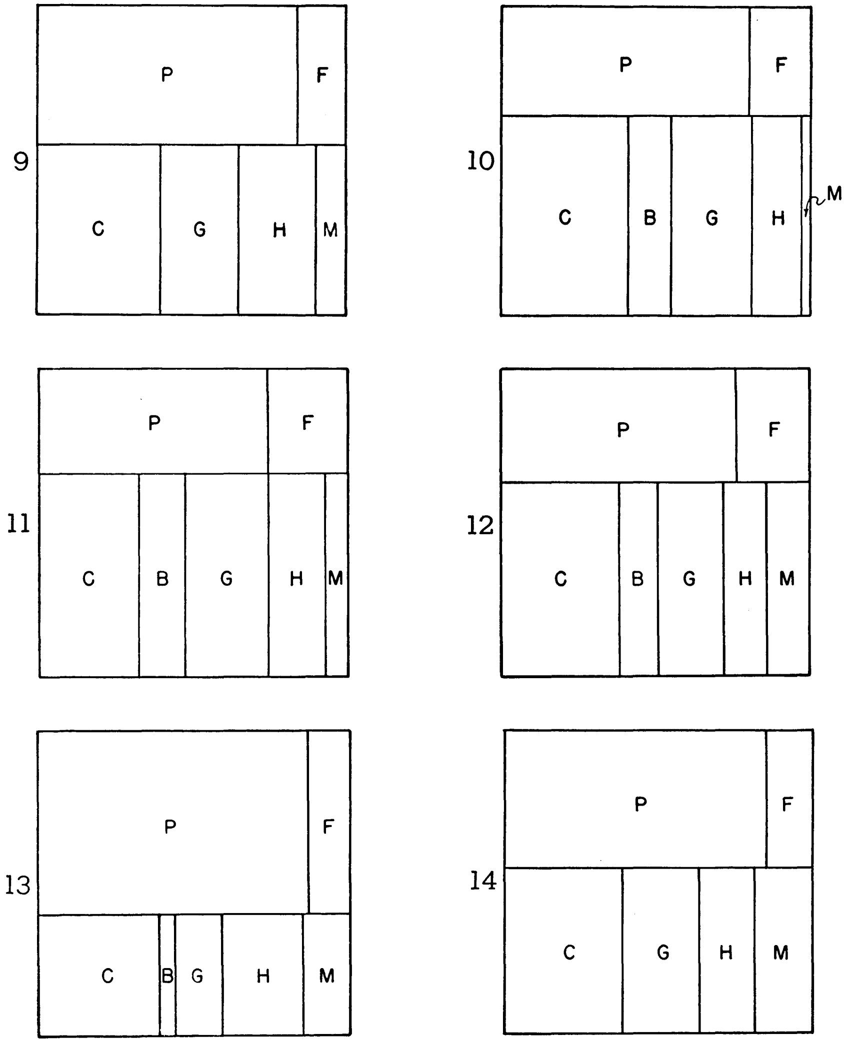


FIG. 8—Farm land use pattern in fourteen parts of the Corn Belt Area in 1944, a wartime production year.

1. Ill. - Ind. cash grain
2. Iowa - Minn. cash grain and livestock
3. Wabash valley
4. N.W. Corn Belt fringe
5. S.W. Corn Belt fringe
6. Miss. River valley meat producing
7. Mo. River valley meat producing
8. Neb. - S. Dak. Corn Belt fringe
9. Iowa - Wis. - Ill. hog and dairy
10. Ind. - Ohio hog and general farming
11. Ind. - Ohio - Mich. mixed farming
12. Ind. - Mich. general farming
13. Iowa - Mo. livestock and pasture
14. So. Corn Belt fringe

Legend: C - Corn; B - Soybeans; G - Small grains; H - Hay; M - Miscellaneous crops; P - Pasture, rotation and permanent; F - Farmstead, roads, timberland.

The more fertile the soil, the higher the proportion of cropland in corn or soybeans. Livestock plans are related to the feed crop combination and nearby markets.

9. *Iowa-Wisconsin-Illinois Hog and Dairy Area*—The rolling land lying along either side of the Mississippi River makes this a productive farming area. The large amount of grain and hay produced per farm furnishes feed for a rather intensive livestock program. Hogs bring in the most income of any single enterprise. Dairying is a sizeable enterprise, and poultry are important. On rented farms, the livestock-share lease is common. Yields generally are quite high as most of the cropland is of good quality; crop rotations are used and rainfall is dependable. About 1½ tons of grain are raised per ton of hay. Crops in 1944 were worth $4,100 per farm.

10. *Indiana-Ohio Hog and General Farming Area*—Rainfall usually is quite dependable in this productive area. Many farms are of the smaller family size—60 to 120 acres. Crop yields are good but manure, lime, and commercial fertilizer are generally needed to maintain them. Some farmers grow special crops such as tomatoes for canning. Hog raising is important and the two-litter system is used. Most farmers milk several cows but few specialize in dairying. About 3 tons of grain are raised for each ton of hay. Crops in 1944 were worth $3,700 per farm.

11. *North Indiana-Ohio-Michigan Mixed Farming*—Many medium to smaller size family farms of 140 acres or less are found here. Crop yields are good and rainfall is quite dependable. More grass is used in the rotation than in the area immediately to the south. Hogs are less important than in most of the Corn Belt while dairying and poultry are more important. Three-fourths of the farmers own all or part of the land they operate. About 2 tons of grain are raised for each ton of hay. Crops were worth $3,200 per farm in 1944.

12. *North Indiana-Michigan General Farming*—Lying nearer Lake Michigan, this area has a less fertile soil than central Indiana. Farms are larger in acreage than in areas 10 and 11 but are rather small in output per farm, as Table 6 shows. With a less responsive soil, good management is important. A large share of the farms are owned and no single type of farming predominates. About 2.8 tons of grain are raised per ton of hay. Crops per farm were valued at $3,000 in 1944.

13. *Iowa-Missouri Livestock and Pasture Area*—The land in this large area is rolling and the soil, not highly fertile, erodes easily. Much of the land is in permanent pasture and the hay acreage is large. Many farmers need a larger acreage to make a good family unit. Usually, the larger operators on a 320-acre farm or more keep a beef cow herd while those on smaller farms more likely have milk or dual-purpose cows. The number of hogs raised changes with the corn supply. Sheep flocks are common. About 1½ tons of grain are raised for each ton of hay. Crops per farm were worth $2,200 in 1944.

14. *Southern Corn Belt Fringe*—Some good river bottom land is found in this area, but fertility of the upland varies. Much of the upland is rolling making soil erosion a common problem. The surface soil often is thin so quite a little of the land is in pasture or hay. Summer drouths are not uncommon and lower the average grain yield. Cattle are more important and hogs less important than in areas raising more corn. Less than one ton of feed grain is raised per ton of hay. Crops were worth $2,470 per farm in 1944.

The Dairy Area

Along the Corn Belt's northern border is an area with wide variations in quality and depth of soil. Not so much land is under cultivation and hay occupies more of the cropland. The growing season is shorter than in other parts of the Midwest, summer nights are cooler, but summer rainfall is more dependable. Corn gradually becomes less important as one moves north, while the cooler weather crops, small grain, and hay play a large role. For cash crops, shorter season crops such as potatoes, dry field beans, or the canning crops, peas and sweet corn, are prominent.

In most of the Dairy Area about half of the land is in crops. The acreage of both small grain and hay exceeds that of corn. The tonnage of feed grain often is less than that of hay and is reduced further since much of the corn is used for silage. About 40 per cent of the farm land is in pasture. Such a feed supply fits well the predominate type of farming in this area—dairying.

Along with dairy herds, hogs and medium sized poultry flocks are common. In the southwest part of the Dairy Area farmers often sell butterfat and use skim milk for livestock feed, although a shift toward commercial uses for skim milk was going on in the late 1940's. During World War II the manufacture of whole and skim milk powder developed as a major industry. Near the cities milk goes largely for fluid use. Farther north, cheese factories, condenseries, or driers are the chief markets.

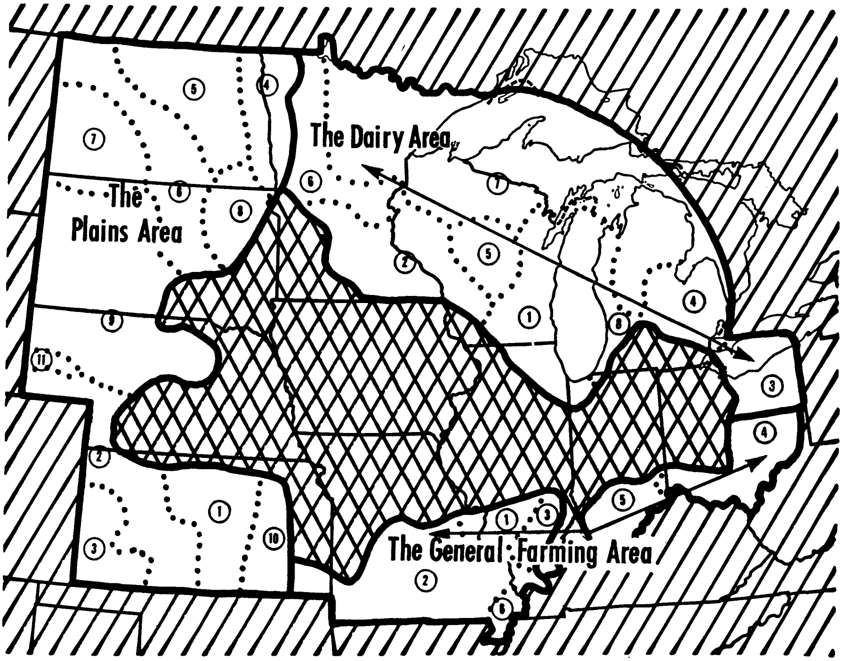


FIG. 9—The edges of the Corn Belt grade off into other types of farming more suitable to these conditions; dairying to the northeast; general farming to the southeast; wheat growing and cattle ranching to the west. Conditions are more variable in these three areas than in the central Corn Belt.

The lower peninsula of Michigan is a special area. Flanked on three sides by the Great Lakes, its growing season varies more than elsewhere. Along the eastern shore, such fruits as apples, peaches, pears, cherries, and small fruits are of commercial importance. This also is true in other more sheltered spots.

The people in the Dairy Area are largely of central and northern European extraction. They are thrifty and willing to undertake the steady work and long hours that go with dairy farming.

Some Nonfarm Areas

In the extreme northern part of Minnesota, Wisconsin, and Michigan are large areas that cannot be made into suitable farms. Many so-called farms can be bought at low cost per acre, which may lead unwary families into the mistake of trying to farm such land for a livelihood. Little more than an existence is possible on the income obtained from smaller acreages of the poorer land, although some better farm land is scattered throughout the area. Summer resorts are common and many part-time farmers try to work out a combination of farming with another occupation. Some families are quite successful but many are not. In general, such combinations furnish a less dependable income than commercial farming.

Family farms predominate all through the Dairy Area. Since dairying is the main enterprise, the farm size tends to be one that will furnish feed for a cow herd that a family can milk. Farm income is moderate but quite stable, a characteristic of dairy farming areas.

Table 7 provides data on seven of these subareas, the eighth having such a wide variety of farming that average figures are not representative.

1. *Wisconsin-Illinois Intensive Dairy*—The Chicago and Milwaukee milksheds are included in this area, the heart of the Midwest dairy belt. With much productive land and a generally good market, it is an intensive dairy area. Farms run medium to small in acreage, typical farms being 80 to 140 acres in size. The sale of milk brings in the larger share of the income, although hogs add some and most farms have a good poultry flock. Peas are a cash crop. More capital is needed per farm than in any other Midwest dairy area. About 1½ tons of grain are raised for each ton of hay. Harvested crops were worth $3,600 per farm in 1944.

2. *North Mississippi River Valley Dairy Area*—Dairying is first in importance and hogs second in this section, which lies on either side of the Mississippi River in southern Minnesota and west central Wisconsin. Most of the land is quite rolling but the soil is productive. About one-third of the land is in pasture. Many young dairy cattle are sold to eastern dairy farms. Here, more so than farther east, more cream

TABLE 7
The Dairy Area Farming Pattern

	Better Land—More Crops				Poorer Land—Less Income		
	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7
Per 100 acres of farm land							
Capital							
Land and buildings	$12,800	$ 5,900	$ 8,600	$ 7,800	$ 4,300	$ 3,000	$ 3,100
Livestock	2,780	1,820	1,560	1,320	1,800	1,000	770
Machinery	1,800	970	1,070	1,410	940	550	640
Total	$17,380	$ 8,690	$11,230	$10,530	$ 7,040	$ 4,550	$ 4,510
Acres needed for $4,000 gross income	110	200	180	200	240	340	330
Average farm in area							
Acres per farm	130	170	120	130	140	170	130
People per farm	4.9	4.4	5.1	4.4	4.1	5.3	3.9
Capital per farm	$22,600	$14,800	$13,500	$13,700	$ 9,900	$ 7,750	$ 5,900
Number of livestock per farm							
Milk cows	17	14	8	8	15	10	6
Other cattle	9	14	7	8	7	10	5
Pigs raised	26	30	13	13	8	12	3
Ewes kept	...	3	2	6	...	3	...
Chickens kept	125	150	125	90	70	80	40
Raised per farm							
Feed grains, tons	53	48	25	25	17	21	8
Hay, tons	39	40	29	22	41	47	31

TABLE 7 (*continued*)

THE DAIRY AREA FARMING PATTERN

	Better Land—More Crops				Poorer Land—Less Income		
	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7
Yield per acre							
Corn, bu.	46	42	45	38	33	28	29
Oats, bu.	45	33	41	47	29	32	34
Hay, T.	1.8	1.6	1.5	1.3	1.4	1.4	1.4
Per 100 farms in area							
Full owners	63	57	71	64	72	63	80
Part owners	10	14	12	21	14	21	14
Tenants	26	29	16	15	14	16	6
Dairy farms	69	44	42	20	84	52	3
Livestock farms	6	22	18	10	2	12	53
General farms	14	25	25	39	10	27	20
Poultry farms	3	4	10	3	1	3	7
Crop farms	4	2	5	25	1	2	4
Size, usual range, acres	40–280	60–320	40–240	40–240	60–280	60–320	40–280

is made into butter. About 1.2 tons of grain are raised for each ton of hay. Crops in 1944 were worth $2,700 per farm.

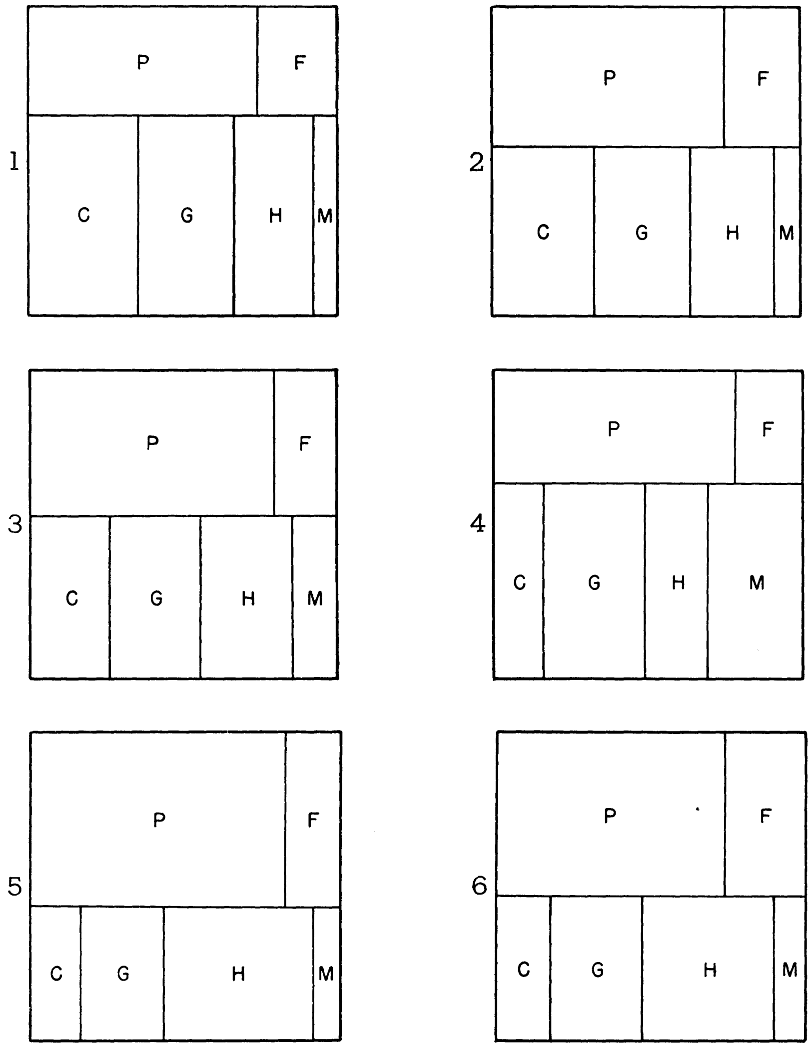
3. *Northeast Ohio Dairy and Mixed Farming*—This more densely populated section has farms that run to the smaller family size of 60 to 120 acres, most of them farmer owned. Farmers usually have a diversified program which centers around milk cows. Quite a little specialized farming is found around the cities, such as intensive dairy, poultry, vegetable or fruit farms. A little less than a ton of feed grain is raised per ton of hay. Crops were worth $2,700 per farm in 1944.

4. *East Michigan Dairy and General Farming*—A wide variation in types of farming is found here. The area includes much of the Detroit milkshed. However the growing of cash crops such as dry field beans, sugar beets, and potatoes is important. A few hogs are raised and chicken flocks are numerous. Most of the farms are operated by owners. The typical farm business is rather small both in capital and income as Table 7 shows. About 1¼ tons of feed grain are raised per ton of hay. Crops per farm were worth $2,760 in 1944.

5. *Central Wisconsin Dairy and General Farming*—Milking provides the principal income in this section and much of the milk goes to cheese factories or condenseries. Soil here is less fertile than in areas to the west, south, or east, although there are some very good farms. With lower grade land, farms generally should be larger than they are. A little less than one-half ton of grain is raised per ton of hay so additional feed often must be purchased. Crops per farm were worth $1,840 in 1944.

6. *Northwest Minnesota Cutover Fringe*—More farms are of commercial size in this area than in most of the cutover country. Dairy and general types of farms are most common. The acreage of feed crops per farm is small and the lower land productivity means that the income per farm is limited. About one-half ton of grain is raised per ton of hay. Crops per farm were worth $1,450 in 1944.

7. *Minnesota-Wisconsin-Michigan Cutover Area*—Some good farms and farming areas are scattered through much of this



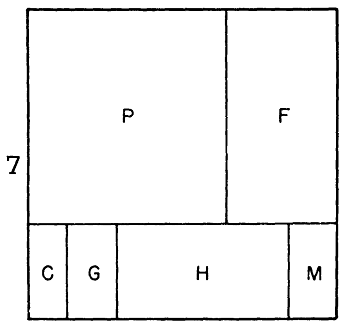


FIG. 10—Farm land use pattern in seven parts of the Dairy Area in 1944, a wartime year.

1. Wis. - Ill. intensive dairying
2. N. Miss. river valley dairy - hog - poultry
3. N.E. Ohio dairy and mixed farming
4. E. Mich. dairy and general farming
5. Central Wis. dairy and general farming
6. N.W. Minn. cutover fringe
7. Minn. - Wis. - Mich. cutover area

Legend: C - Corn; G - Small grain; H - Hay; M - Miscellaneous crops; P - Pasture, rotation or permanent; F - Farmstead, roads, timber, waste.

More small grain, hay and pasture fit in with dairying as the leading farm enterprise. Miscellaneous cash crops are a supporting enterprise.

cutover timber country. The typical farm is small in size of business, many farms having only five to eight cows. Other farms are of a noncommercial type. General rather than dairy farming is most common. Since the growing season is short most of the farm land is devoted to pasture and hay. Potatoes are a cash crop. Only about one-fourth ton of feed grain is raised per ton of hay. Crops were worth $1,350 in 1944.

8. *Michigan East Shore*—The protection furnished by the Great Lakes makes fruit farming important in this area along with dairying, poultry, and vegetables. Since farming here varies so much, no brief description is adequate.

The General Farming Area

To the south of the central Corn Belt lies an area somewhat different from the main belt, but it still is one where corn is adapted. Here the land is more often rolling and sometimes hilly, and there is less plowland than in the Corn Belt. Soils usually are not as fertile and there are places where the surface soil on rolling land has been washed away. Control of soil erosion is a major problem. The growing season is somewhat longer and rainfall usually is more plentiful than in other parts of the Midwest. But the less fertile and more rolling land limit the acreage of corn and other row crops and make it important to choose crop rotations carefully. Yields per acre are substantially less than in the Corn Belt area. Where soils are thin they often are "drouthy" and small grains or grasses may return more per acre than corn. Much of the land needs lime, and commercial fertilizer is needed generally.

The one-third of the land devoted to crops is about equally divided between corn, small grain, and hay. Part of the small grain is wheat. The feed grain combination provides 3/4 to 1 1/2 tons of grain per ton of hay. More than half of the land is in pasture.

There are fewer profitable types of farming in this area than in the central Corn Belt. For example, cash crop farming is not as adaptable and almost no livestock specialization is found because there is not enough grain for heavy feeding programs. As a result, general livestock farming predominates. Few hogs are raised and the livestock are the roughage consuming kind—

cattle or sheep. Dairying is of considerable importance and by mid-century probably was increasing faster in the area than any other enterprise.

Larger farms usually raise beef cattle, most of them being sold either as feeders or as grass-fat cattle. Some are grain-fed by shipping in corn from farther north or buying it from local bottom land farms. Many farms have small flocks of sheep although larger flocks are found on the rougher land. Poultry flocks are the family size common to the Midwest and are found on most farms.

Many Small Farms

Farms are smaller here than in the main Corn Belt Area, many of them too small to support a family and make rent payments to a landlord as well. Fortunately, most of the farms are owned by the operators but much of the area needs to shift to larger units. Land prices are lower than in the central Corn Belt although there are many acres of good land. The price range is wide, $20 to $80 per acre being pre-World War II levels, but prices almost doubled during the wartime rise. Bottom land is considered more desirable here than it is farther north.

Where the unit is small many farmers work at other occupations on a part-time basis. However, much of the area lacks local industry so that off-farm opportunities are limited.

Compared to the central Corn Belt the average farm produces a lower income, is harder to mechanize, and there are fewer contacts between the farmers and people in other areas. As a result modern methods and practices have come in more slowly. Much progress is being made, however.

Good farming opportunities still are to be found. Young farmers often can start with less capital than in more commercialized areas. But they should not be misled into trying to start on farms where land resources are too limited. Under such conditions even highly skilled management will not bring in enough income to provide a satisfactory level of living for the family.

A high percentage of the people in this area are of the older American stock since the area was settled early in Midwest history. Some important facts about characteristic farms in the General Farming Area will be found in Table 8.

TABLE 8

THE GENERAL FARMING AREA PATTERN

	More General Farming—Less Feed Grain					Cotton
	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
Per 100 acres of farm land						
Capital:						
Land and buildings	$11,400	$ 2,400	$ 4,100	$ 4,400	$ 4,600	$ 9,300
Livestock	1,400	720	760	860	910	710
Machinery	1,100	280	370	440	550	960
Total	$13,900	$ 3,400	$ 5,230	$ 5,700	$ 6,060	$10,970
Acres needed for $4,000 gross	155	550	480	320	310	115
Average farm in area						
Acres in farm	120	180	140	140	130	90
People per farm	5.2	4.1	4.3	4.2	4.4	4.9
Capital per farm	$17,200	$ 6,100	$ 7,300	$ 8,000	$ 7,900	$ 9,900
Number of livestock per farm						
Milk cows	6	4	3	6	4	2
Stock cows	2	4	3	1	3	1
Other cattle	4	7	4	4	4	3
Pigs raised	22	20	10	15	14	10
Ewes kept	...	2	3	12	...	...
Chickens kept	150	100	110	80	110	50
Raised per farm						
Corn, bu.	910	375	610	610	660	470
Hay, T.	22	16	19	16	14	13

TABLE 8 (*continued*)
THE GENERAL FARMING AREA PATTERN

	More General Farming—Less Feed Grain					Cotton
	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
Yield per acre						
Corn, bu.	36	26	26	40	34	28
Oats, bu.	30	19	22	30	30	22
Wheat, bu.	19	13	13	16	15	......
Hay, T.	1.6	1.1	0.8	1.3	1.2	1.6
Per 100 farms in area						
Full owners	49	76	58	72	72	32
Part owners	18	9	24	9	13	7
Tenants	32	15	17	18	15	61
Crop farms	15	3	12	21	7	79
Livestock farms	9	49	28	24	34	11
General farms	39	23	34	24	35	7
Dairy farms	19	6	5	18	10	1
Poultry farms	5	7	9	7	7	1
Size, usual range, acres	50–320	50–360	60–360	40–240	40–240	20–180

1. *St. Louis Milkshed*—Some farms are on rolling uplands in this area, some on bottom land, and others on the flat, heavy soil in the eastern part of the area. Farms are mostly of commercial size, but run to the smaller family or one-man types. Dairying is most important though hogs as well as poultry bring in substantial amounts of income. Wheat is the main small grain. About 1½ tons of feed grain are raised per ton of hay. Crops per farm were worth $3,570 in 1944.

2. *Missouri Ozarks*—In this rather large area commercial farms are scattered among smaller, often self-sufficient ones. About one-fourth of the farm land is in crops. Crop yields are moderately low, but can be much improved under good management. General and livestock farming predominates. In southwest Missouri more fruit raising, dairying, and poultry are found than in the rest of the Ozark area. Something less than one ton of feed grain is raised per ton of hay. Crops in 1944 were worth $1,320 on the average farm.

3. *Southern Illinois Graylands*—Heavy, generally level soils that have the tight gray layer typical of them account for the name here. Since the soil does not absorb water readily, it is wet and heavy in rainy periods and drouthy in dry ones. Yields generally are rather low. Farms should be a half section or more in size to make use of an extensive farming system, but most are not. Hence, income per farm usually is low. About one ton of feed grain is raised per ton of hay. Crops per farm were worth $1,260 in 1944.

4. *Upper Ohio River Valley*—This rolling to hilly area is made up of many 40- to 160-acre farms with a scattering of larger, more commercialized kinds. About one-third of the farm land is in crops. General, livestock, crop, and dairy farms are about equal in importance. About one ton of feed grain is raised per ton of hay. Crops were worth $1,780 per farm in 1944.

5. *Southern Indiana Hills and Bottoms*—An old coal field area occupies much of this section. Most of the upland is hilly and about 40 per cent of the farm land is in crops. Farms often are too small for a good family income. But some are larger farms with enough good land to keep the farmer

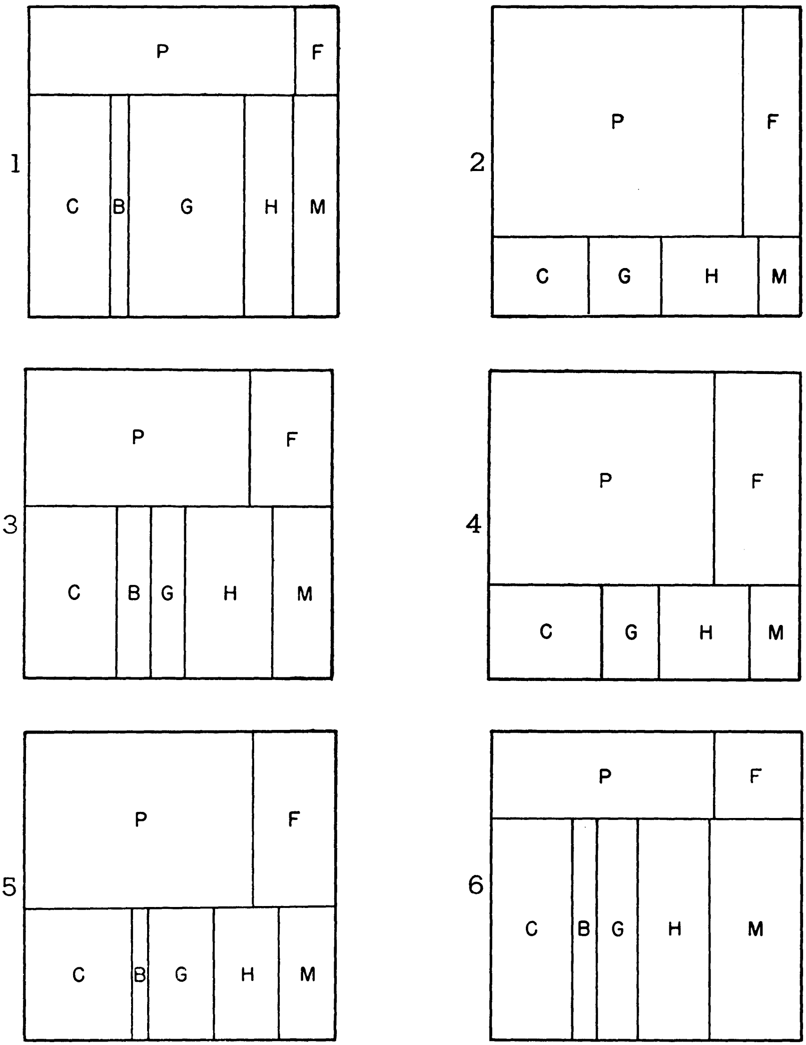


FIG. 11—Farm land use pattern in six parts of the general farming area in 1944, a wartime year.

1. St. Louis milkshed
2. Missouri Ozarks
3. So. Illinois gray lands
4. Upper Ohio river valley
5. So. Indiana hills and bottoms
6. S.E. Missouri cotton and general

Legend: C - Corn; B - Soybeans; G - Small grain; H - Hay; M - Miscellaneous crops (Includes cotton in S. E. Missouri); P - Pasture, rotation and permanent; F - Farmstead, roads, timber, waste.

Less uniformity and lower productivity of land resources results in more general farming as the typical situation in this area.

efficiently employed. Farmers find it to their advantage where they have some good bottom land for crops. No single type of farming stands out. A little over 1.4 tons of feed grain is raised per ton of hay. Crops were worth $1,850 per farm in 1944.

6. *Mississippi Delta Cotton*—The cotton area reaches up into southeast Missouri and extends far down the Mississippi. Here cotton is king rather than the typical Midwest crops. Three-fourths of the land is in crops and nearly one-third of this is in cotton with much higher percentages on good cotton farms. Cash crop farming predominates with only a little livestock on most farms. Farms of 20 to 80 acres are common since cotton raising is little mechanized as yet. Tenancy is high. The soil generally is quite productive. On less intensive cotton farms about as much grain and hay is raised as in the hill country to the north even though livestock enterprises usually are small in size. A little over one ton of feed grain is raised per ton of hay. Crops were worth $3,900 per farm in 1944.

The Great Plains

West of the Corn Belt lie the Plains States, only a part of them in the Midwest. Conditions here vary greatly and soils range from those high in fertility to large sandy areas or other types low in fertility. In some sections most of the land is plowable while in others almost none can be plowed. As the name indicates, the Plains Area is level to gently rolling. Annual rainfall drops from 30 inches on the eastern edge to 20 inches or less each year farther west. The growing season varies from about 130 days in the north to 180 in southern Kansas.

The drier weather crops—wheat, small grains, flax, and grain sorghums—are important. Wheat is the principal cash crop.

Where the land cannot readily be plowed, large areas are grazed. Beef cattle raising is the principal enterprise, although sheep are found in some areas. In the Sand Hills of Nebraska, beef cow herds fit best while in the Flint Hills of Kansas, stock steers are shipped in for fattening on grass.

Irregular rainfall creates special problems for the Plains States. There may be a longer annual rainfall cycle, but year to year variations are wide and crop yields follow the rainfall pattern. The problem is made more difficult by the tendency for prices to be low in good crop years. Coupled with this, farm operating costs take more of the gross income, and high costs may leave the farmer with little or no profit. When crops and prices are good, income goes up rapidly. But it goes down just as rapidly when conditions are unfavorable. Therefore, reserves either in crop carry-over, cash, or both, are most important.

Conditions in the area make it difficult for young farmers to get started. The chance of running into a series of lean years is considerable and beginners usually are in a weak position to carry on if setbacks come at that time.

Small Farms, Large Acreages

Unfortunately for the Plains Area, it was settled when the traditional quarter section farm of the Midwest was the standard size—much too small to provide a decent family living. In fact, a going farm in the drier areas may be a section or more in size, while in the cattle country a farm of 2,000 acres is of medium size. Since most of the farms are highly mechanized, one man can care for a large acreage of cropland.

In the years immediately following World War II, land prices in this area were not high, at least in dollars per acre. However, it would be fatal for farmers to bid up the price of land. The high risk and usual slim profit margins make it extremely unwise to establish high fixed costs. This is very important to the young farmer who may look at the low price per acre and be misled into placing a heavy mortgage on a farm in order to own it. Nowhere else in the Midwest are low costs more vital. Table 9 sets out some of the characteristics of typical farms in the Plains Area.

1. *Central Kansas Wheat and General Farming Area*—Wheat raising is more dependable here than farther west, though yields per acre are about the same when the crop is good. Farms are larger than in the Corn Belt but much smaller than in southwest Kansas. However, income is more dependable. Crop farms predominate though a good many livestock and general farms are found. As is generally true in the wheat country, many men own one farm and rent additional land to increase the size of business. Harvested crops were worth $4,700 on the average farm in 1944.

TABLE 9

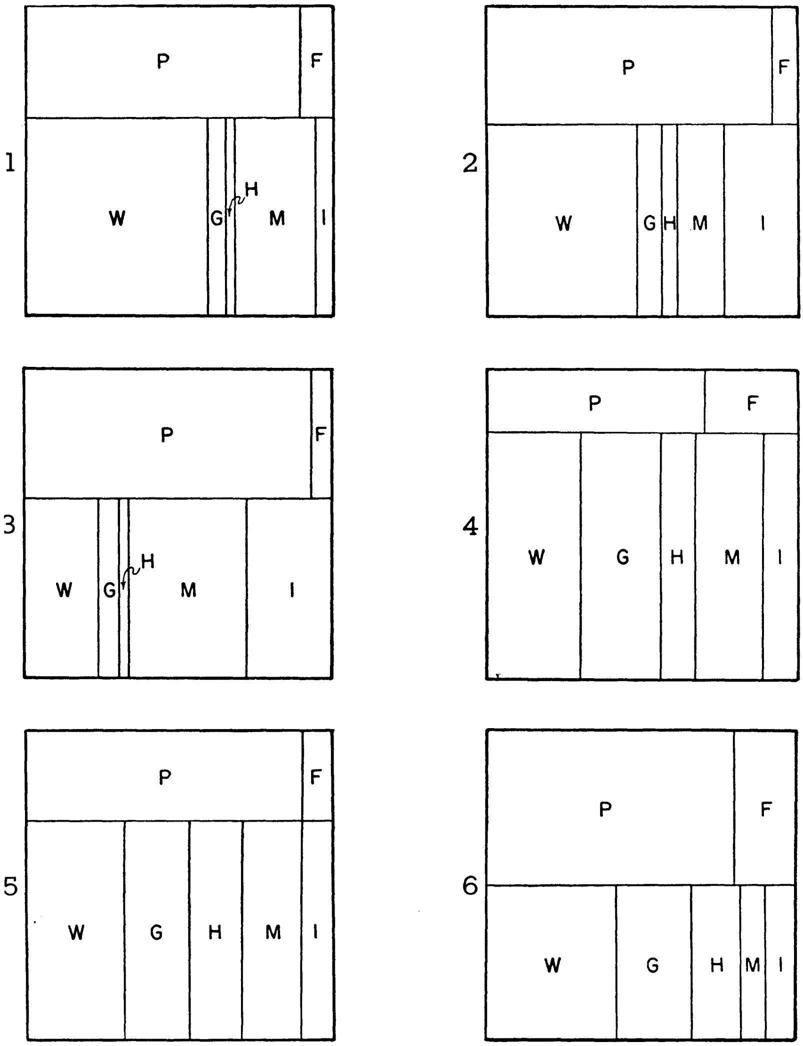
THE WHEAT AREA FARMING PATTERN

	Winter Wheat Area			
	Area 1	Area 2	Area 3	Area 4
Per 100 acres of farm land				
Capital:				
Land and buildings	$ 5,000	$ 3,400	$ 1,700	$ 3,500
Livestock	670	430	260	460
Machinery	520	370	220	740
Total	$ 6,190	$ 4,200	$ 2,180	$ 4,700
Acres needed for $4,000 gross	340	390	610	240
Average farm in area				
Acres per farm	370	660	1,260	390
People per farm	3.7	4.0	3.8	4.0
Capital per farm	$22,900	$27,700	$27,600	$18,300
Number of livestock per farm				
Milk cows	6	5	3	6
Stock cows	8	7	20	3
Other cattle	18	30	20	12
Pigs raised	10	6	10	12
Ewes kept	4	6	10	12
Chickens kept	125	120	90	90
Raised per farm				
Wheat, bu	1,880	2,750	1,640	1,690
Hay, T	17	37	44	35
Yield per acre				
Wheat, bu	13	14	9	19
Corn, bu	13	10	9	27
Oats, bu	20	19	15	33
Hay, T	2.3	1.9	1.7	1.0
Per 100 farms in area				
Full owners	32	24	20	46
Part owners	30	40	46	27
Tenants	38	35	34	26
Crop farms	61	74	73	63
Livestock farms	11	13	16	10
General farms	21	10	8	21
Dairy farms	3	2	1	2
Poultry farms	3	1	2	2
Size, usual range, acres	160–800	200–1500	320–3000	120–800

TABLE 9 (*continued*)
THE WHEAT AREA FARMING PATTERN

Spring Wheat Area				Cow Herds*	Grass Fattening*
Area 5	Area 6	Area 7	Area 8	Area 9	Area 10
$ 1,500	$ 1,100	$ 1,300	$ 2,000	$ 700	$ 3,900
420	360	460	640	360	750
350	270	270	410	70	340
$ 2,270	$ 1,730	$ 2,030	$ 3,050	$ 1,130	$ 4,990
520	570	640	450	1,960	540
620	710	800	450	2,000	370
4.3	3.6	4.8	3.6	3.9	3.7
$ 14,100	$12,300	$16,200	$13,700	$22,100	$18,400
7	6	8	6	4	4
5	8	15	7	40	10
18	14	25	18	50	22
12	14	24	40	16	26
12	7	8	14	60	....
80	70	80	125	80	120
1,710	1,560	1,530	730		640
60	48	56	36	146	66
12	10.5	13	12	11	22
21	15	19	16	18	25
25	23	27	27	....	....
0.8	0.8	1.0	0.9	0.7	3.0
30	27	31	21	27	37
41	52	47	33	45	20
29	21	22	46	28	42
62	76	69	42	13	17
12	10	12	26	71	50
22	12	18	30	12	21
2	1	1	1	1	6
1	1	....	1	1	4
240–1200	300–1500	320–2000	200–1000	600–5000	160–800

* Range Livestock Area.



2. *Central Plains Specialized Wheat*—In this most specialized wheat area of the Midwest, farms often are a section or more in size because one family can handle a large acreage of crops. Sixty per cent of the farm land is in crops and about half of this is in wheat. However, rainfall is not very dependable and yields are uncertain. Improved methods,

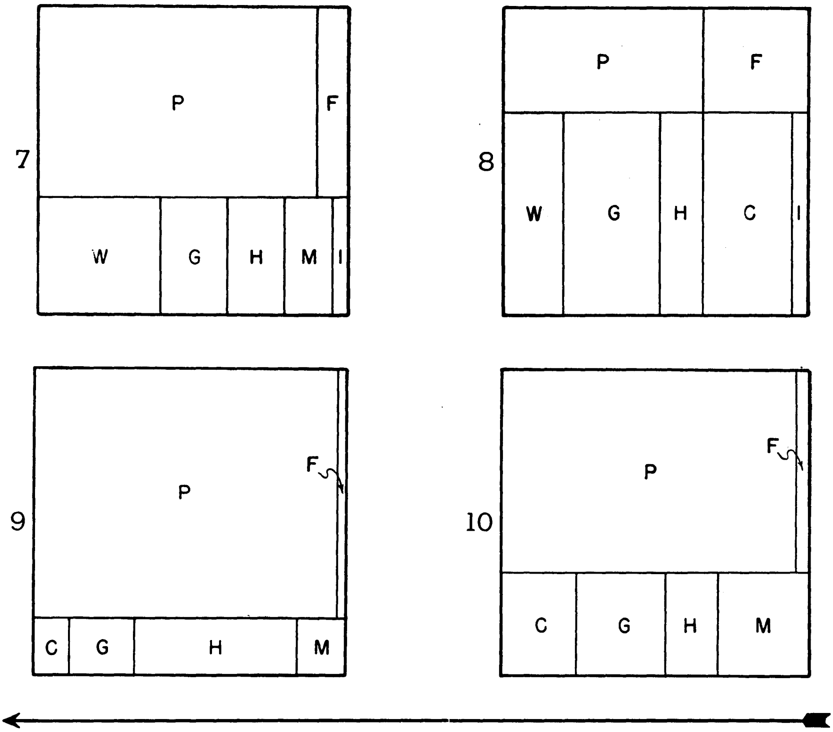


FIG. 12—Farm land use pattern in ten parts of the Plains in 1944, a wartime year.

1. Central Kansas wheat and general farming
2. Central Plains specialized wheat
3. S.W. Kansas wheat and grain sorghum
4. Red River valley
5. Central N. Dak. specialized wheat-small grain - livestock
6. Upper Mo. River specialized wheat and livestock
7. Western N. Dak. specialized wheat and livestock
8. Specialized Wheat - Corn Belt transition
9. Sandhills-Plains range livestock
10. Kansas flint hills

Legend: W - Wheat; G - Other small grain and flax; H - Hay; C - Corn; M - Miscellaneous crops; I - Idle and fallow; P - Pasture, rotation and permanent; F - Farmstead, roads, waste.

Dry weather crops predominate in the Plains, wheat in the better crop areas, pasture and hay for range livestock elsewhere. In some areas, as much as 80 per cent of the farm land is in crops, in others, less than 20 per cent.

including use of fallow land in the rotation, have boosted yields and increased crop dependability. Quite a few cattle are pastured on wheat when the fall growth is good. Others are kept to use up pasture and hay. From here south and west is the short grass country. In 1944, crops were worth $6,700 per average farm.

3. *Southwest Kansas Wheat and Grain Sorghum*—Grain sorghum is a better feed crop than corn in this area, which begins in Kansas and extends well down into Oklahoma and Texas. Rainfall is less dependable than in central Kansas and farms are larger. Wheat yields are decidedly less per acre than in areas 1 and 2. With reasonable rainfall and good prices, farmers have high incomes. But they suffer badly during drouths or depressions. Crops were worth $8,200 per farm in 1944.
4. *Red River Valley Wheat - Potatoes - Sugar Beets - Livestock*—The soil is good but the growing season short in this diversified farming area. Cool weather crops predominate and yields generally are good. The area is well mechanized. Crops like potatoes and sugar beets require a great deal of labor per acre; wheat, flax, and small grains very little. Quite a little milking is done but few strictly dairy farms are found. Crops in 1944 were worth $7,500 per farm.
5. *Central North Dakota Spring Wheat - Small Grain - Livestock*—Wheat is the main crop though other small grains are important on farms in this territory. About 70 per cent of the land is in crops. Many farmers keep cattle to use up hay and pasture. Rainfall is uncertain and yields vary from year to year. Crops in 1944 were worth $5,000 per farm.
6. *Upper Missouri River Valley Wheat and Livestock*—Though much like central North Dakota, less of the land here is in crops, yields are lower and not as dependable. Farms are some what larger in acreage, a section of land being a medium sized farm. Crop farms predominate though some livestock and general farms are found. Crops per farm were worth $5,900 in the good year of 1944.
7. *Southwest North Dakota Wheat - Livestock*—West of the Missouri River, more land is in pasture and hay, and less in crops. Farms are somewhat larger. Cattle are kept to use the pasture and hay and diversify the income. Since crop yields are erratic, livestock help stabilize the farm business. In 1944, crops worth $5,550 per farm were raised.

8. *Spring Wheat - Corn Belt Transition Area*—About one-third of the cropland is in corn in this area, and more than half in wheat and other small grains, including flax. A general farming pattern is usual. More hogs are raised than is typical in the regular wheat country. Farms are somewhat smaller, 320 to 480 acres being a frequent size. Crops worth $4,730 were raised on the average farm in 1944.

9. *Sand Hills - Great Plains Range Livestock*—This is a grazing rather than a crop area. About 80 per cent of the land is in pasture and another 10 per cent in hay. Most cow herds run from 50 cows upward, and many ranches are very large in size. Some have sheep rather than cattle. In addition to the cow herd, many ranchers keep yearlings or older steers. Some specialize in these cattle. While land is low priced per acre, a large amount of capital is needed for successful cattle or sheep ranching. About 6 tons of hay are raised for each ton of grain which means little grain feeding of livestock. Crops are minor, only $3,350 per farm being raised in 1944.

10. *Flint Hills Blue Stem Area*—Many steers are summer grazed in this long-grass cattle grazing area in east central Kansas. Cattle often are brought in from Texas and Oklahoma ranches for the pasture season and many pastures are rented on contract to the owners of the steers. Cow herds are not so common. About one-third of the land is in crops, about equally divided between corn, or corn and sorghum, small grain, and hay. Some cattle feeding as well as grazing is carried on, especially on farms with more cropland. About 3 tons of hay are raised for each ton of feed grain. Crops per farm averaged $2,600 in 1944.

11. *Irrigated Area*—The type of farming is sharply different in this section, which occupies part of Scotts Bluff and Morrill counties in western Nebraska and neighboring counties in Wyoming. Some irrigated farming occurs in many places in the Platte River Valley. Wheat and corn are much less important and intensive crops like sugar beets, potatoes, and dry field beans are much more so. Many heavy steers are fattened on beet tops and other feeds.

CHAPTER 3 Money Making – The Management Problem

A man must master his undertaking
And not let it master him.
Armour

WHEN A FARMER TURNS TO THE management problem, he starts with the question: *Will it pay?* He thinks of his farm business as a unit, not as a series of separate enterprises. He still thinks about how to produce good crops, care for his soil, keep livestock, and get the most out of his machinery. But in his over-all management plan, these things are considered with only one question in mind: What effect will they have on my income?

If he's a wise manager, the farmer assembles for himself a sizeable "kit of farming knowledge" about good methods and practices for his area. He wants to know all he can about soils, crops, fertilizer, machinery, livestock, and so on. But when he uses this knowledge, he does his best to find out whether the practices that give the largest production also are the most profitable.

The farmer who develops the ability to think accurately of his farm as a unit is improving his management skill. He sees that each enterprise is related to every other. He knows that each enterprise on his farm could use more of his time and attention. He is aware, too, that all must be serviced by the same workers and that they must compete with each other for his supply of capital. But he makes money because he makes efficient use of the things he has to work with on the farm and because he fits each enterprise into his management plan according to the profit it contributes to the whole farm business.

The Skillful Farm Manager

The capable farm manager makes and carries out decisions that result in the *largest continuous farm profit from the resources available to him.* The goal is not the largest profit possible in any one year, but *continuous* profit—continuous for the number of years that are important to the family.

Profit, of course, comes from wisely managed production, and it is net production measured in money value, not bushels or pounds, that counts. The larger the net production, the greater the profit. This key statement holds the clue to top-grade farm management.

Working toward a large continuous profit, however, does not mean that a farmer should go ahead and wear out his farm. Each farmer has a stake in the long-time future value of the capital he is using as well as in year-to-year income. Some men, in their desire or need for immediate income, use up capital that cannot easily be replaced—by letting the soil erode, for example. If they do, they have less capital to earn income for them in the future or to sell to others when they are through using it.

There are times when it is good business for a man to draw some capital from his land or buildings. And there are other times when it is equally good business to put capital back into the farm. Unfortunately, some people and some communities are short-sighted and exploit their farms. Rental agreements, for example, sometimes encourage the tenant to farm the land too hard. But these are errors in judgment—mistakes people make in not seeing clearly their own longer run self-interest.

A farming system carried on as a profit-making business will not in every case fully protect the long-time public interest in farm land. This part of the land use and conservation problem must be handled as a public rather than a private problem.

The wise manager, however, guards his capital investment. As farmers sometimes say: "Only a fool would eat his seed corn." Land is the farmer's seed capital and it is used by each generation as the basis for the farming business. The wise manager will "keep the land but use it too."

Combining Your Resources

To realize the largest possible continuous profit, the farm manager must make the best use of the resources available to him. These resources, or tools of production, fall into four classes:

1. Management
2. Labor
3. Land
4. Working Capital

The goal of the good manager is to fit together exactly the right amount of each of these four resources, then use them to get a maximum continuous farm income or profit from them.

He soon finds, of course, that he seldom can have all the resources he might want, mainly because they cost money. For example, if a farmer wants to use more land, he either must buy or rent it. If he needs more buildings or improvements, they also cost money. Perhaps he can rent them, but if he has to build he must plan to use them for many years. If more labor is needed, the farmer or his family must work longer hours, or workers must be hired. And if more machinery or livestock or feed is wanted, he must have money or credit to get them.

Obviously, if the farm manager is to get the highest possible return from his resources, he must use them with economy. Being economical does not mean doing without. It means using the resources wisely and effectively.

Resource No. 1: The Manager

The farmer himself is the manager on family farms. He makes the decisions as well as carries them out. If the business succeeds, he can take much of the credit. If it fails, a large share of the responsibility must be his.

In many farm families the wife contributes to management by taking part in the decisions. If so, the combined ability of the man and wife working together make up the "supply" of management. If at times the two disagree about certain decisions, the management is less effective than it would be if one person acted alone. In such cases whatever decisions the two agree upon must be counted as the effective supply of management, however good or bad they may be.

On rented farms the landlord may share in the management. In fact, with father-son arrangements and stock-share deals the farm owner often takes a large part in the decision-making. If tenant and landlord work well together, the total management skill applied to the business will be greater than otherwise. But if they do not agree very well, their combined decisions may be poorer ones than either individual would make alone.

A person's quality and skill of management is extremely hard to measure. No one can be sure how much money-making ability he has until he tries himself out. The real test comes only by making and carrying out decisions.

Since the manager must take account of constantly changing conditions before he makes up his mind, management formulas or rules-of-thumb are of limited use. Some have said that good farm management is "doing the ordinary things better than most." This is wide of the mark. Good management is much more than using good practices.

Many farmers never become top-grade managers. But all of them can improve their decision-making skill if they are convinced that improvement is necessary.

Risk in Management

Part of being a good manager is learning how to cope with the risks or uncertainties of farming. There are two kinds: uncertain production and uncertain prices.

No one can know exactly how much crops will yield; whether grass stands can be obtained; how much feed will be needed to get a given amount of production from hogs or cattle; whether a heifer will be a good producer or a poor one; if flood, hail, insects, or disease will wipe out a growing crop.

No one can forecast exactly the prices for products to be sold or for those to be bought or the possibility that the general level of prices will change compared to the fixed costs of farming.

But wise planning will reduce these risks or uncertainties. There are some costs attached to reducing risks, of course, and sometimes these costs are direct cash ones, such as vaccinating pigs against cholera. Other risk reduction costs are indirect, such as stocking a pasture below capacity for fear of a dry spell later on.

The farmer can reduce risk in two ways: (1) By obtaining more and better knowledge about the price and business outlook for the future, and more knowledge of good crop and livestock practices and the effects he can expect from them on his farm, and (2) By deliberately adding certain kinds of costs with the idea that he will gain more from the lower risk than it costs him to reduce it.

Examples of direct money costs to reduce risks are:

1. Taking out hail insurance on a crop.
2. Keeping and using a land roller to firm the seedbed and improve the chances for getting a new grass seeding.
3. Keeping a larger tractor or a second one to be ready for a backward season.
4. Insulating the hen house to reduce the effects of changeable weather on egg production.
5. Keeping extra repair parts or extra tools on hand "just in case."

Examples of indirect costs in reducing risks are:

1. Keeping a feed reserve on hand as a protection against a short crop instead of using the feed immediately to return a profit.
2. Breeding a few extra sows to be sure to have the right number to farrow. This protection takes extra feed and labor and reduces the income somewhat.
3. Feeding less cattle than the farmer would like rather than taking the bigger risk of larger numbers.
4. Keeping the business smaller than appears to be the most profitable size since borrowed money would be necessary to expand. Prices might drop later or a man might have bad luck and be unable to pay off his larger debt.

To decide whether to try to reduce his risk a farmer must answer two questions: (1) Is the cost of reducing the risk worth the possible gain? (2) Will the extra or partly idle resource—labor, more capital, extra cash, or whatever—used to reduce the risk pay better if used for some other purpose?

In some cases the answers are pretty obvious. The large hog raiser, for example, seldom fails to vaccinate his pigs. The possible loss from cholera is much more important than the small cost of vaccination. But many a cattle feeder hesitates to expand too much, even though he would like to feed more cattle. "It's too risky this year," the farmer will say. In his judgment the extra profit he might make from more cattle is more than offset by the risk of losing money.

Resource No. 2: Labor

When a farm manager thinks of his labor supply, he knows that the number of workers—himself, his family, and his hired workers—is just one measure. Another is their physical strength and stamina, and a third is the workers' skill. Some workers can do many jobs well, others only a few. Some have less skill but more persistence. "He's a steady hand but not very fast," the farmer will say.

The farmer may do all of his own work, his wife and children may help, or he may hire year-around or seasonal workers. But whatever his work plan, he must measure his supply of labor with these things in mind: number, physical strength, stamina, skill, versatility, persistence.

In addition to supply, the farmer must consider labor costs in his management plan—his own and his family's as well as those of his hired workers. Labor costs are a big item—the largest single cost in farming. On many farms at usual wage rates, labor accounts for half or more of all the costs.

Because labor costs are not uniform over the Midwest nor even from farm to farm, the wise farm manager analyzes his own costs in the four ways they vary:

1. Differences in wages paid to workers.
2. Keeping workers busy at useful jobs.
3. Whether the farm manager can direct the worker well.
4. Whether the farmer chooses the most important job for the worker.

Wages may be in cash or cash plus living quarters, board, or room and board. If the worker stays with the family, the inconvenience of having an extra person around the house may be an extra cost. For some, though, the additional person in the home actually may be an asset and reduce the cost of the worker to the farm business.

Whether the worker can be kept busy at useful jobs has a bearing on the cost of work done. Some farmers need an extra man part of the time but find that his time can't be used efficiently with only one set of machinery. In such cases, the wage rate may be fair enough but the cost of work actually accomplished may be too high. This type of problem occurs most where seasonal labor is needed.

Some men are unable to direct the work of another person in addition to themselves. For them hired labor nearly always proves too costly. They had better be content to run a one-man farm or learn how to manage for two before they hire much labor. Other farmers can manage two, three, or even more workers efficiently, but managers of this caliber are not common.

The fourth kind of labor cost occurs when two jobs need doing at the same time. Take the case of the farmer who has a good repair shop and takes pride in making his own repairs. He may often find himself doing repair work when he ought to give more time to his crops and livestock. In reality the "cost" of his own repair work may be far too high. He would make more money if he did his regular farm work better or added to the size of his business and hired his repair work done. There are times, of course, when it will be good business to make his own repairs. A good manager knows where his labor pays best and makes his plans accordingly.

Farmers commonly expect the workers they hire to be trained in doing many farm jobs. Very often they expect too much. A good manager knows whether his workers need extra training. An hour or so devoted to teaching a worker how to do a particular job benefits both the worker and the employer. "If the worker hasn't learned, the employer hasn't taught" is a good idea to keep in mind for the man who hires much labor.

"I always include the hired men in the family conference when I make out my weekly work plan," says a top-notch farm manager. "Then I work with them until I am sure they know how to do right the job that is assigned to them." This farmer gets an unusually large output per worker. In addition he keeps his workers satisfied and is able to pay them above average wages. Both gain from the planning and extra training he gives them.

Resource No. 3: Land

Nearly three-fourths of the capital used in Midwest farming is tied up in land and buildings. Not only is the farm itself an important resource to farmers but it is less easy to change than the others.

The actual size of a farm cannot be measured accurately by its acreage, or even by its cropland acreage. Those figures are helpful, of course, but acreages do not mean a great deal unless something is known about productivity of the land. How much a farm will produce depends upon several factors: the ease of working the soil, the hazard of drouth, flood, or hail, the likelihood of erosion, the nature of the climate. For example, 100 acres of land in western Kansas and the same acreage in central Indiana might have the same *fertility*, but would be far different in *size* because of the difference in rainfall.

The kind of farming also is a factor in determining size. If livestock farming is to be followed, buildings, fences, and water supply must be considered. Too few buildings will be a handicap and so will too many. The first farmer is handicapped in producing income, the second one because so much of the income must go for building upkeep.

Still another measure of farm size is the ease or difficulty of renting additional land. Renting land is hiring the use of capital owned by someone else. Where additional land can be rented at a reasonable price, the size of farm is adjusted easily. In areas where little land is for rent, farmers find it harder to change their scale of operations. But a change in acreage is not impossible for the determined man.

Location of farm buildings, the convenience of crop and pasture land to them, access to all-weather roads, and distance from market are other factors to be counted in determining the size of the resource called the farm. And finally, after careful appraisal of all of the foregoing conditions, the current price of the farm compared to others must be considered.

Deciding whether to invest money in a larger or smaller farm unit is not a simple problem. Unlike feed or fertilizer, where one sack or more can be added easily to the business, land must be added in "chunks," for it is usually rented or sold in blocks of several acres at a time.

When renting land the farm manager not only adds acreage to his operations, but he also adds a landlord to his business dealings. And there are cases where the landlord is more of a problem than the land. In any event, both must be kept in mind.

When land is purchased it is common to take on a mortgage contract with it. In such cases, the annual cash outlay for the use of the land in future years is determined more by the terms of the mortgage contract than by the income the land is then producing.

The same kind of problem occurs when additional buildings are needed. Capital may be added to the farm as building investment because the farmer wants to expand. Later he may find that the expansion was unwise and he is left with an idle or partly idle building. The Midwest is dotted with barns, silos, and the like that are monuments to some farmer's unwise investment.

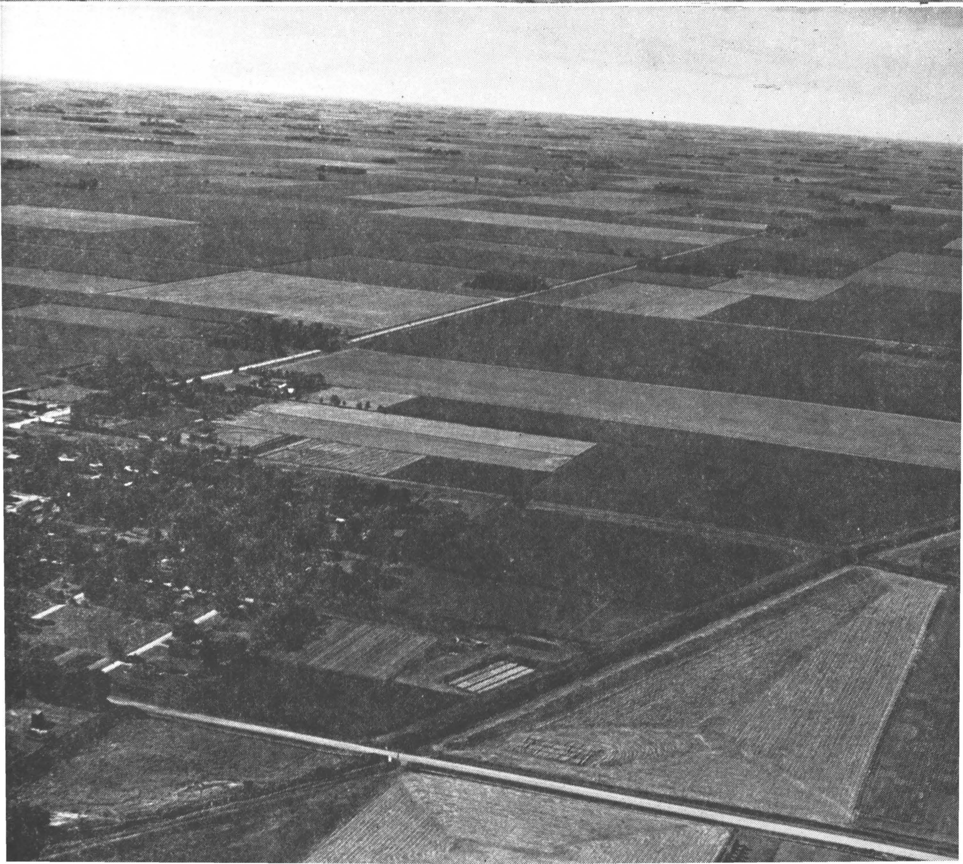
Resource No. 4: Working Capital

The farmer's working capital is made up largely of his tools of production: power, machinery, livestock, seed, feed, and so on.

On every farm, power is absolutely necessary, whether it is furnished by tractors, horses, mules, or electric motors. Field machinery and livestock equipment also are a must. So are cows, steers, sows, ewes, or hens on livestock farms. They are the living machines that process grain and roughage into other products. They too get old and wear out, the milk cow as well as the tractor. And because they do wear out, depreciation is an important part of their cost.

Feed on hand is another kind of working capital. While in the bin, mow, or silo, it is capital "in waiting." So is the combine that sits in the shed for perhaps 350 days of the year or more. How much capital that rests most of the time should a farmer have? How much of his capital should be the busy kind? And

Fig. 13—Land is an important source of farm income. The type of farming to which it is adapted varies widely as these two Iowa views show. Photos by "Parma."



what is the return on each kind of capital while it is busy? These are management decisions that each farm operator must make.

Most farmers do not have enough ready cash of their own to handle all their working capital needs, so they borrow money for some of their farming operations. When borrowed money is used, the judgment of the lender as well as the borrower is important in fixing the amount, cost, and terms of the loan. If the lender is to make wise decisions about lending, he must have full information about the business. And because it improves his credit standing, the good manager keeps his banker or other credit agency fully informed about his business and his plans.

Farmers often limit the capital they otherwise would use because of their doubts about future prices. For example, a cattle feeder might want to put a thousand dollars or so into more feeder steers to utilize his feed and labor supply better. But his doubts about the future prices of fat cattle may lead him to operate on a smaller scale when he balances the possibility of loss against that of profit.

As in any other business, financial risk always is a big problem in farming. In proportion to his income, a farmer must keep a lot of money tied up in working capital. If prices fall before inventory items are sold (corn, beef cattle, hogs, wheat, and so on), the profit the farmer expected is reduced, or he actually may suffer a loss. If on the other hand prices should rise, the farmer's return from a large inventory would be higher than he expected. Also adding to the financial risk of farming are long-time money contracts. The longer the contract period, the greater the farmer's risk that changing prices will endanger his ability to pay off the loan.

The Best Money-Making Combination

Once he has analyzed his resources and found what he needs, the farm manager must fit them together—himself, his labor supply, his farm, and his working capital—so that he makes the best possible use of them. "Best" means the use that makes the largest continuous profit.

Fig. 14—The use of capital increases the output per worker. The threshing machine added to labor efficiency in its day. The self-propelled combine and grain truck, here operated by father and son in Cass County, North Dakota, add to output per worker and farming flexibility. Photo USDA Extension Service.

If conditions didn't change there would be only one best plan for each farm. In real life, however, conditions do change so the best plan never is fully realized. Instead the good farm manager strives for a plan that is close to the best one.

To do that, the farm manager must first know how to go about finding the best plan under *fixed* conditions. Then he can apply that knowledge to his own farm problem and design a really good plan for his own set of conditions.

The next few pages contain the principles that will guide the farmer in setting up a management plan for his farm. It may be desirable to read them four or five times to be sure these principles seem clear. But farmers and other businessmen are paid well by greater profits if they understand the principles needed to guide them in making decisions. So persistence in learning them should pay handsome dividends.

Studying the Principles

Although the essentials of management cannot be learned in "one easy lesson," a simplified approach will help in studying the problem. The following four examples are designed to make the principles of good management easier to understand. The farm situation in this first simplified example is:

1. A particular farm manager is operating the farm with his present knowledge and decision-making ability.
2. Prices for all items that the farmer buys or sells do not change during the period covered in the example.
3. Uniform production results are obtained in every case of crop and livestock production.

Example One: Find the best possible plan for a farm adapted only to one enterprise: raising hogs. Production results on this farm always are exactly as follows:

- ▶ A sow produces seven pigs.
- ▶ A sow and litter consume 120 bushels of grain, 500 pounds of protein feed, one-fourth acre of pasture.
- ▶ A sow and litter need one 1-pen movable house and 30 hours of labor until marketed.
- ▶ A litter produces, at a profit, 1,500 pounds of hogs of market weight.

- ▶ On this farm more sows can be bred, more feed bought, houses and pasture can be rented, labor can be hired.

Problem: How many sows should the farmer keep to make the maximum profit: 20, 50, 100, 500, 1,000?

If conditions are exactly as stated, each sow added to the business brings in the same profit per head as any other sow. Actually there is no real management problem here because sow number 100 or 500 or 1,000 makes exactly the same profit as the first sow. *Under these conditions, the best number of sows for the farmer to keep would be determined by the largest amount of land, labor, feed, and houses that he could get together in the correct proportions.*

Any experienced farmer knows that this is not true in actual practice. He knows that as more and more sows are added, the returns from additional sows become smaller and smaller. The resource that stays the same is the manager. Of course the manager can hire more workers to feed the hogs, clean the houses, and so on. But the time and skill of the man who directs the business must be divided among more and more sows. The result is that as more and more sows are added, either they fail to produce 1,500 pounds of hogs per litter or they require more feed to produce it, or other problems arise.

Where does the farmer stop in this situation? *He stops when the income from the last sow added just covers the cost of raising that litter of pigs.* If he added one more sow, the last litter raised would be produced at a small loss. If he had one less sow, her litter still would add a little profit. So he should try adding another sow. When he got to the sow that just broke even, he could not add to his profit by adding another sow, and his profit would be smaller with any less sows. He would then have the best plan for his farm.

A similar example could be set up for a wheat farmer in the Plains Area. Suppose on this farm that:

- ▶ Wheat always produced just 12 bushels per acre.
- ▶ Five hours of work with machinery always is needed to raise and harvest an acre.
- ▶ One acre of land is needed to raise the wheat, and one-half acre is needed for fallow for part of next year's crop.

- Three pecks of seed are used to seed an acre.

- Costs and wheat prices are stable.

Problem: How many acres of wheat would the farmer raise—200, 500, 1,000, 5,000, 10,000?

As before, if each acre of wheat raised made exactly the same profit as any other acre, the farmer could go on increasing his acreage so long as he could get land, workers, and machinery to expand.

But as with hogs, the real situation is that the manager's ability to look after the business would be more and more diluted as he expanded in size. With fixed yields and prices, the farmer could expand wheat acreage a long way at a profit, but not indefinitely. In other words he should: *Keep adding resources* (another man, a machine, more seed, etc.) *until the income from the last unit of resources used, just equals the cost of using that unit. Do not stop any sooner than this; do not go any farther.*

Example Two: Here is a harder problem. Again assume a certain farmer. Again prices and costs are stable. Again he can expand by adding resources. But now the farm is one where:

- Hogs can be raised, cows milked, and steers fed.

- Only one amount of feed, labor, and housing is best for each kind of livestock to produce a given amount of hogs, milk, and gain on steers, as the case may be.

- The farmer wants to get the last possible dollar of profit.

Problem: How many sows, cows, and steers should the farmer keep to make the maximum profit? What proportion of one kind to the others? The farm manager now has two questions to answer: *How many? In what proportion?*

Each sow added to the herd returns the same profit as the previous one; the same is true for each additional cow and steer. Since sows, cows, and steers do not all eat the same kind of feed, need the same amount of labor per head, nor use exactly the same kind of housing, the problem is to find the most profitable combination possible. (Changing prices do not have to be considered since prices of all kinds are taken as stable.)

The principle the farmer will follow in this case is to decide on the *combination that gives him exactly the same profit for the last unit of a resource* (feed, labor, housing) *that can be shifted from one kind of livestock to another.* He has three resources to shift: feed, labor, and housing; and three places to shift them: to more or less sows, cows, or steers. To find the right combination of livestock, the farmer would compare the cost of shifting his resources with the income he receives from shifting them. For example, it might pay better to reduce steers by two or three and add one milk cow, or vice versa, or change the combination of hogs and cattle.

With stable prices, costs, and production results from livestock, it would be possible for the farmer to find the one single combination that was better than any other. Probably it would take a good while to do it, but an exact answer could be found under these fixed conditions. When the farmer had the right combination, livestock in that proportion could be expanded as long as he could buy what was needed. In other words, when the last head of livestock added paid equally well whether the feed, labor, and shelter was used for a cow, sow, or steer, the farm manager would have the right combination—the highest profit combination.

As in Example 1, this is not a true-to-life situation. But the principle is the same: *equal income from the last unit of resources wherever it is used.* The search here is not for a formula for successful farming—there is none—but for the guiding principles of good management.

Example Three: Assume the same problem as in number two—the same farmer, the same farm.

- He can handle three kinds of livestock.

- He can expand or contract.

- Prices and cost rates are stable.

The difference now is that the farmer knows that cost and income results are not the same per head as he adds more and more livestock. At first, less feed, labor, or housing may be needed per head if the number of animals is increased. For example, it does not take twenty times as much work to care for twenty brood sows as it does for one sow, nor twenty times as much work or shelter for twenty steers as one steer. If the number handled becomes very large, however, efficiency goes down.

Assume the farmer knows how many head he can add and get increased efficiency, and the point at which efficiency turns down and how fast it falls. The fiftieth cow milked does not produce as much milk per ton of feed as the first cow since the manager has little time to look after a fiftieth cow. The same is true of sows and steers. Suppose the change takes place about as follows:

- With sows, total resources used per 100 pounds of pork marketed are lowest with 40 sows and increase slowly after that.
- With steers, resources used per 100 pounds of gain on steers are lowest with 80 head and increase slowly after that.
- With milk cows, resources per 100 pounds of milk produced are lowest with 20 cows and increase slowly after that.

Each of these figures assumes that the manager gives his full time to managing that one kind of livestock.

Problem: How many sows, milk cows, and steers should the farmer keep to make the most possible profit? Remember that the prices are stable. The output of milk, pork, or beef per head in relation to feed, labor, and shelter used, though it changes, is known to the farmer.

The questions he must answer are the same as those in Example 2: *How many? In what proportion?* But now those questions are complicated by the fact that cost and income results are not the same per head as more and more livestock are added. This time, costs and output change as the size of each enterprise is made larger or smaller.

The farm manager's approach is to think through the results of different combinations. Much depends on the fixed prices for feed, labor, and shelter, and for hogs, milk cows, and steers. So with this in mind, the farmer tries to visualize several combinations of cows, sows, and steers:

Trial	*Milk Cows*	*Sows*	*Steers*
1	4	10	20
2	10	4	20
3	8	20	10
4	20	8	10
5	10	20	40
6	4	40	80
7	20	20	20
8	30	20	0

And so on, until he finds the combination most profitable to him. The two principles that guide the farmer in deciding what combination is best are:

(1) He *adds* resources to his business (feed, labor, and shelter, and cows, sows, or steers) until the income from the last unit added just equals the cost of adding it. Thus, he keeps on adding resources until he comes to the place where adding one more set of resources reduces rather than increases his income.

(2) He *shifts* the resources that can be shifted (feed and labor, for example) from one enterprise to another. That is, he shifts resources if the second enterprise pays better for their use than the first one does, from milk cows to hogs, hogs to steers, steers to hogs—whichever move appears to add to his profit. In the end, the farmer finds the size of business and the combination of livestock that brings in the maximum income. When he finds the right size and combination, any change in this number or combination will give poorer income. When he finds the right size and combination, any "high profit" goal of the good manager.

In actual farm practice, of course, prices change and other conditions vary. No one can make a perfect plan. But the principles used here are the ones that should guide the farmer in reaching a decision.

Example Four: This example deals with farming as it really is. The farmer has certain limitations in his ability and knowledge. In a sense, the farmer as the manager is the "fixed" resource and the only one. But he has certain other variable resources at his command: a farm, a certain amount of labor,

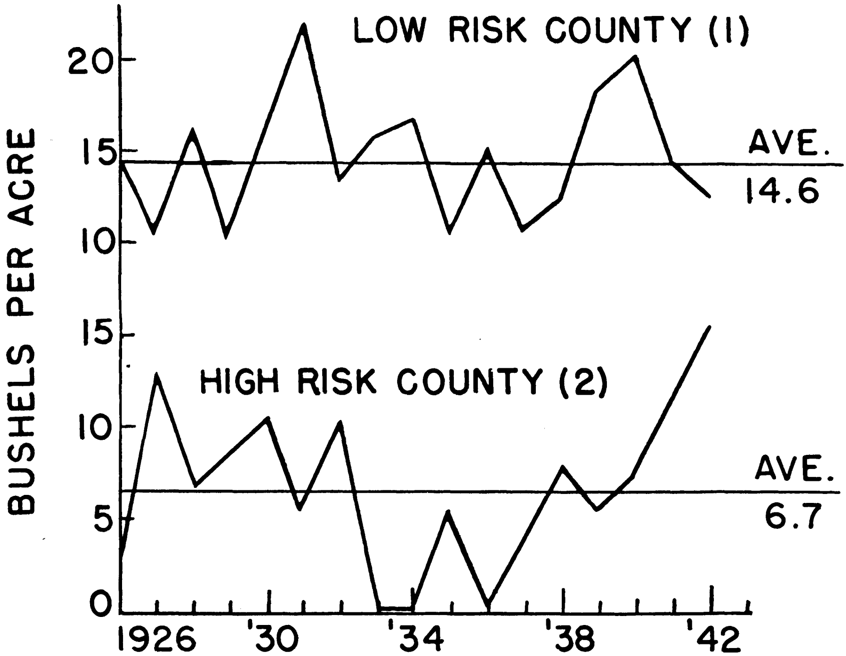


FIG. 15—Yield risks in growing wheat, two locations—17-year period. (1) Saline County, Missouri; (2) Spink County, South Dakota.

In three years out of seventeen, farmers in the high risk area had no wheat at harvest time, less than six bushels per acre in five other years. Yields were never less than ten bushels per acre in the lower risk county.

capital, and credit. Any of the three may be smaller or larger in amount. He can get more of any of them—at a price. He can dispose of some of them if he has more than he wants to use.

Depending on where he lives, he has certain limited choices in the crops he can profitably raise and the livestock he might keep. If he lives in the Corn Belt, he will have more choices than in some other areas, the Plains or the Dairy Area, for example. But in any area, there is a wide range of choice in size of business and many possible combinations of crops and livestock.

The production he gets from a given amount of resources is not very certain. But in some places and with some crops and livestock it is more dependable than with others. In western Kansas, winter wheat may vary all the way from not being worth cutting one year to yielding perhaps 15 or 20 bushels per acre the next. But in central Indiana or Ohio wheat will be a more dependable crop.

Hogs may be kept freer from disease on rolling land, while disease may be a difficult problem on level, poorly drained, heavy soils. Raising sheep may be a sure invitation to loss from predatory animals in some localities, a problem of little or no importance in others. And so on.

Prices, too, are uncertain but not in the same degree. The milk producer in the larger milkshed often gets a contract price for his milk that is good for many months in the future. But the cattle feeder knows that prices sometimes drop out from under him while his cattle are being fattened. Costs also may change, sometimes quickly. Many a man has been caught by a sudden rise in feed prices and found that what seemed to be certain profits in livestock feeding soon withered away because of rapidly rising feed costs.

That's the way farming really is. But with all these uncertainties and qualifications, the principle still holds that the farmer should, to the best of his ability: (1) *add resources to his business until the last unit of resources added just produces enough to cover the cost,* and (2) *shift what resources he can from one enterprise to another so that the last unit of resources used in each enterprise produces the same return as the last one used in any other enterprise.* This will be, to the best of the farmer's ability, the highest profit size of business and the best possible combination for him to use.

By next month or next year, conditions may change enough so that the farmer's plan will need some adjustment, but his *goals remain* the same: *equal pay for the last unit* and *all the units that make a profit.*

Four Key Questions

Here in summary are the four key questions that every farmer as a manager must ask himself and answer, not only once but many times over during his farming career.

Key Questions	*Examples of Individual Questions*
1. How large should the business be?	Will my net income for next year be larger or smaller if more land is used? More labor? More capital? What is the evidence? Which one, if any, and how much? Should I use less of any of them?
2. How should the parts of the business be combined?	Should my crop system be changed next year? To more grain? More grass? More cash crops? Do I have the right combination of crops and livestock? Can I shift the livestock plan to advantage? Does my farm plan work smoothly or am I overloaded at one time and not usefully busy at another? Do I have just enough power and machinery to make the largest profit? Too much? Too little?
3. What practices should be used?	Not what practices are the best ones I know about, but what ones fit best on my farm? Is there a better crop variety for my farm or is the seed too expensive? More fertilizer next year, less, or a different mixture? Full feed protein now or not? Should milk cows freshen in spring, fall or some both times? Harvest a seed crop, cut more hay, or plow under a green manure crop? Invest in a combine or hire a neighbor to cut the grain?
4. Is my farm plan in line with my best judgment of future prices and costs?	Is the plan geared to my idea of next year's prices or last year's? Plan pigs for an early market or a later one? Buy feeder cattle early or late this year; heavy yearlings or calves? Lay in extra feed now or wait until later? Sell a couple of cows now and wait for heifers to come along or keep them all?

The list could be extended much further. But practically all farm business decisions come under one of the four key questions.

Obviously, using good methods and practices are not enough by themselves to make a farmer a "money maker." He must know and be able to apply good practices, but the *decisions* he makes really are the key to his success. Decisions won't fully determine the amount of his net income, of course, since prices he gets for what he sells and prices he pays for the things he buys are major factors in profit. But compared to other farmers in his area in the same year, his ability to make wise decisions will be crucial.

Some Past History

Figure 16 shows sixteen years of history on six good Corn Belt farms—good in the sense that each was a satisfactory unit and had quality land. The farms reported are real ones, the

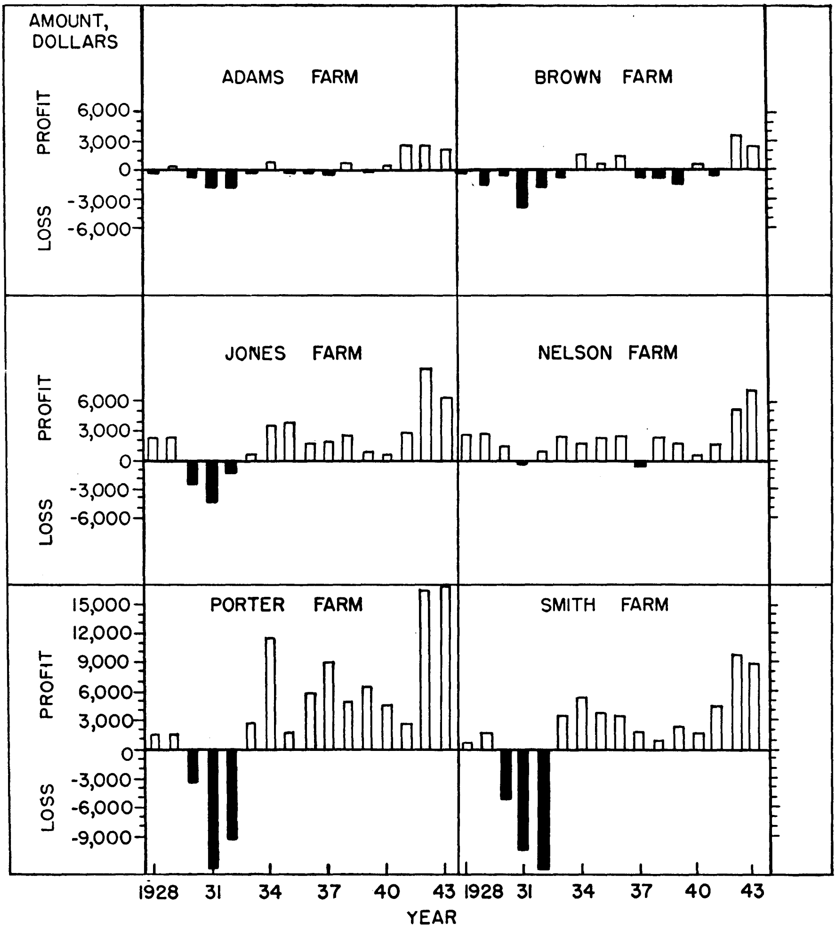


FIG. 16—The ups and downs in profit on six good Cornbelt farms, 1928–43. Profit is gross income less these deductions: all farming expenses; a charge for the use of capital and farm land; wages for the operator and unpaid family labor.

Depressions bring low incomes to all farmers. Well managed farms show handsome profits in prosperity times but poorly managed ones have small incomes even then.

names of the farmers are not. All six men were careful farmers, had good equipment, and used many of the newer practices. The sun shone and the rain fell about alike on all of them. All experienced both low prices and good ones.

The main differences were in management—the size of business operated; how the plan was put together; practices used; skill in estimating future prices and adjusting the business to them. The result: large differences in the amount and regularity of profit. Profit here is figured on an inventory basis. Deducted from the year's gross income are all farm operating expenses including depreciation, cash rent for the use of the farm, interest on the farmer's own operating capital and wages for the farmer and unpaid family labor at current wage rates for good hired men. The remainder is termed profit.

Adams Farm—This 140-acre farm is somewhat better than average land. Mr. Adams holds his operations at a steady but rather slow pace. The $16,000 of capital used per man is a good level. A general farmer, he tends to have a rather fixed plan of operations; is not very skillful with livestock. He picks up new practices readily but is not always skillful with their use. He makes a good living for his family; that's about all.

Rating		*16-Year Average*	
All around management ability	Medium	No. of workers	1.4
Day-to-day attention to jobs	Average	Capital used	$24,000
Use of new practices	Average	Gross income	$3,350
Use of outlook information	Moderate	Expenses	3,130
		Profit per year	$220

Brown Farm—Mr. Brown is a hard worker and gives close attention to his business. A hog-cattle feeder, he is on a larger than average (240 acre) farm with good land and buildings. He uses crop rotations and legumes, and feeds his livestock well. Capital at $23,000 per worker indicates a large business. But it is not well organized, with too few hogs and a tendency to over-fatten his cattle. Too many errors in decisions result in a reduced gross and high costs.

Rating		*16-Year Average*	
All around management ability	Poor	No. of workers	1.5
Day-to-day attention to jobs	Good	Capital used	$34,000
Use of new practices	Average	Gross income	$6,310
Use of outlook information	Little	Expenses	6,420
		Profit per year	$—110 (loss)

Jones Farm—This is a medium-sized acreage (160 acres) but a good-sized business. Quality of land is above average, buildings good. Mr. Jones uses $23,000 of capital per man and uses it effectively. He is a good crop man and an excellent livestock man though a bit erratic with his hogs. A hog raiser–cattle feeder, he pays close attention to the outlook; gives much time to decision-making.

Rating		*16-Year Average*	
All around management ability	Excellent	No. of workers	2.0
Day-to-day attention to jobs	Good	Capital used	$47,000
Use of new practices	Alert use	Gross income	$10,160
Use of outlook information	Well-timed	Expenses	8,285
		Profit per year	$1,875

Nelson Farm—This 200-acre farm is below average of the area in native fertility of the soil. But Mr. Nelson has planned a dairy-hog-poultry combination that rates high for consistent performance. Capital per man at $12,000 is the lowest of this group of farms. But this weakness is more than made up by the skill applied to crops, livestock, and marketing and high degree of efficiency developed. Machinery costs have been kept low.

Rating		*16-Year Average*	
All around management ability	Excellent	No. of workers	2.9
Day-to-day attention to jobs	Superior	Capital used	$34,000
Use of new practices	Alert use	Gross income	$8,875
Use of outlook information	Good	Expenses	6,875
		Profit per year	$2,000

Porter Farm—This is an example of highly skilled management on a large family owned and managed farm. This farm of 330 acres with 200 acres of good cropland uses $18,000 of capital per worker. A hog raising–cattle feeding unit, it combines larger scale operations with excellent management and full use of outlook information. Like all large units, losses were incurred when prices dropped in the early thirties. But with rising prices, profits came back fast. The farm also illustrates other risks. The large, clean ground hog program was practically wiped out by disease in 1940 and 1941 before it could be brought under control even by this highly skilled manager. But other alternates were used to maintain size of business until the hog program could be brought back into full operation.

Rating		*16-Year Average*	
All around management ability	Excellent	No. of workers	3.2
Day-to-day attention to jobs	Superior	Capital used	$59,000
Use of new practices	Alert use	Gross income	$20,760
Use of outlook information	Well-timed	Expenses	17,060
		Profit per year	$3,700

Smith Farm—Mr. Smith runs a large unit. This farm with excellent land, fine barns and good equipment is a production unit, not a show place. Capital amounts to $20,000 per worker. Formerly with a large herd of purebred cattle along with hog raising, it was not well geared to a falling price level. A high cost business such as this, even if given close attention, took large losses in the early thirties. The plan was shifted to hog raising and some cattle feeding, the size of business being reduced though still large. It fared well when prices started up. But this kind of business must handle a lot of money to make a modest profit.

Rating		*16-Year Average*	
All around management ability	Medium-Good	No. of workers	4.4
Day-to-day attention to jobs	Superior	Capital used	$90,000
Use of new practices	Alert use	Gross income $13,650	
Use of outlook information	Moderate	Expenses 12,480	
		Profit per year	$1,170

CHAPTER 4 Choosing the Type and Size of Farm

BEFORE A FAMILY DECIDES WHERE to farm in the Midwest, or anywhere for that matter, three questions ought to be answered: (1) which of the types of farming liked by the family is best adapted to its situation, (2) what are the income prospects for that type in the future, and (3) where should the family locate if they greatly prefer one type of farming over others?

Nearly every area, of course, has more than one "high profit" type of farming and, likewise, a particular "high profit" type of farming is not necessarily limited to just one area. As far as the family is concerned that's all to the good, because it provides a wide choice of localities and increases the family's chances of finding "just what they want." But, as shown in Chapter 2, some areas offer a much wider range of choice than others.

In selecting the farm and type of farming that will bring a high continuing net income, the family should include in its estimate the cost of soil maintenance, the replacement of machinery and buildings, improvements needed, and the number of workers that will be required. It's not good management to produce the income that's wanted at the expense of the farm, nor is it good business to work the family or the hired help excessively hard year after year.

What Type of Farming?

When the family begins to look around for a farm, talks with the county extension agent, bankers, and local farmers will suggest what types of farming are most successful in the area being considered. Even if the area is familiar to the family that's a sensible thing to do, because the more information the family can gather together the wiser its decision will be.

Within the limits set by natural and economic conditions for any area, the type of farming best suited to the family can be determined by considering the following seven points:

1. The man and his family—their interests and special abilities.
2. The size of the farm to be operated and whether owned or rented.
3. The land—its fertility, whether level or rolling, and the kind of soil.
4. The buildings and other improvements.
5. The money or credit available.
6. The outlook for prices and costs.
7. Local market opportunities.

The special interest and ability of the man himself should play a large part in deciding between the types that are available. Does he like to run risks or is he conservative by nature? Does he like livestock or do crops come first in his interests? Is he careful with details or does he like only the bigger jobs? Is he a good buyer and seller?

When they begin farming, most men are not certain of their own interests and abilities. So it follows that the young man should not invest heavily in any one type of operation until he learns by experience how well it fits him.

Some of the important qualifications a farmer ought to have for the major types of farming in the Midwest are given on the following pages.

The Cash Crop Farmer

The man who gets a large share of his income from cash crops must get his work done on time, especially during planting season. This may mean long hours and night work if the season is unfavorable. Besides having up-to-date knowledge of the best crop varieties for his locality, the cash crop farmer must know the capacity of the soil on his farm for the various kinds of crops. He needs to be well informed, too, about crop rotations, seed treatments, fertilizer requirements, effects of time of plant-

FIG. 17—The Midwest cash crop farmer needs good equipment, an adequate acreage, and skill both in raising crops and handling machinery to keep his business volume up and costs per unit down. The wheat farmer pictured here can cover a lot of ground in a day with a disc tiller. Photo courtesy Deere and Company.

ing, cultural methods, weed and insect control, and other details. Knowing these things may mean the difference between high yields and mediocre ones.

The manager of a cash crop farm needs to be handy with machinery if he is to be efficient and keep his machine costs down. One farmer may keep the same tractor going for fifteen years while a neighbor with the same acreage wears out a tractor every five years. Because he frequently operates on narrow margins, such variations in cost make a big difference to the cash crop farmer.

The risks that go with this type of farming are fourfold: those of weather, price, disease, and insects. Although they can be covered to some extent by insurance and storage programs, not even the government-operated plans can fully protect a farmer from recurring drouth, floods, hail, frost, or other hazards of nature.

Since he usually is not fully occupied at productive work the year around, the cash crop farmer cannot expect as high an income as livestock farmers of equal ability in areas where both livestock and crop farming fit. But there are things the crop farmer can do to increase his income. One way is work out a rotation that gives a larger total production of high profit crops. A second is to use better crop producing methods, and a third is to lower his costs. If his crop rotation includes soil building crops, they can be used for livestock feed and the manure returned to the land. In other words, he could add a sideline of a few dairy, beef, or dual-purpose cows to his farming plan. Or he might have a small flock of sheep. And if the wife is interested, chickens could be raised for meat, eggs, or both. The farmer, if he has an adequate acreage of crops to care for himself, has little time for chores during the planting and harvest seasons.

The Dairy Farmer

Operating a dairy farm is a year-around job that requires the farmer and his family to accept a steady routine. And because dairying is best adapted to families that like this steady and settled way of life, family labor can be used to advantage.

Income from dairying is regular, partly because there aren't so many risks in this type of farming, but usually it is only moderate in amount. This latter is true partly because the labor requirement per dollar of product produced is high. Capital requirements, however, are less than what is needed for the beef cattle farmer.

Good day-to-day management is a big factor in success on a dairy farm. The dairy cow is a more sensitive animal than most farm animals and she needs quiet, intelligent care. Then, too, the high labor requirement for dairying means the farmer must have a carefully organized system if he is to get his chores done quickly. Since many jobs are repeated twice a day for 365 days a year, a few minutes of waste motion on any single job add up rapidly over the long pull.

Where dairy products bring a special price, as they do in some milksheds, the farmer may specialize on a medium to

FIG. 18—A good dairy herd like this one from the Dairy Area can efficiently convert a large quantity of pasture and roughage, and some grain into a high quality product—milk. But it takes a lot of labor. Photo USDA Extension Service.

large scale and use one or more steady hired workers. But in the majority of cases, dairying fits a diversified farming system with most or all of the labor furnished by the family.

Plenty of high quality hay and pasture is important to dairy farming. And since hogs do not require a large amount of labor and will use grain not needed by the dairy herd, they fit into a dairying system nicely. Chickens also often make a profitable sideline.

It's not unusual to find cash crops worked into the dairy farming plan, especially those with a high value per acre such as canning peas, beans, potatoes, and other similar ones. Care must be exercised, however, to see that these crops don't compete for labor at critical times. To avoid that, farmers have part or all of their cows freshen in the fall so their labor supply will be released to some extent during the summer for crop production.

The Beef Cattle Farmer

Beef producers belong in two groups: beef cattle *feeders* and beef cattle *raisers*.

Although the cattle feeder must not shrink from the risks that go with this type of business, neither is he wise to be a "plunger." Too often that's fatal. The successful cattle feeder is a good buyer and seller as well as a good producer. He needs a good deal of operating capital for his business, but capital turnover may be rapid. Some of that capital should be his own, but in addition he must have a good credit standing with his banker or other credit source.

While a cattle feeder always tries to buy on a low market and sell on a high, he should expect that narrow price margins will sometimes cause him to feed cattle at a loss. Since feeding margins are seldom very wide, he needs a good deal of volume to bring in much profit. And since cattle feeding requires little labor per head, a large volume of business per man is readily possible.

Because of the high risks involved in buying both cattle and feed, few farmers care to operate unless they can raise a large part of the feed. Fortunately, cattle feeding farms usually produce good crop yields if soil erosion is avoided. The high yields, of course, add to the farmer's income because they increase the feed supply. Some farmers reduce their risk by raising a part of the cattle they feed.

Many older cattle feeding systems depend largely on grain feeding, and there is no substitute for it if well-finished cattle are desired. However, as a means of working cattle feeding into conservation systems of farming, larger use is being made of roughage and pasture.

Most successful feeders do not count on cattle feeding for more than half of their gross income—that is, the gross after

Fig. 19—The cattle feeder must risk a good deal of capital each year with this type of enterprise. It is easy to have a large volume of business with a moderate amount of labor. Here we see choice quality calves in a Corn Belt feed lot.

deducting the cost of feeders. In fact, many say 40 per cent is high enough. The remaining income usually is from other livestock enterprises, especially hogs.

Cattle feeding may be a sideline enterprise for large scale wheat farmers, especially where some grain sorghums are raised.

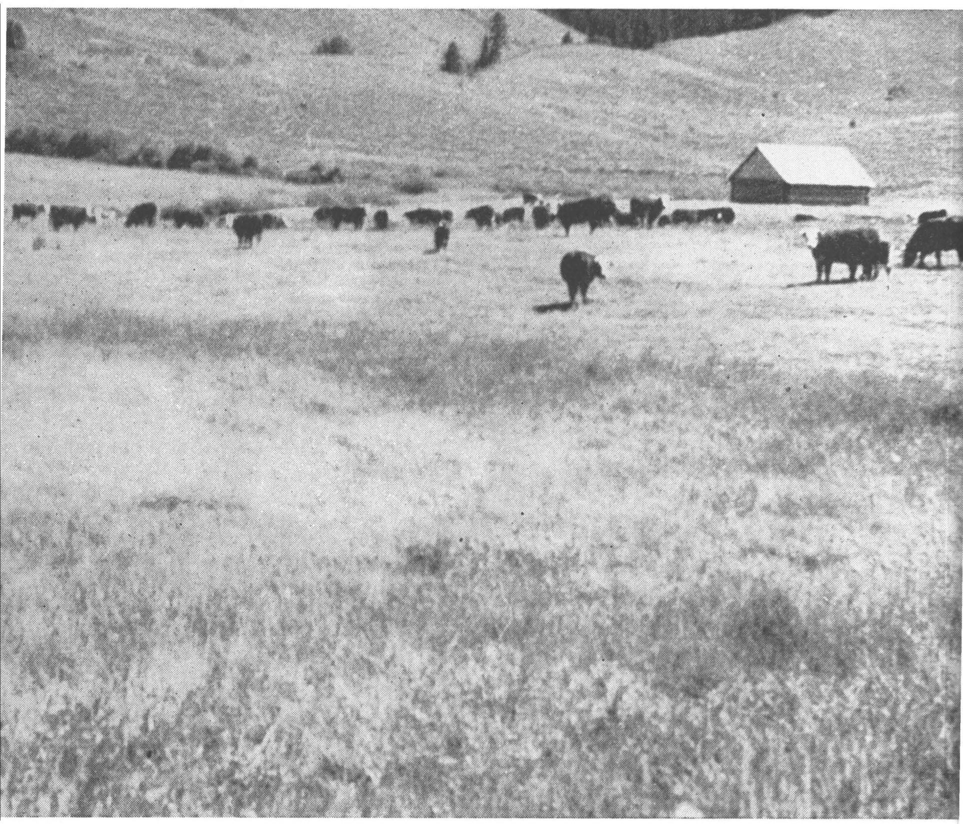


FIG. 20—The cattle raiser has a large investment in the cow herd, especially in the range country where cattle raising may be practically the only farm enterprise.

And the sugar beet raiser also may feed cattle in order to use his beet tops.

Large scale lamb feeding is much like cattle feeding as a type of farming, although even greater skill is needed for success.

The beef cattle raiser fits his enterprise to land that is primarily adapted to grass. And because beef cattle raising and small scale operations do not go well together, it is mostly on the large, less productive farms that farmers specialize in this business. On small farms with productive grassland, operators tend to favor milking or a dual-purpose type of cattle enterprise.

In the range country, cattle ranches have extensive acreages and large cattle herds. Beef raising here is the main business and it requires plenty of capital and a lot of know-how.

Throughout both the range area and the Corn Belt, however, there are many family-size cattle raising farms. The usual system, where most of the land is in hay and pasture and comparatively little feed grain is produced, is to raise calves for sale as feeder calves or yearlings. Where more cropland is available—in corn or grain sorghums, for example—the calves are fattened as baby beeves or fat yearlings.

Since beef raising uses little labor per head, other enterprises are needed to employ labor profitably, especially if the herd is small. Hogs fit in well where there is enough grain, and some farmers keep a few milk cows to add to the income. Most beef raising farms have a small poultry flock, although some farmers put their extra time into a large one.

A few farmers add sheep to their cattle raising enterprise while others substitute sheep for cattle altogether. When the latter is true, farmers need special knowledge of feeding, diseases, and management of sheep to succeed. Since both cattle and sheep raising frequently return rather narrow margins of profit per head, it is important to keep costs low to have a reasonably good income.

The Hog Farmer

Most men who have reasonable skill with livestock can manage hogs successfully if they really are interested in it. Specialized knowledge is not essential, although extra skill and ability do pay well.

Since hogs don't use much roughage, they are found in largest numbers where corn is the chief crop. They convert grain into food efficiently, and need only moderate supplies of capital and labor.

With the two-litter system, it is easily possible for a single sow to raise enough pigs to make ten times her own weight in a year. By way of comparison, one ewe will produce enough lambs in a year's time to just equal her own weight, while a beef cow's single calf a year will be only one-half to three-fourths her weight.

Because they require so much grain, hogs nearly always fit into a diversified farming system. They go well with either dairy,

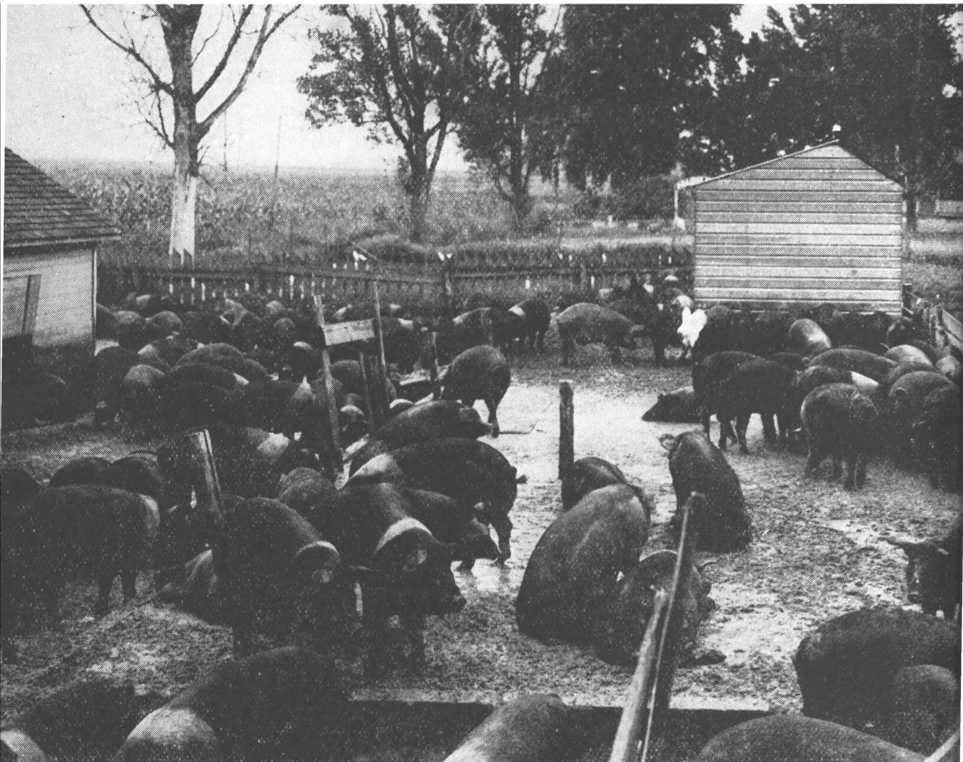


Fig. 21—A great many hogs can be raised with a moderate amount of equipment and labor but they require a large amount of grain. Note the large self feeder in the background on this Washington county, Iowa, farm.

dual-purpose, or beef cattle. Larger sheep flocks and hogs, however, do not work out so well together. Most hog farmers have some poultry, usually a flock of moderate size.

The Poultry Farmer

Even though nearly all farmers keep chickens, not many Midwest farms have a large enough poultry enterprise to classify the operator as a poultry farmer. But where poultry do provide the main source of income, constant attention and detailed day-to-day management are required of the operator. His success depends a good deal upon how skillful he is in handling disease problems and how efficiently he manages his

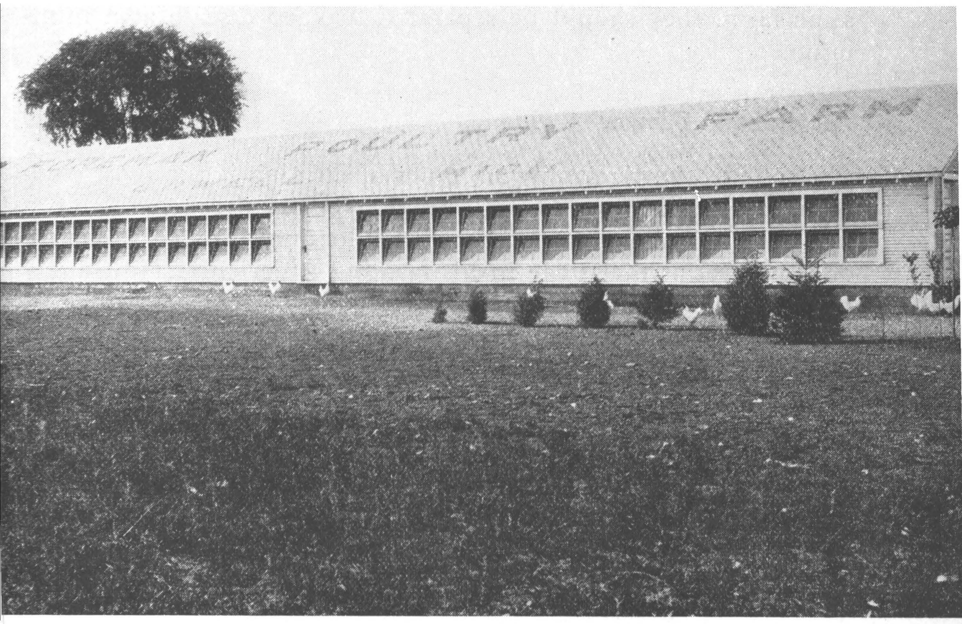


FIG. 22—The commercial poultry farmer has a big investment in buildings as is true on this Michigan poultry farm. Chickens require careful attention where they are kept in large numbers. Photo USDA Extension Service.

large labor and capital requirements. The poultry farmer who is fortunate enough to be located near a special market has a big advantage.

Poultry farms tend to be more specialized than other livestock farms. And in the Midwest this specialization, with the exception of turkey farms, is more likely to be in eggs than in meat production.

As a matter of fact, turkey raising is a special poultry enterprise, even though few farmers go in for turkeys exclusively. It's a specialized business because small operations seldom pay, a high degree of skill is needed for success, and considerable risk is involved. The operator's investment is large, he usually buys most of the feed, and he must sell his turkey crop at the same time other turkey raisers sell theirs. The fact that heavy weight turkeys often sell for a substantial price discount makes it especially difficult to keep turkeys very long for a better market if the price is low. When turkeys and chickens are raised on the same farm, they should be separated to keep disease at a minimum.

The General Farmer

None of the fore-going six types of farming is the most common in the Midwest. That distinction belongs to general farming. The general farmer is a man who does not want to specialize or is not yet at that stage in his farming experience. He usually has three or four main sources of income, none of which is outstanding in importance. This is especially true of the man who either does not have special ability or is not interested in developing a high degree of skill in some special line.

The Midwest's large number of rented farms provide another reason for the popularity of general farming. If a tenant is not sure of being on the same farm very long, he will diversify his program so he can readily adapt himself to a new farm. Some renters, of course, are quite specialized, but the renter on a small to medium sized farm is likely to be a general farmer. For those who do not have the skill, capital, and other requirements for specialized farming, general farming will be the most profitable system.

Although the total number is not high, many other widely varied types of farming are found in the Midwest. There are fruit and truck crop farms of many kinds, some highly specialized and others diversified. Where soil and climate are favorable, tobacco or cotton farms flourish. There also are purebred livestock farms, fox farms, mink farms, farms feeding garbage to hogs, and other highly specialized kinds of businesses. These farmers, if they are trying to make a profit, must use capital efficiently, get large output per worker, protect themselves from risk, and control costs. In fact, such things will be of equal importance, if not more so, on these highly specialized farms than on the types of farms discussed in this book.

Other Factors Affecting Type

Besides the strictly livestock and crop aspects of farming, there are other points for the family to consider in choosing a type of farming. One of these is the number, size, and kind of buildings and improvements already on the farm. Since cash crops, hogs, and beef cattle require little shelter, these types of farming are easier to adapt to farms with limited buildings. Dairy farms normally require barns built for that purpose, although an ordinary barn frequently can be made into a pen-type barn to fit dairying. Because city milk regulations sometimes are strict as to building requirements, the farmer planning to sell milk to the city market should check them to see that he complies. In poultry farming, large flocks require special buildings and cannot be handled without them. General farms, being flexible, can be fitted to whatever buildings are available.

The capital and credit available to the family will also influence the choice of farm type. Young men tend to favor cash crop farming, general farming, or hog raising because of the comparatively low capital needs. Beef cattle raising, cattle feeding, dairying, and poultry farming, on the other hand, all require larger amounts of capital. On beef cattle farms most of the capital is used as operating capital, while on dairy farms more of it goes into buildings and equipment.

Check Up on Local Markets

Local market outlets also help determine farm type. It is easier to be a successful dairy or poultry farmer where a good local market for the product is available. Specialized crops such as truck garden produce also need a market outlet nearby. But distance from market has little influence on cash grain, hog, or beef cattle farms.

The usual types of farming being carried on in the community will be a good indicator of whether market conditions are favorable for certain types. The family should avoid any type of farming that is not of the usual type for a community, unless the possibilities for success have been studied from all angles. If the type of farming is a good one to follow, chances are many alert families will be engaged in it already.

Table 10 summarizes the requirements for the Midwest's main types of farming.

TABLE 10
REQUIREMENTS BY TYPES OF FARMS

Type of Farm	Typical Size—Acres	Acreage Needed: For Grain Crops	Acreage Needed: For Hay—Pasture	Operating Capital Needed	Minimum Management Skill Needed
Cash Grain	Medium to large	Medium to large	Small	Medium	Medium
Dairy	Small to medium	Small to medium	Medium	Medium	Medium
Beef Feeder	Medium to large	Medium to large	Small to Medium	Large	High
Beef Raiser	Medium to large	Small to medium	Large	Medium to large	Medium
Hog	Medium	Medium	Small	Medium	Medium
Poultry	Small	Small	Small	Medium	High
General	Medium	Medium	Medium	Medium	Medium

Size and the Type of Farm

The type of farming selected by the family puts some general limits on the size of farm needed. The beef cattle raiser, for example, cannot have a small acreage and hope to have a reasonably good income. Neither can the cash grain farmer. For both, a large enough acreage to employ their time efficiently is essential for success. The man whose main income is from dairying, on the other hand, probably will do well with a farm of medium size or smaller.

Most farmers expect to put in 2,200 to 2,800 hours of labor per year at productive work. Some are willing to put in longer hours than this, especially younger men who appreciate the value of substituting some of their own labor for the capital they lack or find difficult to get.

A mechanized wheat farmer who raises wheat with four hours of labor per acre would find himself poorly employed on a farm with a capacity of only one hundred acres of wheat. So would a man on a cow ranch with a capacity for forty cows using fifteen to twenty hours of labor per head each year. But the dairyman whose cows and young stock take one hundred forty hours of work annually for each milk cow would be more than busy if he tried to handle twenty-five cows by himself.

Obviously, it is important for the manager to keep in mind that no matter how skillful he may be, he cannot provide his family with a decent living if the business is too small. His total farm income must be large enough so necessary farming expenses can be deducted and still leave enough for the family. His guiding principle is the one set out in Chapter 3—getting the most income from the resources used, including the use of the farmer's own time. The problem should be studied again and again as a farmer sets up his business and develops the farm plan.

What Size Operation?

Capital, experience, and ability as a manager as well as type of farming to be followed are important factors in determining the right size. Ordinarily the farm that uses the labor of either one or two full-time men to good advantage is easier to manage than a farm requiring the labor of 1½ or 2½ men because part-time help is needed on the latter farms. Of course if there are children at home to help with the farm work, one of the in-between size farms may just fill the bill.

Thousands of Midwest farms are an awkward size to manage because they do not fit an ordinary farm family's labor supply. Many such farms are not large enough to use the family's labor effectively, or they may be more than the family can handle and still not be large enough to warrant hiring steady help. In many places, competent labor is hard to hire for short periods of time. It is better to plan for a size of farm and type of program that does not depend heavily on seasonal labor, unless such farming is generally successful in the area.

The acreage that fits the one- or two-man operation varies widely from area to area. Where livestock farming is carried on, a one-man farm usually will have 50 to 100 acres in harvested crops and a two-man farm from 120 to 180 acres. Where dairying and chickens are important enterprises, the size will run to the smaller acreage because of the heavy labor requirements of these kinds of livestock. If much grain is grown for cash sale, the acreage for one man may run considerably higher. As seen in Chapter 2, acreage for one man in the Plains Area is much larger than farther east.

TABLE 11

LABOR REQUIRED PER UNIT ON FAMILY SIZE FARMS IN THE MIDWEST *

Crop or Livestock Enterprise	Good Conditions Well Mechanized	Average Conditions Moderately Mechanized	Fair Conditions Little Mechanized
	(*hours per year*)	(*hours per year*)	(*hours per year*)
Crops			
Corn, 1 A., husked	8	14	24
Fodder (husked or shredded)	21	26	38
Silage	14	25	......
Oats, 1 A., threshed	8	10	16
combined	3	6	......
Wheat, 1 A., threshed	8	12	18
combined	4	6	......
Soybeans, 1 A., combined	6	9	......
Pototaes, 1 A.	40	70	120
Tomatoes, 1 A.	50	70	120
Alfalfa Hay, 1 A.	10	18	30
Mixed Hay, 1 A.	6	9	15
Livestock			
1 Milk Cow	100	140	160
1 Beef Cow and Calf	20	30	40
1 Young Stock Cattle	20	30	40
1 Litter of Pigs, to market	30	40	50
1 Sheep and Lamb	4	5	6
1 Feeder Steer, 200 days	8	16	......
1 Feeder Lamb, 100 days	2	4	......
100 Hens and Young Stock for replacement	160	200	240
1 Horse	40	70	100

* Estimated by the author for farms using a typical size of enterprise for the conditions given. See Chapter 2 for information about various areas in the Midwest.

Table 11 gives the approximate hours of labor required for ordinary crops and livestock under Midwest conditions. By using this table, it is a simple matter to estimate labor requirements of a particular crop and livestock plan for any farm. Hours of labor per unit tend to be higher where fewer acres or units are handled, lower in the case of larger numbers.

In estimating labor needs, the operator should remember that every farm has many small jobs that cannot be charged to any particular crop or livestock. Mowing weeds, repairing fences or buildings, hauling manure—these and other kinds of work are not accounted for in Table 11. To take care of these odd jobs most farms require from one-fourth to one-third more hours of work than the total needed by the crops and livestock directly. Many of these jobs are done in slack periods, so they seldom interfere with the main farm work at peak seasons. Factors which do interfere with farm work, however, are the number of rainy days and type of soil, because they influence the number of days when field work can be done. Both vary considerably throughout the Midwest.

Businesses—Large, Medium, Small

The average size of business in the Midwest for various groups of farms is given in Figure 23, as adapted from the 1945

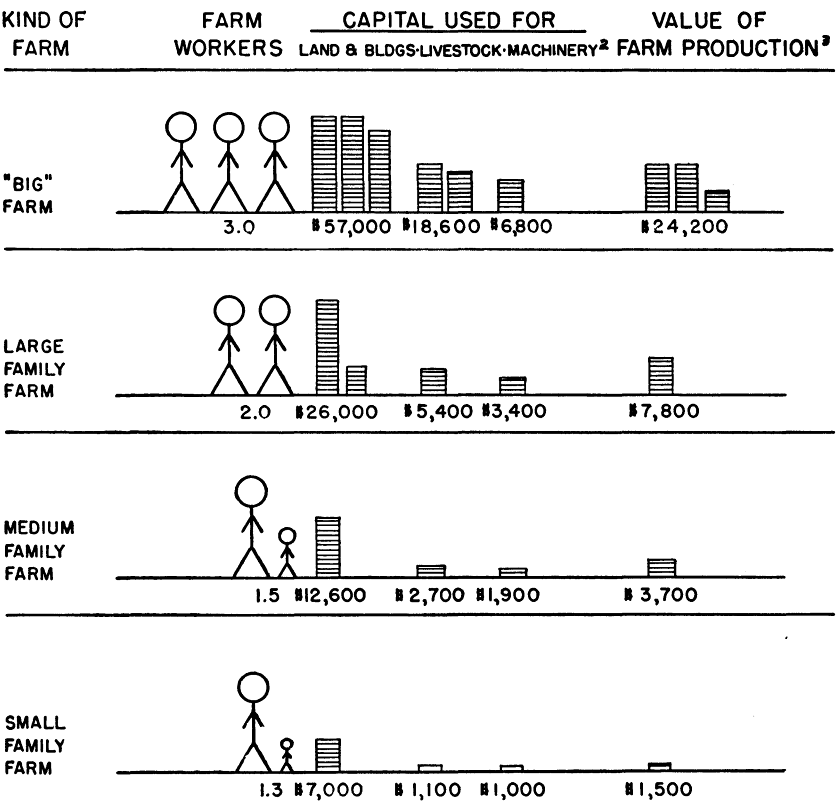


FIG. 23—How capital and labor are combined in the Midwest on large, medium, and small farms (based on 1945 special census of agricultural and related sources). (2) Depreciated value. (3) Gross income less cost of livestock, feeds, seeds, fertilizer, and lime bought.

A farmer must use a good deal of capital to go with his labor if he is to have a satisfactory income, as the figure shows. But using more capital does not guarantee a larger profit.

special census of agriculture and other information. Part-time farms, small holdings, and similar farms are omitted. These are average figures, of course, which means that a great deal of variation can be expected within each size.

Big Farms are highly commercialized. They may be managed and operated by a family, individual, partnership, or corporation, but most of the labor used is hired. Big farms use a great deal of capital. Although some are very successful, especially when prices are rising, many are conspicuous failures. Only a small number of such farms are located in the Midwest.

Family Farms predominate in the central United States. They are divided into three sizes, the main difference being in the amount of capital used for land, machinery, and livestock. While all are managed as a family unit, the larger size farms often keep a steady hired man. Many are rented either in whole or in part.

A significant factor on family farms of small, medium, or large size is the large difference between capital per man and gross income per man. This is very often due to differences in the ability of the farm operator as a manager. Or it may be because of differences in the supply of capital available to various families, or the difficulty some may experience in finding a farm of suitable size. Net income also varies widely among farmers operating farms of each of the four sizes, big farms having the largest income in good years and also the largest losses in other years.

Adjusting the Size of Business

Many farmers find that the business they do is not large enough to furnish the family with a good level of living. They need to study the best method of increasing the size of business so they can add to their income. Occasional farmers, of course, already may be attempting too much. They may need to reduce their operations to increase the profit.

There are four ways for the farmer to increase his size of business: (1) move to a more productive farm, (2) shift to a larger acreage, (3) farm more intensively, and (4) improve the value of what the farm produces.

If it is available to him the farmer's simplest method of increasing his business is to move to a more productive farm.

In doing so, he will be using more capital even though, in the case of a rented farm, the capital is owned by someone else. He also can use more operating capital. Table 12 illustrates several grades of productivity of land with the same farm acreage.

As Table 12 shows, on farms of small and medium size in acres, the farmer gains a considerable advantage by having productive land. For example, the crops and pasture produced

TABLE 12

USING BETTER LAND TO INCREASE THE SIZE OF BUSINESS*

	Farm A	Farm B	Farm C	Farm D	Farm E
Type of farming	General	General and Livestock	General and Livestock	Hog–Dairy	Hog–Dairy
Grade of land	Poor	Fair	Medium	Good	Excellent
Value per acre	$ 30	$ 50	$ 65	$ 75	$ 100
Total acres†	120	120	120	120	120
Crop acres	50	70	90	100	100
Operating Capital	$1,050	$2,200	$2,500	$3,800	$5,600
Value of crops and pasture	$ 610	$ 870	$1,400	$1,730	$2,300
Value of all farm production	$1,200	$1,850	$2,150	$3,200	$4,500
Farm expenses	$ 460	$ 700	$ 750	$1,200	$1,500
Net farm income	$ 740	$1,150	$1,400	$2,000	$3,000

Prices:
Corn $ .52 bu. Milk $1.65 cwt.
Hogs $5.50 cwt. Eggs $ .16 doz.

Wages:
$40.00 per month and board

* Taken from Iowa farm records for 1940.

† Acres are not a good measure of a farm's capacity to produce. The price of land may fairly well indicate how productive it is. In normal times, land prices and productivity are closely related.

on farm A were worth slightly more than five dollars per acre in 1940 while those from farm E were worth nearly twenty dollars per acre. Operating costs per acre were somewhat higher in the latter case, but were by no means as high proportionately as the increase in crop value.

As to labor needed, farmer A used fifteen months of labor to do the year's farm work, all of which was furnished by himself and family. Because of the poor land and little capital that went with it, the farmer's time was not very efficiently used. Farm E was operated with eighteen months of labor including three months of seasonal hired labor.

The larger amount of operating capital used on higher income farms for machinery, equipment, livestock, and feed, was about in proportion to the productivity of the land.

Operating a Larger Farm

A second way to increase size of business is to operate a larger acreage of land of about the same productivity. If the land and prices are good enough to return a net profit per acre, a larger acreage can return a larger net income provided the operator has the capital and skill to manage it effectively. This is illustrated in Table 13.

TABLE 13

Increasing the Size of Business by Using More Land, Labor, and Capital *

	Average of 10 Farms	Average of 10 Farms	Average of 10 Farms	Average of 10 Farms	Average of 10 Farms
Size of Farm..........	Medium Small	Medium	Medium Large	Large	Very Large
Type of Farming.......	Hog–Dairy–Poultry	Hog–Dairy–Poultry	Hog–Dairy–Poultry	Hog–Dairy–Beef Feeding	Hog–Beef–Feeding
Acres per Farm........	110	170	230	310	440
Capital Used For					
1. Machinery and Power............	$ 1,550	$ 2,100	$ 2,800	$ 3,000	$ 4,600
2. Livestock and Feed	3,150	5,000	5,300	8,300	11,600
3. Land and Buildings	13,200	18,000	23,000	28,000	35,000
Value of					
1. Crops and Pasture.	$ 1,950	$ 2,940	$ 3,390	$ 4,170	$ 6,560
2. Farm Production: Total............	$ 4,380	$ 5,540	$ 6,540	$ 8,570	$10,960
3. Farm Expenses....	1,780	2,400	3,180	4,270	5,660
Net Farm Income †.....	$ 2,600	$ 3,140	$ 3,360	$ 4,300	$ 5,300
Labor Used: Man-Months.............	17	22	24	31	33

Prices:
Corn $ .56 bu. Eggs $ .20 doz.
Hogs 8.00 cwt. Milk 1.80 cwt.
Good steers $10.30 cwt.

Wages:
$45.00 month and board.

* Records are from Iowa farms of about equal soil productivity for 1940 and 1941.
† See Figure 24 for individual farm income results on these farms.

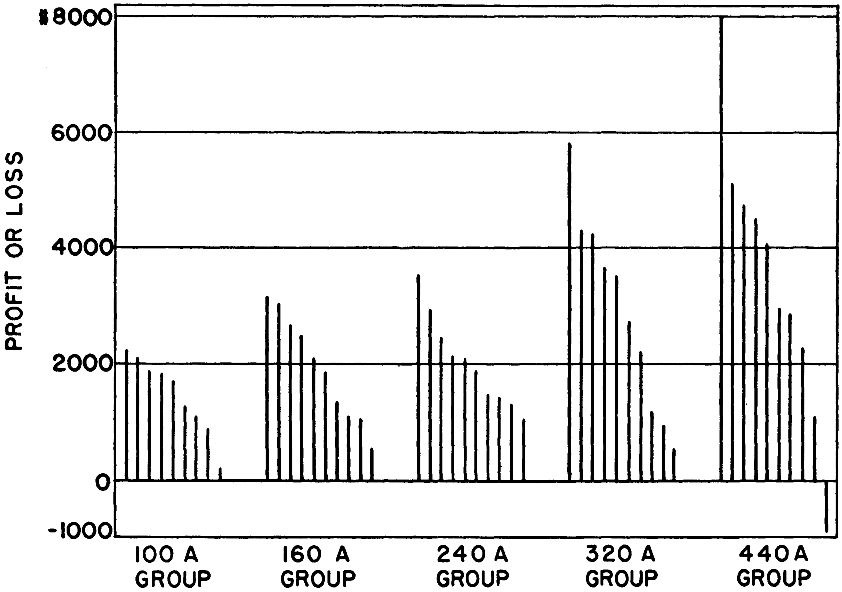


FIG. 24—Profit on good quality Cornbelt farms of five sizes, 1940–41 average. Profit is the income after all farm expenses are deducted including a charge for the farm, capital, and all labor used in the farming business. Each line shows the profit or loss on one farm.

Larger farms have an opportunity for making more profit than small farms but lose more, too, in adverse years. A well managed smaller farm makes more money than the poorly managed larger farm as the chart demonstrates.

Size of farm and capital used are not the only factors that affect farm income, so too much should not be read into the figures in Table 13. These records are from different farms so quality of management is not the same, and there are small differences as well in the quality of the land. Prices may not have been equally favorable for the products produced on the different farms, but when prices were good, as they were in 1940–41, larger farms had an income advantage on the average.

The beginner should not jump to the conclusion that operating a larger farm is an easy way to increase his income. As Table 13 shows, capital requirements go up as the size of farm increases. Risk is greater, more management ability is needed, and the type of farming is likely to change. But in spite of these disadvantages, if the farmer has the capital and the management ability, he can make more money most years on a larger acreage.

Individual profits on the fifty farms in Table 13 are shown in Figure 24. Each line represents an individual farm, and its length above or below the base line shows the average profit or loss for the two-year period, 1940–41. To find the profit, all farm expenses, wages for the operator and family labor, interest on the farmer's own capital, and a charge for all land used were deducted. These profit variations emphasize again the need for the individual to fit his size of operations and plan to his own ability.

Using More Intensive Methods

The farmer's size of business also may be increased by intensifying production. Sometimes this is done by using more intensive crops, that is, by raising crops that require more labor or capital to produce. On livestock farms, it is possible to intensify production by keeping more livestock and buying additional feed. Other ways are to keep livestock with more producing ability or livestock that require more labor.

The cases in Table 14 show how intensifying production can increase the size of business.

Farmers who increase their size of business by this method find that a high degree of efficiency is necessary. And if intensity of production goes very far, additional risk must be counted as a part of the cost. Farm H illustrates both points. In spite of a large volume of sales, comparatively little was added to the production of the farm itself and still less to the net income. In this case, just as much income or more could have been realized from a simpler type of livestock program that made good use of the crops and pasture raised. Instead, this farmer used an elaborate livestock setup requiring large amounts of capital and a great deal of risk with little net gain for his family.

However, as Table 14 shows, when management is good the farm business frequently can be intensified to advantage. Of course, few operators would want to go to the extreme of Farmer I, even though he finds it very profitable. On some farms, the operator would want to intensify in some other direction than livestock feeding.

Selling More Valuable Products

Carrying the product to a higher stage of value is the fourth way to increase the size of business. Some farms do this by selling a product of higher than average quality or value per unit. Others include retailing the product directly to the consumer as a part of the farm business. Frequently, a special location or selecting an enterprise that fills a special market demand are necessary before this method of increasing the business is wise. Since this method usually requires special ability on the

TABLE 14
INCREASING THE SIZE OF BUSINESS BY INCREASING THE INTENSITY OF PRODUCTION *

	Average of 60 Farms	Farm No. F	Farm No. G	Farm No. H	Farm No. I
Type of Farm	Hog–Dairy–General Livestock	Hog–Dairy–Cattle Feeding	Hog–Cattle Feeding	Cattle Feeding–Hog	Hog–Cattle Feeding
Size of Farm, Acres	120	120	120	120	120
Capital Used For					
1. Machinery-Power	$ 1,800	$ 2,400	$ 4,200	$ 3,400	$ 2,400
2. Livestock and Feed	3,700	4,600	8,800	15,400	10,600
3. Land and Buildings	15,000	17,000	22,000	17,000	18,000
Value of					
1. Crops and Pasture	$ 2,000	$ 2,500	$ 3,300	$ 2,600	$ 2,300
2. Total Income	5,000	8,200	15,700	21,500	45,400
3. Livestock and Feed Bought	1,600	3,600	7,600	17,000	33,000
4. All Farm Production	$ 3,400	$ 4,600	$ 8,100	$ 4,500	$12,400
5. Farm Expenses	1,500	1,900	1,800	2,600	3,900
Net Farm Income	$ 1,900	$ 2,700	$ 6,300	$ 1,900	$ 8,500
Labor Used, Months	18	22	24	24	32

Prices:
Corn $ .52 bu. Milk $1.65 cwt.
Hogs 5.50 cwt. Good Steers $9.90 cwt.

* Greater intensity of production may result in increased net income to the family. However, if not well managed, increasing the intensity of production may lower rather than increase the net income. It also increases the risk. Taken from Iowa farm records for 1940.

part of the farmer to make it a success, a good many who try it find their income is smaller rather than larger. It is important, therefore, to study personal ability and local conditions carefully before undertaking this method.

Table 15 shows how farms increased business size through the sale of specialized or high value products.

TABLE 15

Increasing the Size of Business by Selling a Higher Value Product *

	Farm J	Farm K	Farm L	Average of 150 Farms
Size of Farm, Acres	160	160	160	160
Type of Operation	Hybrid Seed Corn–General Farming	Turkeys and General Livestock	Retail Dairy	Hog–Dairy–Cattle Feeding Poultry –
Capital Used for				
1. Machinery-Power	$ 3,400	$ 2,400	$ 2,300	$ 2,200
2. Feed, Seed-Livestock	6,500	4,600	5,600	5,500
3. Land-Buildings	21,000	22,000	24,000	19,000
Value of				
1. Crops and Pasture	$ 2,600	$ 2,500	$ 2,600	$ 2,200
2. Sale of Special Products	$ 1,900	$ 5,500	$ 5,400	$——
3. Total Income	6,300	14,000	10,500	6,000
4. All Production †	5,800	7,100	8,800	4,700
5. Farm Expenses	2,700	2,600	3,400	2,000
Net Farm Income	3,100	4,500	5,400	2,700
Labor Used, Months	20	24	33	20

Prices:
Corn $ .52 bu. Hybrid seed corn $3.50 bu.
Hogs 5.50 cwt. Turkeys .16 lb.
Eggs .16 doz. Retail Milk .09 qt.

Wages:
$40.00 per month and board

* Taken from Iowa farm records for 1940.
† Income less cost of feed and livestock bought.

Diversify or Specialize?

The old adage "don't put all your eggs in one basket" raises the question of whether a farmer should divide his attention among many enterprises or concentrate on a few.

More enterprises on a farm often mean lower risks. If prices fall, for example, the price of everything a farmer has to sell seldom falls at the same rate. Thus a combination of beef cattle, milk cows, sheep, hogs, and chickens is decidedly less risky than beef cattle and hogs alone. Moreover, with more enterprises, unforeseen trouble from weather, disease, or insects will have less effect on the total business.

Diversified farming also makes it easier to work out a uniform labor load throughout the year. Not only will there be fewer peak labor periods, but diversification makes for steadier year-around employment. In some cases diversification helps increase crop yields by permitting better rotations or providing more manure.

But all the advantages are not on one side. Take price risks for example. Diversity gives more protection from falling prices, but it also acts as a brake when prices rise. The specialist can much more easily expand one enterprise to take advantage of an expected major price rise.

Some farmers diversify too much. With many enterprises to look after, a farmer may so dilute his time, energy, and knowledge of detailed management that the efficiency of the whole operation is lowered considerably. Then, too, extensive diversification may mean that equipment is not efficiently used. The specialized hog raiser, on the other hand, may use one set of equipment and buildings for two or even three litters per year and thereby reduce costs. That is no small factor when equipment investments are high. With specialization, a farmer can take time to become an expert in one or two fields while few can learn to be an expert in half a dozen. Also, each person has natural abilities that are greater in some lines than others. It usually pays to make intensive use of the farmer's best ability.

Your Age and Specialization

As a farmer grows older, he should make some variation in how much he specializes. A young man with limited capital cannot diversify greatly or he will spread his money too thinly. But neither can he specialize very much. Depending on his opportunities, he picks enterprises which have small risks, quick turnover, and which require moderate amounts of capital. He needs to strike a reasonable balance and keep himself employed on a year-around basis. If he is not able to do this, it might be wise for him to find off-the-farm work during slack periods.

As soon as he fully understands his starting enterprises, he can try others. By broadening his field gradually, he can see if he has the most profitable combination as well as find out about any special ability that he may not yet have discovered in himself. In other words, the first ten years or so of farming should be something of a period of finding oneself.

If a man finds that he has special ability and can obtain enough capital, he may then specialize. Most farmers with the highest average net income specialize to a considerable degree. But so do those that lose the most money. The difference is in their *ability as managers* and in *when they specialize.* A highly skilled manager can afford to specialize, while one with medium to low ability as a manager had better choose a diversified program made up of enterprises where the risk is low and only moderate skill in management is needed.

It is not unusual for men past middle age to shift their type of farming. If they have been successful, they look for a type that does not require so much of their time and energy in active work. They expect their capital to produce more of the income, and their labor less. Their judgment and management skill have been proved by this time. But at middle age and after, they do not like to be closely tied down with day-to-day details. The resources they have to use in farming at that time of life are quite a different set than those they used as younger men. By adjusting their farming they can make the maximum use in their older years of their capital, experience, and ability.

Tables 14 and 15 in this chapter show that the seven farms F, G, H, I, J, K, and L are specialized. Most of these were operated by men near middle age who started out without much specialization. As they learned more about farming and developed their special skills, they decided to intensify their operations rather than to expand their acreage. Farmers G, I, K, and L were highly successful as indicated by the large net income they received.

Farmer H also specialized, but far less successfully. He didn't develop the necessary skill for specialization. The result was that he made less profit than farmer F who did an excellent job without going much beyond the feed he raised. Nor did farmer H make any more profit than farmers D and E who used less than one-third as much operating capital and were not specialized. Even so, specialization can pay well, but only for the man who has the necessary experience and skill, the capital, and credit to carry it through, and only when prices for the specialized product are favorable.

CHAPTER 5 Getting Started

No one knows what he can do till he tries.
Publius Syrus

ONCE THE TYPE AND SIZE OF FARM is in mind, the family must decide whether to rent or buy, plan what will be needed in the way of power, machinery, and livestock, and obtain enough money to launch the farming enterprise.

The family's decision whether to rent or own a farm is largely a matter of how much money is at hand, current price levels, and the location selected for starting farming. In many Midwest areas, farms can be rented that are quite satisfactory. In other places, however, good rental farms are hard to find. If the competition for farms is keen, it may pay the family to look around, particularly if the rent rate or the price of land is too high for the size wanted. Also, it may be easier and just as satisfactory to find a farm of a less popular size. But rather than take a farm that is too large or too small for the capital and skill of the manager, it is better to pay a little higher rate for one that fits the family.

When he draws up the farm's power and machinery needs, the wise manager will consider all possibilities. He will be careful not to buy too much; he will look at good used equipment; he will decide whether he can save money by having some custom work done; he will consider sharing ownership with a neighbor.

On farms where livestock will be used right at the beginning, the family will need the kind and number of livestock suited to its situation—milk cows, brood sows, feeder steers, chickens, and so on. Livestock are "productive machines" just as plows or combines are, and on livestock farms they must be considered part of the productive equipment. Because the subject of livestock farming is so broad, no attempt is made to analyze it in this chapter. Instead, all of Chapter 7 is devoted to planning livestock needs.

Once the family has progressed this far with its plans, money will be needed to get the farming business under way. Besides the machinery and livestock, there will be feed, seed, fertilizer, and other things to buy. The farmer will need money for day-to-day operating expenses until the farm produces enough income to take care of them. And family living costs should not be overlooked either.

These are decisions the family must make to get started in farming—whether to rent or buy, machinery and livestock needs, and operating capital. None of the decisions should be made hastily. They are too important to the future success and well-being of the family.

Renting or Owning—Which?

Even if they have enough money to buy a farm, there are several reasons why it is wise for most young people to start out by renting. First, the young couple needs to learn from experience what size farm fits them best. Buying may commit them to the wrong size, which isn't always easy to change. Furthermore, not very many beginners have enough money for all their needs. If that's the case, it usually is easier to make money on a rented farm. The third reason for renting is the matter of location. Few people buy more than one farm in a lifetime, so the decision of where to live is a very important one. And it's a decision that's likely to be less hurried if the couple starts out by renting.

Whatever the final decision—to rent or buy—getting started is the main problem. A study of the several plans that enable beginners to obtain a farm will help the family decide which fits its situation best.

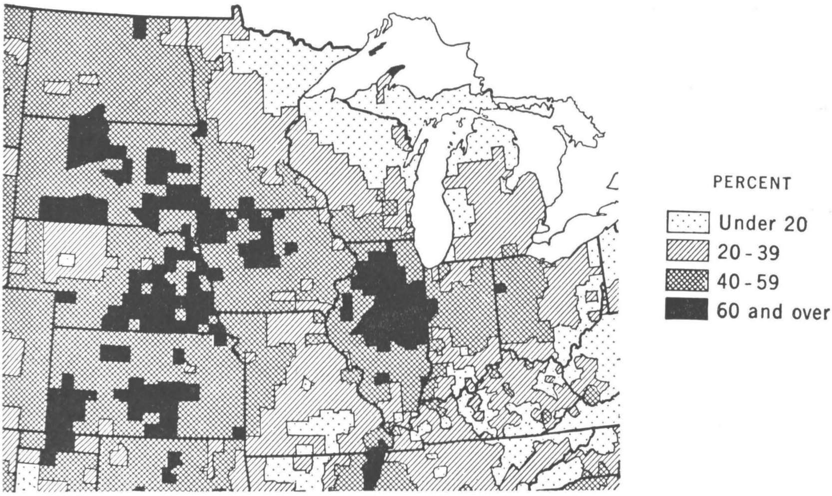


FIG. 25—Farm land rented 1945. The amount of rented land in the Midwest varies from less than 20 per cent in some counties to over 60 per cent in others. Young men find it easier to get started in farming where rented farms are available. *Bureau of Agricultural Economics and Census Bureau.*

Renting on a Labor-Share Plan

Although not very common in the Midwest, this plan is finding an increasing place as a starting point for qualified young farmers with little capital.

It fits the combination of a young man who wants to farm but has little capital, and a farm owner, usually an older man, who wants to be relieved of most of the labor but continue in the business of farming. The plan often is used by father and son or other near relatives, but this is not essential.

Typically the older man has a farm in operation and furnishes the farm, machinery, equipment, livestock, and part of the management. The young man gets a share in the business income, often one-third or one-fourth, which is agreed on in advance. This includes a minimum annual wage. If his share does not exceed the wages agreed on, the wages are all he gets; if his part of the income falls short of this, he still gets his wages; if his share is more than his wages, he gets the additional amount. The plan sometimes includes a provision so he can gradually own part of the operating capital. Some plans do not include a minimum wage, but this provision is desirable because the young man without capital is not yet in a position to take on many business risks.

Although he probably will shift to a different plan before many years, the young man will find that the labor-share arrangement has one real advantage: he gains experience, especially in management, and perhaps can accumulate some capital. The plan is a test of his ability as a manager and willingness and skill as a worker. If he shows promise, he usually can find someone to finance him as a regular farm tenant. In a father-son arrangement, it may be a step in the transition to the place where the son is a full-fledged partner in the business.

To the land owner, the plan offers a way of maintaining his farm operations rather than having to dispose of part or all of his livestock and equipment. He does not have to perform the labor or assume all the management.

Renting on a Grain-Share Plan

In the areas where it fits, the grain-share plan usually requires the second smallest capital investment. It is best adapted to the more level areas of the Corn Belt or Plains States where a share of the crop is paid as the rental and most of the land can be cropped. It is not so readily used in special cash crop areas where a great deal of seasonal labor must be hired.

With this plan the farm operator needs a good tractor and an adequate set of crop machines. The landlord usually will insist on this so he can be assured that the crop will be put in on time and cared for properly. Money or credit is necessary to pay operating expenses and living costs until a crop is harvested. Livestock are not absolutely essential and in many cases the operator gets along without horses. However some livestock, especially a few milk cows, chickens, and hogs, add considerably to the income and make for better use of labor.

This type of operation returns a decent profit to the tenant only on high yielding farms of considerable size. On Corn Belt farms, at least 80 acres of crops are needed for a one-man farm, and 100 or more are better. In the Plains Area, the acreage should be larger. Cash rent often is paid for land used for hay, pasture, and other uses.

In the Corn Belt, legumes should be used in the rotation to maintain yields, while summer fallow as well as legumes may be used in the Plains Area. In many cases, as experience and capital are accumulated, the farmer works toward more of a livestock system of farming.

Renting on a Livestock Share Plan

This stock-share or partnership plan requires the next largest capital investment by the operator. It is a good system and is found mostly in areas where the land cannot safely carry a large acreage of the more intensive crops such as corn, wheat, or soybeans, and where a livestock system of farming fits the land. There are a number of variations in this system including the so-called fifty-fifty livestock share lease, a one-third, two-thirds share arrangement, and other combinations.

The common goal of both landlord and tenant is to arrange the lease so the tenant will make the best possible use of his own time and ability, the capital available, and the capacity of the farm to produce. This is a much more important question than details of how to divide income and expenses. If the lease does not encourage the tenant to do his best, it is not a good lease regardless of the so-called "fairness" of the division between the two.

Some essentials for success with the stock-share arrangement are:

1. The business must be large enough so the operator's share of the net income will support a family well.
2. The operator and landlord must generally see "eye to eye."
3. A reasonably good set of buildings and an adequate fence system and water supply are important since much of the income is from livestock.
4. A good set of financial records must be kept.
5. A detailed lease should be drawn up. However, if many decisions must be arbitrated by what is written in the lease, the plan is likely to fail.

In other words, all the qualities that make for a successful partnership apply here: similarity in interests; ability to work together; both parties being able to keep attention centered on the main problems and to adjust minor differences quickly; respect for the partner's abilities and limitations. One example

TABLE 16

Divisions on One Farm With Livestock Share Lease Where Income Is Shared 50–50

Capital Items	Furnished by	
	Landlord	Operator
Land and buildings	All	None
Livestock and feed	½	½
Machinery and equipment (May be exception on such livestock equipment as milking machines, farrowing houses, etc.)	None	All
Expenses *	How Expenses Are Divided	
Regular operating expenses, feed, seed, fertilizer, fuel and oil, etc.	½	½
Labor	None	All
Personal property taxes and insurance	½	½
Land taxes and building insurance	All	None
Building and fence upkeep (Operator to furnish unskilled labor in making ordinary building and fence repairs.)	All	None
Income	How Income Is Divided	
Sale of hogs, dairy products, crops, etc.	½	½
Poultry and eggs (Often ½ and ½, but depends on size of flock. May have different arrangement due to special labor requirement for poultry. Sale of dairy products also may be different from hogs, cattle, and crops because more labor is needed.)		
Income from labor and custom work off the farm (But work on home farm must not be neglected by the operator for outside income.)	None	All

* Adjustments to give greater incentive to the tenant more often are made on the expense side. The landlord may furnish the lime and grass seed, for example, in return for the tenant's extra work in using erosion control practices, filling ditches, cleaning up weeds, and the like. But income and capital shares may vary, too.

of how both landlord and tenant share income and expenses in the stock-share plan will be found in Table 16. This shows the list of items that the landlord and tenant studied together to set up a good lease on a particular farm. Details must be varied to fit other cases.

The Cash Lease

This kind of lease is found more often where weather and similar hazards are comparatively low. The tenant must have more capital for this plan than he needs for others. For example, he not only furnishes all of the livestock, feed, and equipment, but typically contracts in advance to pay a stipulated cash rent for the farm regardless of prices, weather, or other effects on the year's business. Many farmers like a cash lease because it gives them practically the same freedom of operation as farm ownership. But it involves more risk than the previous types of leases.

A variation of the cash lease has been developed, however, that tends to reduce the tenant's risk. It is called the flexible or sliding-scale cash lease, and at the time the lease is written a base rental rate is fixed. Then at the end of the year the actual cash rent rate is adjusted above or below the base rate by examining the average level of farm prices in the state during the year. If prices have been higher than were expected, the cash rent rate will be higher than the base rental rate. If prices were lower, the cash rent rate would be lower.

Table 17 shows the capital needed by a beginner on a Corn Belt farm under four rental arrangements and as an owner having a 25 per cent down payment. To make a uniform comparison, the same farm plan was used in all cases.

TABLE 17

CAPITAL NEEDED BY A FARM OPERATOR UNDER VARIOUS TENURE PLANS

(Same Farm and Home Plan)

	Total Farm Capital*	Farm Rented Using:				Owner–25% Down Payment
		Labor Share Lease	Stock Share Lease	Crop Share Lease	Cash Lease	
Land, 160 acres $150 per acre	$24,000	....	....	....	....	$ 6,000
Livestock	1,650	....	$ 825	$1,650	$1,650	1,650
Feed	500	....	250	500	500	500
Machinery	2,160	....	2,160	2,160	2,160	2,160
Cash for operating expenses	600	....	350	400	600	600
Cash for household equipment and operation	1,000	$1,000	1,000	1,000	1,000	1,000
	$29,910	$1,000	$4,585	$5,710	$5,910	$11,910

* 1942 prices: corn, 75c bu., milk cows, $95 head, two-plow tractor, $1,000.

Buying a Farm

This has been left until last because it should, in the early years of farming, be dismissed from the minds of young farm families with limited capital. This is not because it is undesirable to own a farm. Farm ownership is a worthy goal for any farm family. But it is a question of what is logical and reasonably safe from the business standpoint as well as what is desirable for the family. One of the high ranking goals of almost every farm family is to be successful financially. Buying a farm before enough money is accumulated is not the way to success, but all too frequently leads to failure.

There are two main reasons why this is so. First, capital put into land normally earns a much lower rate of return than money used for farm operations. Over a period of years, farm land normally earns only a little more than the usual mortgage interest rate. And it may earn less. This is a fundamental reason why, under normal conditions, it takes even a good manager the better part of a lifetime to pay for a farm. If the farm is bought at too high a price or with too small a down payment. future low income years may squeeze out the farmer who lacks the money or credit to tide him over. In many such cases, all the previous savings are lost and the family finds itself forced to start over again.

The second reason is that a farm that fits the family should be large enough to use the labor of the family, pay operating costs, carry costs of the mortgage, taxes, upkeep, and also provide a good family living. The minimum size of farm that will do this successfully varies greatly in different areas. But usually the purchase price for a farm of a desirable size requires more money for a safe down payment than the young farm family will have and still leave them enough to carry on profitable farm operations.

It's not quite so risky to buy in areas where additional land can be rented easily. In such areas, many farmers buy a small or medium-sized farm and rent additional land to make a good operating unit.

Don't Mortgage the Future Too Much

In periods when land prices change greatly within a single generation, the wise family is extremely careful in choosing the *right time* to buy a farm as well as the *right farm* to buy.

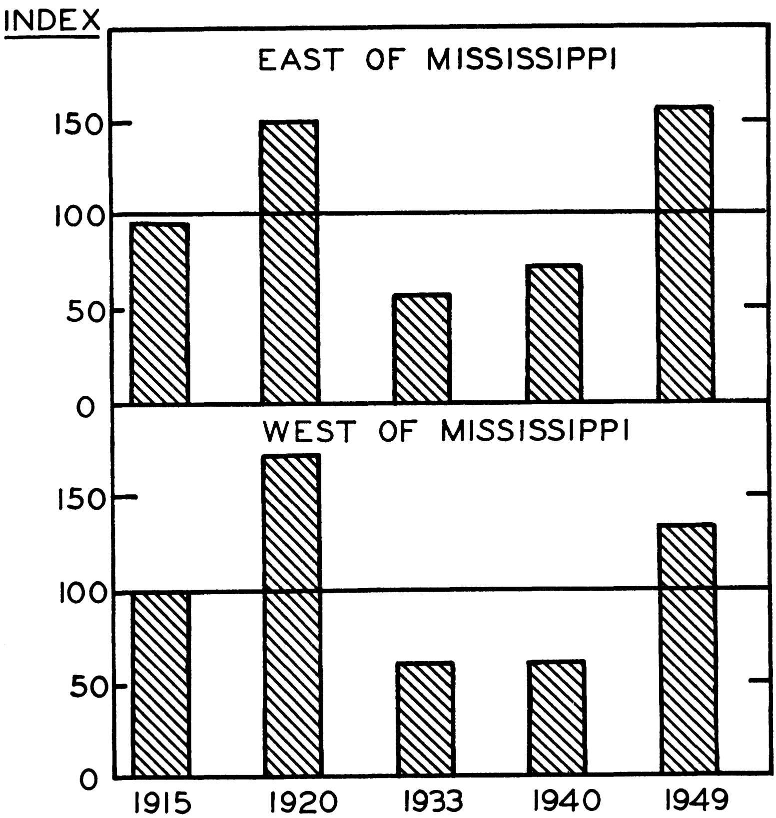


FIG. 26—The ups and downs in Midwest land values per acre. (1915–49 average = 100). The price of farm land goes up and down a great deal from time to time. If a large share of the cost of a farm is to be paid for out of future earnings, the farm family needs to be especially careful before buying.

The decision to buy a farm involves much more money than any other single one made by the average farm family. Furthermore, because most farm families make such a decision only once in their lifetime, much of the family's future welfare depends upon the conclusion they reach.

If borrowed money is used to buy a farm, the annual and total cost of using it needs careful study. Such a cost should be considered in relation to the present and prospective future earning power of the farm and the probable future level of farm product prices. The annual and total cost of a $10,000 mortgage loan is shown in Table 18.

TABLE 18

YEARLY INTEREST AND TOTAL COSTS ON A $10,000 MORTGAGE LOAN *

(Five Repayment Plans—4 Per Cent Interest)

Annual Payment	Standard Amortization Plans						Uniform Principal Payment Plan		Modified Amortization Plan †	
	20-Year Yearly Cost		34-Year Yearly Cost		40-Year Yearly Cost		20-Year Yearly Cost		40-Year Yearly Cost	
	Int.	Total	Int.	Total	Int.	Total	Int.	Total	Int.	Total
1st	$ 400	$ 736	$ 400	$ 543	$ 400	$ 505	$ 400	$ 900	$ 400	$ 504
5th	343	736	376	543	382	505	320	820	382	505
10th	258	736	339	543	355	505	220	720	355	505
15th	154	736	295	543	323	505	120	620	323	505
20th	28	736	241	543	283	505	20	520	283	505
30th	....	....	97	543	177	505	....	....	177	505
34th	....	....	21	543	121	505	....	....	160	160
40th	....	....	....	....	19	505	....	....	160	160
Total Cost	$4,716	$14,716	$8,465	$18,465	$10,208	$20,208	$4,200	$14,200	$10,858	$16,858
									($4,000 unpaid principal)	

* Nearest whole dollar.

† This plan is the standard 40-year amortization plan except that payments are discontinued on the principal after it is reduced to $4,000. From then on, it is shifted to a long term loan with no principal payment required. It may run more or less than 40 years, presumably until ownership is shifted by sale or inheritance.

Those who plan to buy also should become familiar with the common method of land appraisal. The buyer can make a rough appraisal of a particular farm's value, but after the choice has been narrowed down to two or three possible farms it's a good idea to have an expert appraisal made also.

A rule-of-thumb method of appraising a farm is shown in Table 19. In making the appraisal, the farm is considered rented on a crop share–cash plan. Table 19 capitalizes the net rent a landlord would get in an average year and can be used as an appraisal method even if the farm is not actually rented.

In many cases the home farm of the parents is considered for purchase. Naturally there is merit in keeping a farm in the same family generation after generation. But care should be taken that the price is based primarily on the farm's earning power rather than merely on personal attachment.

Actually, a father-son partnership is a good way for a boy to get started. This must be said with some reservation, of course, because many problems will arise, some not easily settled. Is the farm large enough for two families? Do father and son enjoy working together? Are there satisfactory living quarters for both families? Is the father willing to let the son learn through trial and error or does he protect him too much from making mistakes?

These partnerships nearly always are an agreement among four people instead of two. At least they ought to be. The interests and contributions of the son's wife, frequently overlooked, are important to the success of the agreement. "Of course we'll be more than fair," the parents are likely to say. But self-respecting young people want to stand on their own feet and they want an agreement that gives them an opportunity to do so.

A family arrangement that works out pleasantly and profitably during current operations can lead easily to a satisfactory agreement when property is to be passed on. But this will not happen if the son never is allowed to "grow up" in his responsibility for handling the business.

Power, Machinery, and Equipment

A certain minimum of power, machinery, and equipment is necessary for successful farm operation. What that minimum

TABLE 19

A Rule-of-Thumb Land Value Appraisal Method *

1	2	3	4	5	6	7
Usual Land Use Crop Acres	Normal Yield	Total Production	Landlord's Share	Amount To Landlord	Expected Price	Landlord's Income
Corn 50 A.	50 bu.	2,500 bu.	½	1,250 bu.	$1.00	$1,250.00
Oats 30 A.	40 bu.	1,200 bu.	2/5	480 bu.	.60	288.00
Soybeans 10 A.	20 bu.	200 bu.	2/5	80 bu.	2.00	160.00
Hay 30 A.	1-2/3 T.	50 T.	½	25 T.	15.00	375.00
Pasture 30 A.			Cash Rent		6.00	180.00
Buildings 10 A.						
Total 160 A.						Total $2,253.00

Usual Expenses

Taxes	$200.00
Seeds (corn and grass)	100.00
Lime and fertilizer	60.00
Insurance and repairs	90.00
Depreciation on buildings	160.00
Depreciation on fences, tile	60.00
Total	$670.00

Summary

Total income	$2,253
Less expenses	670
Net income	$1,583

He figured a 5% return as follows:
$1,583 ÷ 5 = $316.6 × 100 = $31,660.
$31,660 ÷ 160 A. = $197.87 per acre.

* Many farms will have less cropland and more pasture under normal conditions. Some will have more cropland.
† The prices used are only examples. Each person must make his own estimate of probable future prices and farm expenses.

FIG. 27—Father-son farming works best where there is cooperation both in work and planning as well as enough land and capital to make their labor and skill effective. Here a father and his sons discuss the new building that will enlarge the farm business. Photo USDA Extension Service.

should be depends upon the labor supply, type of crops grown, soil conditions, the weather, and other factors.

If, for example, labor is scarce or expensive, more machinery will be needed than if labor is plentiful and wages are lower. Before he buys machinery, the manager analyzes both the present and probable future labor situation.

The probability of unfavorable weather also will guide the farmer in planning his machinery needs. He knows, too, that some crops must be planted within a short period of time to yield the most, and machinery will be needed for that. A farmer is unwise, however, to keep such a large power and machinery supply that it will see him through even the most unfavorable conditions. He can better afford to run some risk of bad seasons and perhaps hire custom work to help out in peak periods.

Wisdom is needed in deciding how much to invest in machinery, especially when money is scarce. A farmer can be "machinery poor" by having too much or too expensive machinery just as well as by not having enough. If capital is short, used machinery may be the answer. The work done per hour by good used and new machinery is about the same, so the lower cost may favor the used machine even though it requires more skill to keep it in running order.

How Much Farm Power?

Midwest farmers depend on tractor power for most of their farm work. For odd jobs and certain kinds of field work, though, many farmers use a team of horses, especially in the more rolling areas and on smaller farms.

Because more than a third of a farmer's investment in power, machinery, and equipment may be tied up in the tractor, the size and type of power unit to be used needs careful study before a purchase is made. The proper size should be considered in relation to the rest of the business and the size and kind of farm being operated.

The farmer who has soil that works easily and has plenty of time to get his land ready and the crop put in can get along with a small power unit. In other areas, where the soil works hard, the farmer will need a large power unit to do a good job. If the number of days when the ground is fit to work are limited, it will pay the farmer to buy a larger power unit than the acreage of cropland normally would require.

The man who operates a two-man farm, or larger, must decide whether he wants two tractors of the same size or a large one and a small one. Many managers of large farms like power units of two different sizes because more economical use can be made of them. And economy in power use is important in keeping costs down. It comes from picking the right size and type of power and keeping it in shape so operating costs will be low. This principle can be applied to any kind of power unit, whether it's a tractor, motor, or horses.

Once a tractor is bought, the cost of using it will be pretty well fixed until it is ready to trade in. If it is too large, operating costs and depreciation per unit of work done are sure to be high. If it is too small, farm work takes more time and the tractor many not be large enough to operate some machines that are needed. It's possible to make mistakes both ways, but buying a tractor that is too big or has more power than is necessary is the most common mistake. Another is failure to adjust the tractor to keep fuel consumption down.

For many small power jobs like pumping water or grinding feed, an electric motor is the most satisfactory. A motor of the right size and type for the job has a long life when properly cared for. Large motors seldom pay since most farmers don't have enough use for them and already have a tractor on hand that can do the heavy belt work.

Tractor Costs

Tractor costs may be estimated by dividing them into two parts. First is the routine cost of having the tractor on the place—depreciation, housing, repairs, taxes, interest on the investment, and so on. These costs are much the same per year regardless of the number of hours the tractor is used. Second are the costs that depend directly on the hours of use, mostly the expense for fuel and oil. Table 20 gives approximate estimates for these items.

Cost of Using Machinery and Equipment

Like the costs of tractor power, the cost of using machinery and equipment varies from farm to farm and from area to area. The largest difference is in the amount of work done by the

TABLE 20
TRACTOR COSTS*

	1-Plow Tractor	2-Plow Tractor	3–4-Plow Tractor
Routine cost per year (Repairs, depreciation, housing, etc.)	$100	$165	$225
Cost per hour for fuel and oil†	30c	39c	45c
Typical use, hours per year	400–600	400–800	400–800

* Adapted from research under farm conditions in Minnesota, Iowa, and Illinois, by the respective experiment stations.

† Gasoline at 20c per gal., oil at 30c per qt.

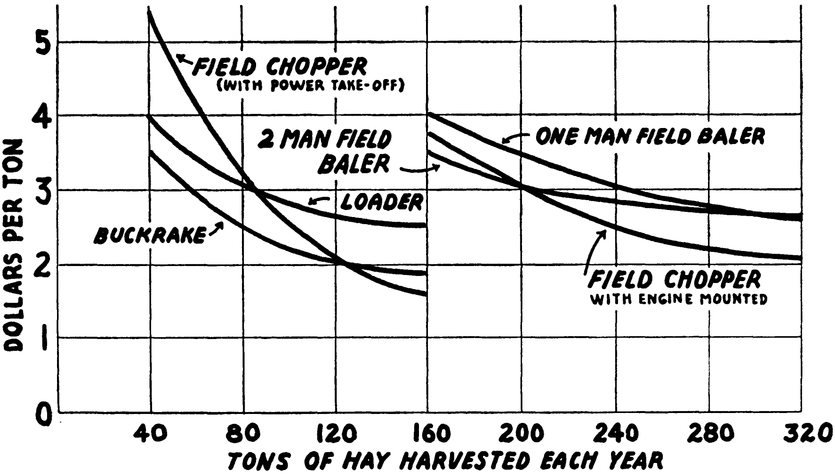


Fig. 28—Be careful to select machinery adapted to the size of the farming operation. Note how haying costs vary with the amount of hay put up and the kind of machine used.

machine in a year. For example, one farmer may use his corn picker for only 40 acres of corn a year while his neighbor may use the same size picker for 200 acres. The man with the larger acreage would find the picker a big saving in cost, while the man on the smaller farm would find the picker an expensive machine to own. Figure 28 shows the costs per ton of putting up hay with various kinds of equipment. The principle illustrated here—how costs per unit change depending on the kind of machine used and amount of work performed—applies to all kinds of farm machinery and equipment.

Many farm managers find that hiring certain work done by others is cheaper than owning the equipment. Others who are handy with machinery find that doing custom work for their neighbors is a profitable sideline. But it seldom pays a farmer to work away from home if his own crop or livestock program must be neglected. This is especially true where the farm business is large enough to justify the operator's full time.

Upkeep Reduces Costs

Farms are different and soils are different in their effect on field machines. And so are operators. The man who keeps

TABLE 21
Cost of Using Farm Machinery*

Machine—Kind and Size	Iowa Conditions		Nebraska Conditions	
	Cost per A.	Usual acres†	Cost per A.	Usual acres†
Tillage machinery				
Plow, 18″ tractor	$ .27	60	....	....
Plow, 2-bottom	.26	70	....	....
Plow, 3-bottom	.27	100	....	....
Plow, 2-way, 2-bottom	....	....	$ .69	110
Disc, 7′, horse	.09	80	....	....
Disc, 9′ or more, tractor	.07	180	....	....
Disc, tandem	....	....	.17	130
Disc, one-way	....	....	.11	350
Harrow, spike tooth	.04	120	....	....
Harrow, spring tooth	.07	80	....	....
Roller	.08	110	....	....
Corn planter, 2-row	.22	50	....	....
Corn planter, 4-row	.16	200	....	....
Corn, lister, 2-row	....	....	.20	140
Drill, 6′, horse	.47	35	....	....
Drill, 9′, tractor	.59	60	.15	120
Potato planter, 2-row	....	....	1.50	50
Cultivator, 2-row	.09	190	....	....
Cultivator, duckfoot	....	....	.14	260
Cultivator, lister	....	....	.12	110
Potato sprayer	....	....	.94	200
Harvesting machinery				
Small combine, power take-off	.85	160	....	....
Medium combine, with motor‡	....	....	1.06	300
Corn binder, horse	....	....	.50	60
Corn binder, 1-row, tractor	....	....	.63	190
Corn picker, 1-row	1.03	70	....	....
Corn picker, 2-row	.86	160	....	....
Field ensilage cutter	....	....	1.35	160
Mower, horse	.41	40	....	....
Mower, tractor	.25	80	....	....
Side delivery	.32	40	....	....
Hay loader	.47	40	....	....
Stacker, tractor mounted	....	....	.48	70
Buck rake, tractor	....	....	.28	120
Hay rack	....	....	6.00 yr.	....
Potato digger, 1-row	....	....	2.50	40
Ensilage cutter, stationary	51.00 yr.	....	....	....
Other machinery				
Manure spreader	27.00 yr.	....	....	....
Wagon and box	15.00 yr.	....	....	....
Grain elevator, portable	36.00 yr.	....	....	....
Feed grinder				
Medium size hammer mill	36.00 yr.	....	....	....
Large size hammer mill	57.00 yr.	....	....	....
Medium size plate mill	9.00 yr.	....	....	....
Large size plate mill	18.00 yr.	....	....	....
Milking machine	20.00 yr.	15 cows	....	....
Cream separator and motor	....	....	38.00 yr.	....

* Costs are at 1948 price levels. They include repairs, depreciation, housing, taxes, insurance, and the like. They do not include the cost of the power to operate the machines or costs of labor in using them. Derived from base data of Iowa and Nebraska Experiment Stations.

† Acreage once over.

‡ Includes fuel for motor.

TABLE 22
Machinery Check Sheet

1. What will be the first cost and the cost per year?	
a. Original cost of machine	$______
b. Cost of one year's use.	
Interest on investment $______	
Annual depreciation $______	
Repairs and Upkeep $______	
Shed room, insurance, taxes $______	
Total cost for year $______	
2. What will it cost per unit (per acre, per head, etc.) per year?	$______
3. Will the farm produce more due to its use? How much more? (Be conservative.)	$______
4. Will it save time? How many hours per year?	______
5. Can the time saved be used to produce other income or will it (and should it) be used for leisure?	______
6. Do I have the skill necessary for successful operation?	______
7. Is the machine one I will need for many years?	______
8. Is it a well established make, backed by a sound company and with dependable local service?	______
9. Is it likely to go out of "style" or be replaced by a more efficient machine soon?	______
10. Would it be cheaper to hire custom work than to own it?	______
11. Could I use the money elsewhere and get a higher return?	______

his machines in good repair—bolts tightened, bearings greased—and runs them carefully will have much lower costs than the man who is careless. On some farms, machinery falls apart or rusts out faster than it wears out. Other men may take good care of their machines but have such a big investment in a machine shed and repair shop that the overhead adds too much to machine costs. The man short of capital will find that paint, grease, and good care is a satisfactory low-cost substitute for expensive machine sheds. More complicated machines, however, such as combines, corn pickers, and tractors, ought to have some kind of shelter.

Approximate average costs of using various machines and equipment are given in Table 21.

Local farmers who are good managers can be relied upon for advice about what machines fit in their community and which ones the young man should buy. Through trial and error, they have learned the types and sizes that fit their conditions.

Table 22 is a check sheet that will help the beginning farmer make wise investments in machinery and equipment.

Plan Money Needs Wisely

To buy machinery, livestock, seed, and the other things needed to begin farming, the operator must have money. He should make a careful estimate of the capital needed, and a reasonable amount of whatever is required ought to be his own, say from a third to a half. If he has some money of his own and a reputation for being dependable, it won't be hard for him to borrow the rest.

The farmer should take the banker or other lender into full confidence in his plans. No doubt the lender will be rather conservative. But this may be a useful check on the enthusiasm of the beginner. It is easy to paint too optimistic a picture of the first year's income and forget about the hazards of weather and of prices. But optimism tempered with the judgment of older heads will be a great asset.

There are many uses to which money can be put by the beginning farm family, but five are of major importance. They are, in the order they should be considered:

1. Money for household goods and personal items.
2. Money to buy at least the minimum needs of power, machinery, and equipment.
3. A fund for getting operations under way. This should include money for farming and living costs until income from the farm is available.
4. Money to buy livestock and the feed they need until a crop is raised.
5. Money to buy a farm.

None of these requires a fixed amount of money; all can be adjusted. Suppose that a deal already has been made to rent a farm and $5,000 in cash and credit are available. With this money the couple must buy most of the items needed in the home and on the farm. The problem is to divide the money among the various uses to get the maximum return from it.

The First Management Test

The first test of the young farm family's management ability comes when household goods are bought. Too much money spent on furnishings and finer things for the home may limit seriously

TABLE 23

Points to Consider in Using Borrowed Money

Use of Borrowed Money	Time Needed for the Loan to Repay Itself	Kind of Risk Involved for Money Lender
1. To pay farm operating expenses	Until a crop is raised; where the crop is fed, until livestock or livestock products are ready to sell.	Crop yields may be low. Prices may go down. Living costs or other expenses may not leave enough to repay the loan.
2. To buy feed for livestock	Varies: a short time in the case of cows in milk; a few months for hogs, chickens or feeder cattle; 2 or more years for some breeding stock.	Livestock may die or not produce well. Prices may fall. Operator may do a poor job in care and management.
3. To buy feeder cattle	Usually less than a year	Considerable risk of future prices. Farmer may be a poor feeder or run short of feed.
4. To buy milk cows	Usually 15 months to 2 years since feed and other costs take a large share of the income.	Cows may die, be nonbreeders or poor producers. Prices may fall.
5. To buy a tractor or machinery	Normally 5 to 10 years depending on kind of machine and amount of use.	Usually no direct income unless custom work is done. Is paid for by crops or livestock produced on the farm.
6. For family expenses or household use	Usually no direct income.	Repayment depends on the ability of the family to earn enough to pay this in addition to regular expenses.

the amount of capital available for the farm business, and therefore the future income of the family. Household investments do not bring in direct money income, but farm business investments do. It takes good management on the part of the family to decide how much money will furnish the home comfortably and still leave enough to set up a going farm business. The young couple will face this problem again and again during their farming experience because there are dozens of times when family living needs and farm operation needs are in competition for whatever money is available.

One point is vital: both husband and wife should join in the decision-making about the use of capital for the house and for the farm business. Parents or friends may furnish counsel and guidance. But the final decision always should be made by the family. Not only do such joint decisions make for more harmonious living, but they also develop the confidence and judgment of the couple in making decisions that are vital to their mutual welfare.

Using Borrowed Money

Most farmers must borrow money, at least part of the time, to add to their own capital, especially if they use the farm plan that pays best. The problem is to reach wise decisions about borrowing money for use in the farm business or for the family. In Table 23 are examples of using borrowed money which indicate the time required for the investment to repay itself and the lender's usual point of view.

The Farmer and the Lender

A good manager will take the following steps before going to his banker or other source of credit to borrow money:

1. Make a careful estimate of whether it will add to the income if it is a production loan. This calls for study of how its use affects the whole farm business if the loan is a good-sized one.

2. See how much reserve is available in case plans do not work out as expected.

3. Estimate when the loan can be repaid. Is it reasonable to expect it to be paid off in three to six months or will it take a year or two?

If these points are carefully considered before asking for the loan, the lender will be much more inclined to extend the needed credit. If, on the other hand, the farmer takes the attitude that "this is my own business and not the lenders," a smooth working relationship between the two is not likely to develop.

The lender needs to understand the credit needs of the farmers and know a good deal about the man who wants to

TABLE 24

POINTS ABOUT SHORT AND LONG TERM CREDIT

Source of Credit	Kind of Credit Offered	Usual Interest Rate	Security Required	Comments
(Operating Credit)		(Percentage)		
Local Bank	Short term loans for most purposes.	5 to 7%	Varies. Usually chattel mortgage for larger amounts.	Up-to-date bankers fit the terms of the loan to the credit needs of the borrower.
Production Credit Association	Livestock and production loans.	5%	Usually full chattel mortgage on non-real estate assets.	Offices are scattered. Farm inspection is required. Borrower must hold small amount of stock in proportion to loan.
Farmers' Home Administration	Production loans where borrower cannot get credit elsewhere.	5%	Usually full chattel mortgage.	Government money, so a good deal of "red tape." Can make loans up to 5 years.
Implement dealers, stores, mail order houses, etc.	For purchased goods.	Varies. May be direct or indirect.	Varies. May require chattel.	Interest rate often indirect and usually higher than regular credit agencies.
Personal Lending Agencies	Personal loans, usually $300 limit.	Up to 40%—sometimes more.	Usually signature only. May take household chattel.	Interest rate is usually very high. Unsuitable for farmers.
Mortage Credit				
Federal Land Bank (Local Farm Loan Association)	Primarily for purchase of a farm or to make farm improvements.	4%	First mortgage on farm with clear title.	Use amortized repayment plan. That is, interest and principal are paid in annual installments so that mortgage is repaid in about 33 years.
Insurance Companies	Usually for land purchase	4 to 5%	First mortgage on farm with clear title.	Wide range of plans, mostly longer term. Some are amortized.

TABLE 24 – (*cont.*)
POINTS ABOUT SHORT AND LONG TERM CREDIT

Source of Credit	Kind of Credit Offered	Usual Interest Rate	Security Required	Comments
Local Bank	Real estate loans where owner equity is large.	4 to 5%	Mortage on real estate.	Real estate loans are for longer term than production loans. Many variations in individual bank policies.
Farmers' Home Administration	Farm Ownership loans.	3½%	Mortgage on farm purchased.	40-year loans to limited number qualified tenants.
Private Individuals	Various purposes.	Varies.	Varies.	These are often subject to call on short notice which is not desirable for a farmer.

borrow. If he does, he can use policies that fit the different kinds of loans requested. The lender should not merely ask how much security the prospective borrower can put up, but also should look into the earning ability of the farmer to see whether the loan will be wise and useful credit. Many farmers who are good "money makers" do not have a large inventory as loan security.

Common sources of farm credit and a description of each are given in Table 24.

Private banks are the largest source of operating capital for farmers. Production Credit Associations are active in many areas, while the Farmers Home Administration makes operating loans to many young farmers.

Private capital furnishes the largest share of mortgage capital needs except in the high risk areas. Since good credit terms are offered by nearly all agencies, the farmer has several good choices from which to get his capital.

How Much Money To Use

The complex problem of how much money is needed involves many decisions. Among them are:

1. Is this the right time to invest? Will you make more money during the next year or two if you make the investment or not? Are prices likely to go up, stay about where they are, or go down—and how much?

2. Will this investment make it easier or more difficult for you to manage your business? Will it save labor such as a piece of machinery might do and if so, what will you do with the labor saved? If it requires more labor, (such as adding more livestock) must you hire it? If so, can you keep the extra help fully employed at profitable work?

3. Which is the best choice among the investments you can make?

4. Would it be wiser to invest in better living conditions, more education, travel, or other things for the family?

Suppose a man plans to use $1,000 additional cash or credit. Table 25 shows how he studies the choices listed and others that may be added or substituted.

The best decision, of course, is to choose the one use or the

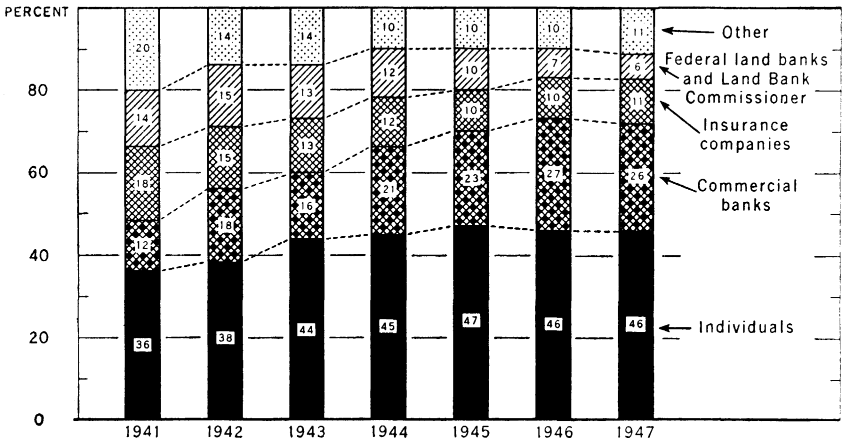


FIG. 29—Sources of credit to finance farm purchases, 1941–47 (data for approximately 130 selected counties). The careful borrower looks over several sources of long term credit before choosing the one that best fits his needs. *Bureau of Agricultural Economics.*

TABLE 25
EXAMPLE OF POINTS USED IN MAKING AN INVESTMENT DECISION BY ONE FARM FAMILY

Money Available	Possible Uses for Money	Comments
	Feeder Steers— $1,000	Takes considerable feed and some extra labor. Risk is fairly high. Return in 3 to 12 months.
	New Tractor Outfit— $1,000	May have more speed and be more comfortable than old one. (And look better.) Return on money may be large or small depending on how badly it is needed.
	Limestone— $100 to $1,000	$100 will lime new field for alfalfa, $1,000 will lime 80 acres. Money returned in 2 to 10 years.
	More milk cows $200 to $1,000	Requires extra labor, feed, pasture, and barn room. Risk is moderate. Money returned in 2 to 3 years.
	Fence— $100 to $600	$100 will put hogs on clean ground; $600 may make rest of farm hog tight. Returns will vary; may be high on first $100, lower on larger amounts.
$1,000 To spend or invest	Addition to Barn— $500 to $1,000	Can handle more feed and livestock. Will have to consider labor needed for extra numbers. Return likely to be slow.
	Brood Sows— $100 to $1,000	Can get returns in 8 to 10 months. Requires more labor and feed, a little more equipment. Risk is moderate.
	Purebred Bull— $200 to $1,000	Return takes 3 years or more. Risk is that production from heifers may not be improved; also the death risk.
	Water System and Bathroom— $400 to $800	Return is in better level of living. Conveniences and satisfaction for the whole family should be considered. May be more important than additional income.
	More Education for Children $400 to $1,000	Returns are in better opportunity for the child. Consideration must be given to benefits to be gained from more education vs. other choices.

combination of uses that gives the greatest returns for the additional investments. Those investments that are a part of the farm business must be judged on the basis of greatest profit and least risk. When the investment can be varied easily (liming or fencing are examples) the return on a smaller additional investment usually is much higher than on larger amounts. Investments that might be made in the family or in better living conditions should have equal consideration since money income is not the only goal of the family.

The wisdom with which decisions like these are made is a real test of the family's management ability. In making choices, the family should be sure that all possible facts are at hand. Then balance up all of the factors without bias. Wise decisions cannot be made by looking only for reasons that will support an early and preconceived choice.

CHAPTER 6 Laying Out the Cropping System

A GOOD CROPPING PROGRAM IS DEsigned to maintain a high level of total production, especially of the crops that help the farmer realize the largest possible continuous profit. As the wise manager knows, a well-planned cropping system will help make the whole farm program more profitable.

In the Midwest, farmers produce a wide variety of crops. Maps included with this chapter show the importance farmers in different areas give to various crops in their efforts to maximize farm income. The maps also show where certain natural or market advantages have encouraged the growing of special crops.

Of the cultivated row crops, corn is far in the lead. Soybeans hold second place. Sorghums are grown in the drier areas, although some are grown for silage or fodder where rainfall is greater.

Wheat is the important small grain of the Plains Area. It also is important as a cash or feed crop in the south central Corn Belt. Oats are the main small grain of the northern Corn Belt and the Dairy Area and extend into the spring wheat country. While barley is grown in cooler climates, some winter barley

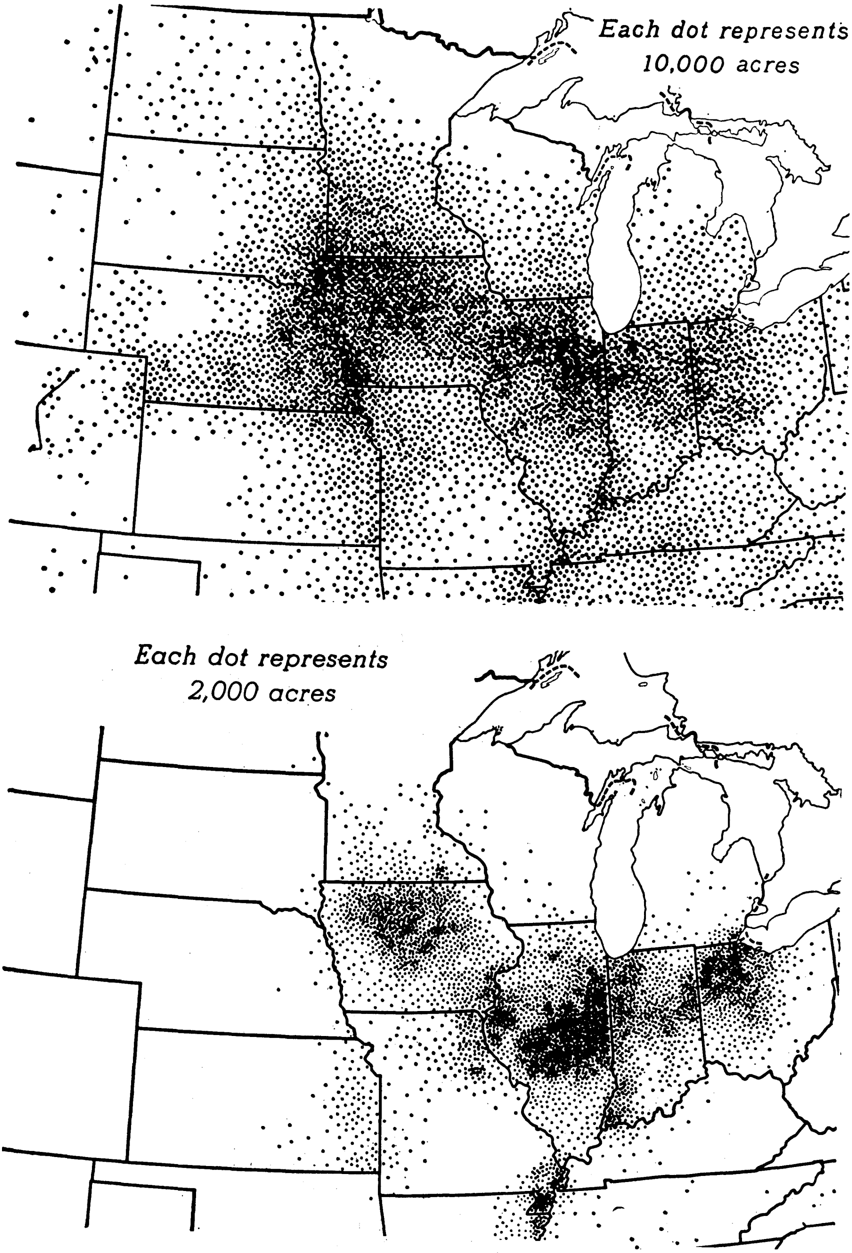


Fig. 30—While corn production (top map–acreage 1939) is general over the Midwest, the heavy producing area extends from western Ohio to eastern Nebraska. Soybean production (bottom map–acreage 1944) is concentrated in much the same area but largely on farms raising crops for sale. Note differences in acres per dot on map. *Bureau of Agricultural Economics.*

shows up in southern Missouri. Flax is grown in lower rainfall areas because weeds are a hazard and wet harvests cause a heavy loss.

Clover or clover and timothy are the principal hay crops in the short rotations of the Corn Belt and Dairy Area. Where the meadow is left more than one year, alfalfa or an alfalfa-brome mixture are common.

In drier years the use of legumes is limited in the Plains Area because they take up too much soil water and handicap the crop that follows. Lespedeza, a crop that will grow on thinner land than most legumes, is well liked in the southern Corn Belt for hay or pasture, especially as a mixture in pastures.

The total acreage of such cash crops as potatoes, tomatoes, peas, sweet corn, dry field beans, vegetables for fresh market, and the like is not very great. But these crops may be quite important to individual farmers who depend on them for a cash income.

In the areas adapted to roughage-consuming livestock, farmers give a good deal of attention to their pasture crops as a cheap source of feed. In some cases the pastures are permanent, while in others they are fitted into the crop rotation plan.

Whatever his program, the farm manager should have detailed information about the best varieties of crops for his locality. He also needs to know about good cultural practices—seedbed preparation, seed treatment, ideal seeding rates, time of planting, proper cultivating methods, best time of harvest, adequate storage conditions, and similar things. Since these vary widely over the Midwest, the farm operator will want bulletins from his own experiment station, and counsel from his local county agent and from skillful farmers in the community.

Since one year's crops affect the yield of those that follow, any crop plan should look to the future as well as to the present. Corn, for example, is a heavy-yielding grain crop that takes a good deal of fertility out of the soil, so it seldom is raised more than two years in a row. Clover, on the other hand, is a soil-building crop—a legume that adds nitrogen to the soil and tends to raise the yield of the following crop. It also may improve the physical condition of both the top soil and subsoil. Obviously, the farmer should consider his whole rotation, not just one year's crops, when he makes his future plans.

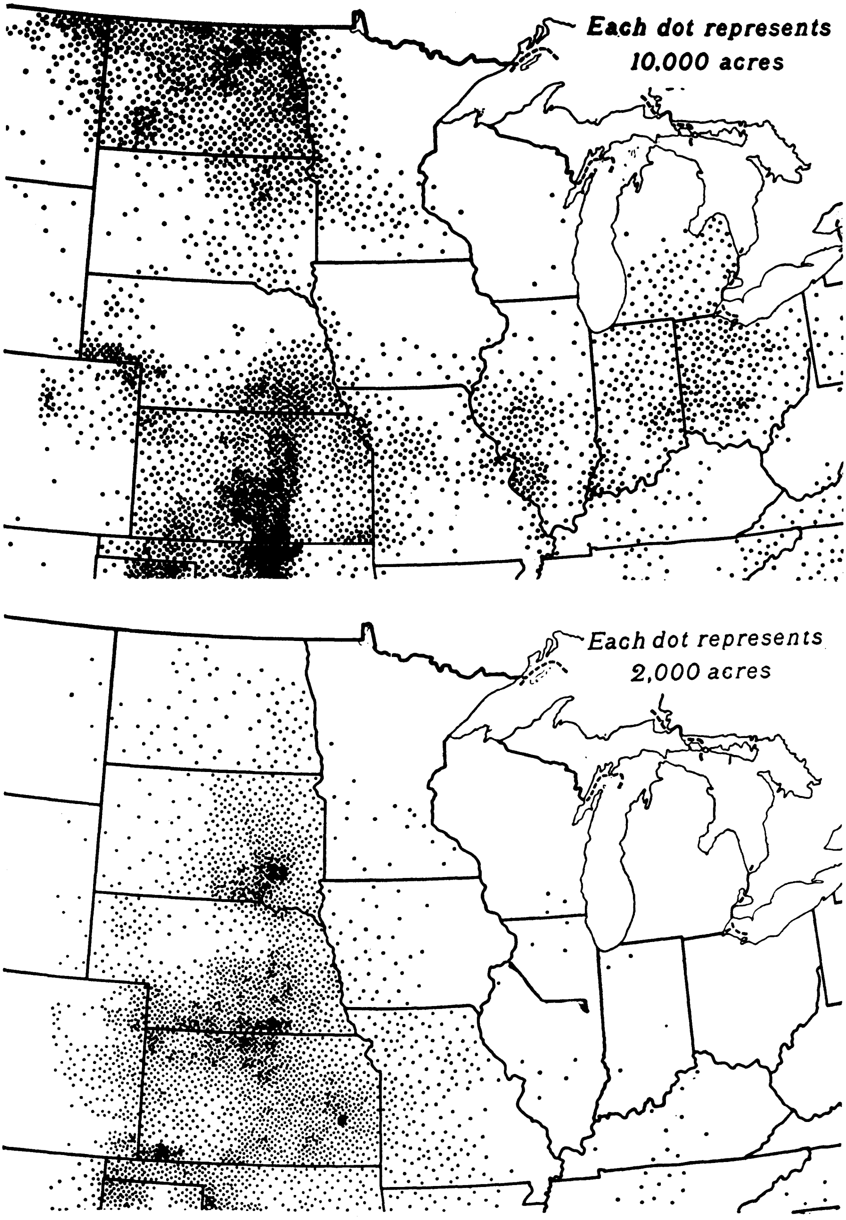


FIG. 31—Wheat production (top map–acreage 1939) is concentrated in two areas. winter wheat being centered in Kansas and spring wheat in North Dakota. A much less intensive area producing soft winter wheat runs from Missouri to Ohio and Michigan. Sorghum (bottom map–acreage 1939) is grown in the drier area west of the main Corn Belt. Note difference in acres per dot on the maps. *Bureau of Agricultural Economics.*

Choose High Profit Crops

When he draws up his cropping system, the farmer's chief question is not whether a crop will produce a reasonable yield. Instead it is: *which crop plan, all things considered, has the greatest advantage?*

From the list of high profit crops for his area, the farmer chooses those that fit his farm. He looks for the best feed grain crops, both cultivated crops and small grains. He also looks at cash crops—wheat, flax, soybeans, potatoes, field beans, canning crops, seed crops, or others. Third are the hay crops, especially the legumes, and pasture crops for rotation use.

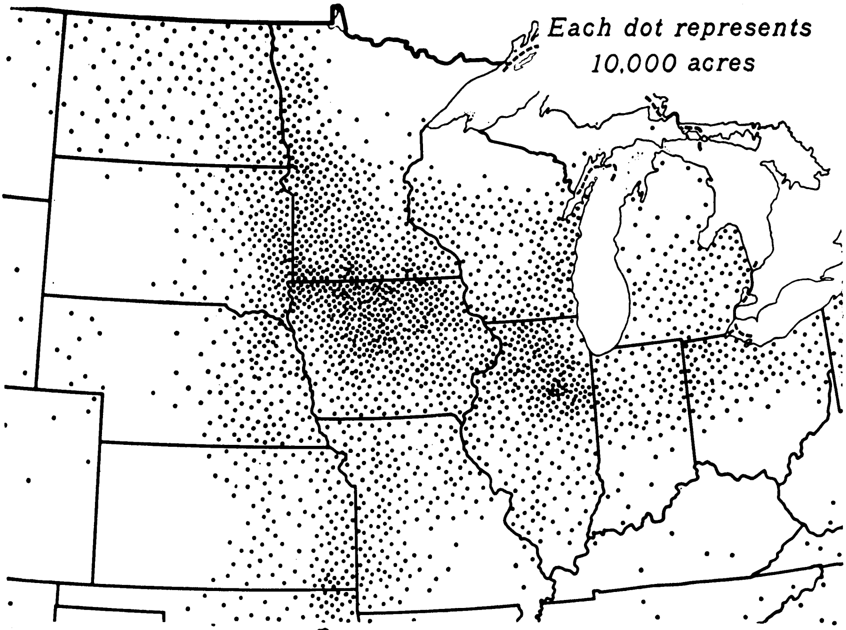
The farm manager can determine the high profit crops for his area by asking local farmers. Their answers will boil down to this: The high profit crops are the ones local farmers want to expand the most, providing their soil will stand it. When they talk about increasing these crop acreages, farmers count both the *value* of the crop and the *cost* of producing it, not the gross value of the crop alone. Because of soil differences, the high profit crops for one kind of soil may not be the best ones for another, even in the same community. It's up to the farm operator to find out which crops fit the soil conditions on his farm best.

Take Risks and Costs Into Account

The Risk Factor

Part of determining which crops to grow is weighing the risks and costs that are involved. There are three kinds of crop risks—weather, insect and disease, and price. Weather risks include the hazards of drouth, hail, frost, wind, and so on. The wise farm manager will investigate which ones are typical of his area and decide whether crop insurance will pay. Insect and disease risks vary from crop to crop—chinch bugs, corn borers, grasshoppers, smuts, rusts, blights, and others. Chemicals, seed treatment, and like measures give adequate protection for some crops, but help others very little.

In the realm of prices, some are more stable than others—corn compared to potatoes, for example. Corn prices have a fairly dependable seasonal pattern but potato prices vary a great



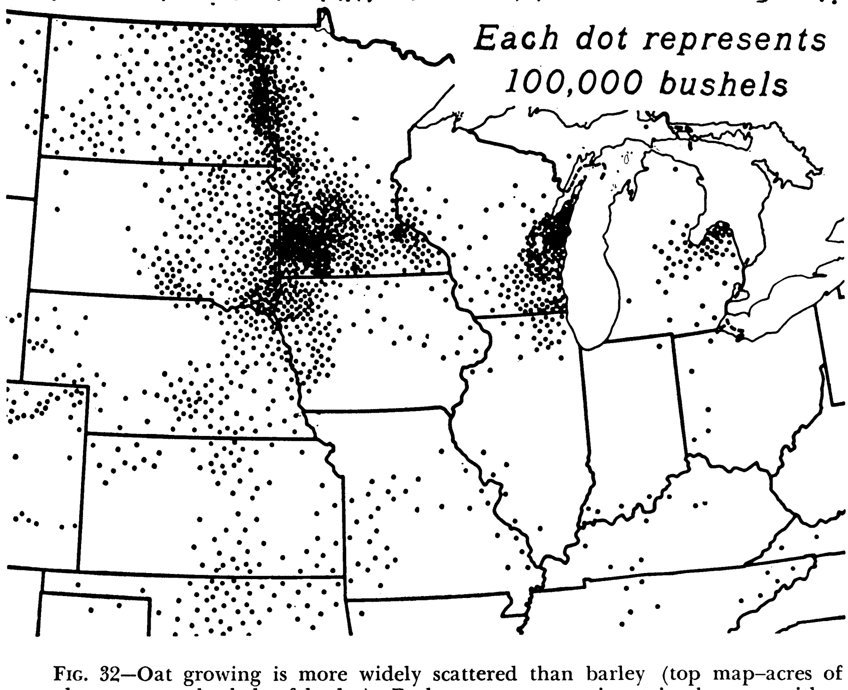


FIG. 32—Oat growing is more widely scattered than barley (top map–acres of oats; bottom map–bushels of barley). Both are more prominent in the area with a cooler and shorter growing season. *Bureau of Agricultural Economics.*

deal. Crops like corn, wheat, and soybeans can be stored if the price is low at harvest time, but perishable crops like tomatoes and melons must be sold regardless of price. Some crop prices have a long-term downtrend while others may have an uptrend. With apples and other tree fruits, the price trend must be estimated for many years ahead before setting out an orchard.

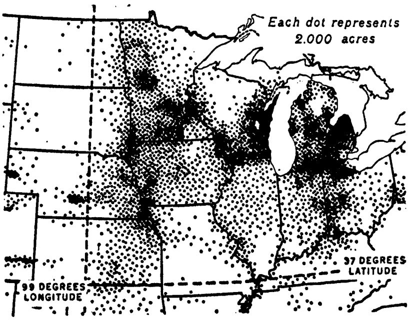
The Cost Factor

On the cost side, the amount of labor needed to raise the crop, harvest it, and get it in storage or to the market varies from crop to crop. In the Plains Area as little as fifteen minutes per bushel may be required to raise and harvest wheat. On small fields in the eastern Corn Belt, on the other hand, wheat may require forty-five minutes per bushel, even with much higher yields. With potatoes, since less machinery is used, as much as thirty to forty minutes of labor per bushel may be required even where yields are quite good.

A varying cost factor is due to the *time* when labor is needed for the different crops. Some crops—corn and soybeans, for example—compete with each other for labor. The first cutting of alfalfa and corn cultivation is another example. Corn and oats, on the other hand, fit "hand in glove" from the labor standpoint.

The number and cost of machines that are needed also should be considered. Machines like a tractor, disc, or harrow are used for nearly all field crops. Several machines serve two or more crops—a combine for oats, wheat, soybeans, and grass seeds; a cultivator for corn, soybeans, and potatoes. Still others (some very expensive) can be used for only one crop—corn pickers or hay balers, for example. On a family-sized farm, certain machines may be in use as little as three to six days a year. The farmer must decide whether his cropping program will justify having an expensive machine sit idle for 360 days so he can have it handy for the few days he will need it.

Other costs include seed, fertilizer, lime, spray material, twine, and so on, as well as the cost of storage buildings if the crop is to be kept. With some crops, storage costs are an important part of the total cost and should be given careful consideration. It doesn't pay, however, to have too much money tied up in



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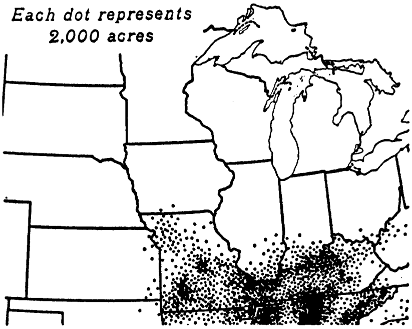
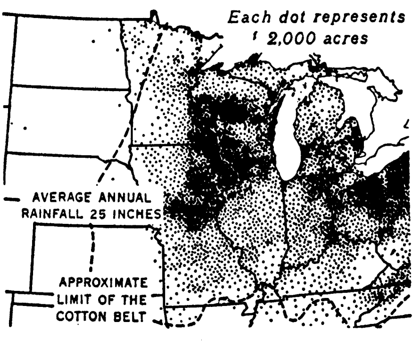
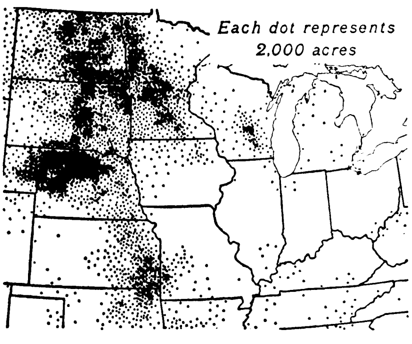


LESPEDEZA



CLOVER AND TIMOTHY HAY



WILD HAY

FIG. 33—Farmers choose the one or more kinds of hay best adapted to their situation. Alfalfa and clover are widely grown but do best in a cooler climate with sufficient rainfall. Lespedeza is strictly a long season legume in the higher rainfall area. In the drier climate of the plains, wild hay has few competitors. *Bureau of Agricultural Economics.*

expensive storage space, especially if the cropping program is a modest one.

More important than many consider it is the cost in soil fertility or soil loss. Some crops, such as corn and sorghums, are hard on the soil. Others, like soybeans on rolling land, cause the soil to wash away easily. Or the crop may pull heavily on some soil elements but not on others. Thus, while alfalfa takes a great deal of lime and phosphate out of the soil, it can be used to build up soil nitrogen by feeding the crop and returning the manure to the land.

Make A Soil Map

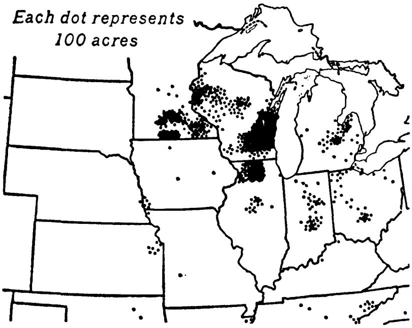
Before starting his crop plan, the farmer should study the ability of his soil to produce. Many men have lived on a farm for several years without doing this job carefully. A good soil map is an inventory of the farmer's land that should show the strong and weak points of each field.

To map his farm, the operator should make a reasonably accurate outline of the farm area and mark on it the different kinds of soil according to physical characteristics. Several divisions may be needed since it's not uncommon to find a half-dozen kinds of soil on a single farm. A typical list might be:

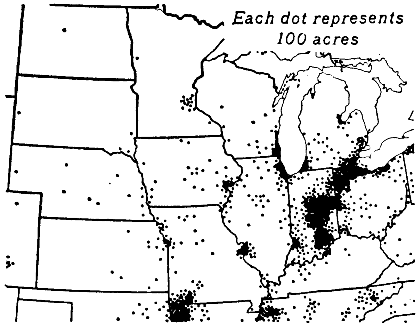
1. Good cropland
   (a) level to gently rolling
   (b) where soil erosion is a problem
2. Medium cropland
   (a) level to gently rolling
   (b) where soil erosion is a problem
3. Fair cropland
4. Permanent pasture land
5. Land for timber or other non-tillable uses

The operator may find that the level and more rolling land needs a different rotation. Perhaps terraces or other erosion control measures will help save soil. Drainage ways should be marked on the map as well as the sandy land, wet spots, stony places, and similar problem areas.

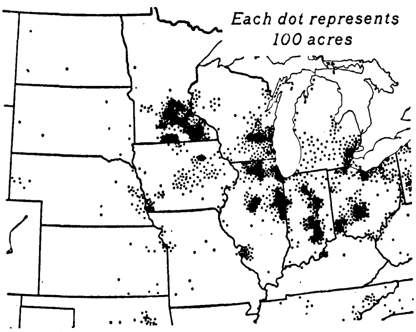
By using a soil auger, the farmer can make a really thorough soil examination. A one-inch wood auger with the shank length-



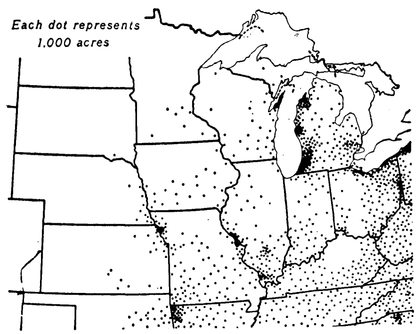
GREEN PEAS



TOMATOES



SWEET CORN



ORCHARDS AND VINEYARDS

FIG. 34—The canning crops are specialty ones; peas are a cool weather crop and tomatoes a warm weather one. Sweet corn is more widely grown. Commercial fruit growing is limited, for the most part, to certain favorable spots. *Bureau of Agricultural Economics.*

ened to three feet will do. Both subsoil and topsoil should be examined since they affect the ability of the land to produce. Depth and texture of topsoil and subsoil should be checked too. Some soils are underlaid with sand, gravel, or rock which may mean that they are drouthy. Lime and fertilizer put on them may leach out rapidly. Some land has a tight subsoil which makes it slow to take in water, slow to dry out, and which interferes with deep rooted crops. Soils may be "cold" or "warm" where crops start slowly or quickly in the spring. Fine-grained soils that puddle easily should not be tilled when too wet or too dry or clods will form that are hard to work into a decent seed bed. The young farmer or a man who is new to the community should talk these problems over with experienced farmers for useful suggestions.

Save Your Soil

Because the soil is one of the farmer's main resources, good judgment tells him not to let it go to waste. In earlier days when farmers could move to new land if a farm became too poor, people gave little thought to the need for saving the soil. Now a farmer who lets his soil wash away without trying to save it is no different from a careless man who doesn't bother to plug a hole in the bottom of his granary. In both cases resources are wasted, but soil erosion has longer time effects as well.

The long neglect of soil conservation has focused public attention on this important problem. Actually, though, the farm family has as big a stake as anyone else in keeping the soil from washing or blowing away. While many say that the farmer's motto should be "Save the soil," the good farm manager knows this is only part of the truth. The real motto both for himself and in the public interest is: "Keep the soil but use it too."

On any particular farm, one or more of the following three soil-conserving methods may be needed:

1. *Use of soil-conserving crops in the rotation.* Fine-rooted grasses hold soil in place the best. Some are low value crops like timothy and redtop, some higher value like bromegrass. Legumes are next best to hold the soil in place. Legume-grass combinations such as alfalfa-bromegrass or red clover-timothy mixtures often are used. Small grains stand third in line in

reducing erosion. Fall-seeded ones such as winter wheat protect the land in winter and early spring while spring-seeded ones do not. Crops grown in cultivated rows such as corn or soybeans are the most erosive kind.

Much can be done to reduce erosion by growing more soil-conserving crops in the rotation. But the farmer must remember that an extra large amount of hay or rotation pasture in proportion to feed grain often is hard to market at a profit. The result is that many farmers prefer to use other erosion control methods rather than have so much grass in the rotation.

2. *Use of erosion control practices.* Contour farming or "farming around the hill on the level" is the most common control practice. This farming across the slope instead of in straight rows calls for the use of carefully established contour guide lines.

Sometimes crops are laid out in strips on the contour. Known as *strip cropping,* this practice works best when laid out across long, moderate slopes. It is harder to manage where rotation pastures are needed and may cause losses where chinch bugs and some other insects are troublesome. Where the land is more steeply sloping, contour planting alone may not be wholly effective.

Other practices include *buffer strips* of grass left across the slope on the contour, usually twenty feet or so in width. Grassed waterways in the drainage ways should be standard practice.

3. *Use of mechanical controls.* One of these is terracing, or man-made waterways constructed on the contour. Skilled help is needed to determine where they can be used to advantage, how they should be spaced, and in their construction. *Erosion control dams* are used under certain conditions—when deep gullies are a problem, for example. In place of mechanical controls, *tree planting* may not only save the soil but produce a crop of timber as well.

FIG 35—A good crop plan includes a well designed crop rotation. Soil conservation methods and other practices used should be suited to the area. The careful manager sets up a plan that gives a large total output in proportion to the land, labor, and capital used. The two scenes, taken in the same community, show a sharp contrast between a carefully planned crop program and a carelessly planned one. Photos by "Parma."

TABLE 26

HOW CONTOUR FARMING AFFECTS CROP YIELDS

Crop	Yield Per Acre		Percentage Increase
	Without Contour Farming	With Contour Farming	
	(Bushels)	*(Bushels)*	*(per cent)*
Corn *	57.5	64.4	12
Corn †	69.7	78.9	13
Soybeans *	20.8	23.5	13
Soybeans †	23.6	26.3	11
Oats *	43.1	50.0	16
Oats †	47.5	52.9	9
Wheat *	20.0	23.4	17
Wheat ‡	15.8	18.8	19

* 7-year average, Illinois farm records.

† Iowa—Corn 6 years; soybeans 3 years; oats 2 years yield results.

‡ 5-year average, Dodge City, Kansas.

The county agent and Soil Conservation Service worker can give advice on methods adapted to the area. In some communities, experienced farmers will have suggestions. In others, few have had enough experience with the more complicated practices to furnish the necessary details.

Table 26 shows typical increases in crop yields resulting from contour farming.

Of course, not every farmer can increase crop yields by the amount shown in Table 26 simply by contour planting. Depending on local conditions, results may be better or poorer than those shown, and at times yields may even be reduced. From the long-time viewpoint, however, contour farming is a wise practice on farms where it will help stop soil erosion, whether yields are increased greatly or not.

In many areas of low total rainfall, much of the water falls in quick, dashing rains. Contour cultivation helps prevent heavy soil washing on the gently sloping land in these areas by leaving hundreds of small water channels that hold the water back until it can soak into the soil. Unless the cultivation follows the correct contour, however, more erosion may occur rather than less. Other water conservation methods are clean ground fallow and basin listing. They are used in the Plains States to save rainfall for the following crop.

Check on Soil Fertility

If high profit crops are to be grown successfully, it is important to know a good deal about the farm's different soils. There are four factors to consider.

First is the degree of acidity. Some soils are slightly acid, or sour, and need a ton or two of ground limestone, while others require four to six tons to grow most legumes successfully. The county agent can make a simple test to determine limestone needs.

Plant food content is an important guide to soil fertility. On most soils, nitrogen, phosphorous, and potash are the elements that may be lacking. Their abundance or scarcity in available form is a big factor in deciding what rotation should be used and if commercial fertilizer is needed. Reasonably accurate fertility tests can be made at a qualified laboratory. Again, the county agent is the man to see, since he can tell the farmer where to send soil samples.

The third thing to look for is humus content. Humus comes from decayed plant material, and soils with enough of it are more easily tilled and absorb moisture better.

Finally, many farms have areas where special soil problems exist. Some soils have high lime or alkali spots, or peat or muck areas. Others have claypan (or hardpan) layers, or other conditions that affect the cropping system or call for special treatment.

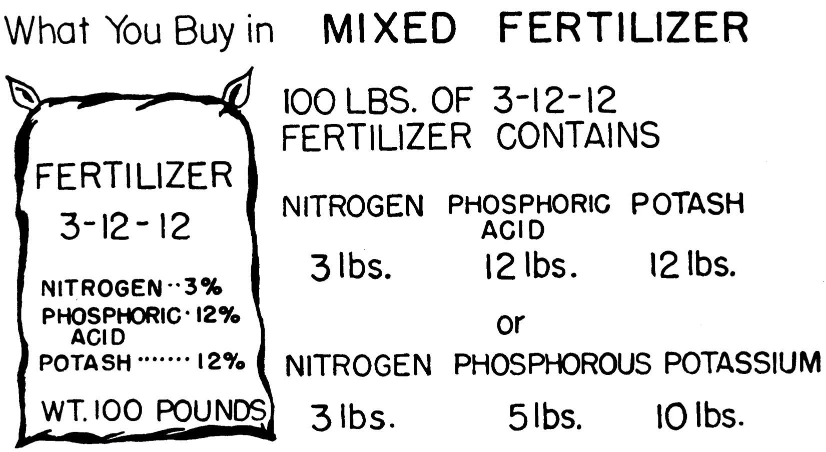


FIG. 36—Mixed fertilizer usually contains three fertility elements as shown on the fertilizer bag above. The needs of the particular soil and crop as well as the cost and expected crop prices should guide the choice of mixture and the amount to be used.

Where good county soil maps are available, the farmer can find out a lot about the soils of any particular community. However, the maps probably will not tell him as much about a particular farm as he would like. He can get some information from experienced local farmers, but there is no substitute for careful study of the soil by the farmer himself.

What About Fertilizer?

Once his soil tests are made and he knows what is needed, the farmer must find the most economical way to put into this soil the elements that are lacking.

Nitrogen usually can be added most cheaply by raising legume crops, clover, or alfalfa, or by spreading barnyard manure. Legumes cannot build up soil nitrogen, however, if all the hay crop is removed and nothing returned. Some crops and soils, of course, can use profitably the larger amounts of nitrogen found in commercial fertilizers. These usually are mixed fertilizers that have other elements too, although at times straight nitrate applications (such as ammonium nitrate) will pay. Because nitrogen is expensive to buy, the wise manager will take care of his nitrogen needs by good rotations and careful handling of barnyard manure as much as he can.

Phosphorus is the scarce element in many soils. Barnyard manure contains some, but the usual source is to buy it in commercial fertilizer. Acid phosphate, or super phosphate, is the most common form in mixed fertilizers, although there are other kinds with a higher percentage of phosphate per pound of fertilizer. Phosphates, together with lime, are especially useful in starting a legume or legume-grass seeding. They also are used on grain crops such as corn and wheat in the Corn Belt and on such crops as potatoes, tomatoes, or truck crops.

Potash, like phosphorus, must be purchased as commercial fertilizer if much is needed. Sulphate and muriate of potash are common forms. Many crops do not remove potash from the soil as rapidly as they do nitrogen and phosphorus, so it is needed less often. But there are many soils where crops do respond profitably to potash fertilizers. The only way to know is to check up on the soil conditions on the particular farm.

Lime, while not primarily a fertilizer, is a most important soil element. It is necessary for a good growth of legume crops, especially sweet clover and alfalfa. Limestone should be finely ground to be of most value, since coarsely ground limestone usually will not dissolve enough to be available to the plant. Marl is another form of lime available in some areas, but whatever lime product is used, its value will depend on its purity and fineness.

How To Know if Fertilizer Will Pay

Three management problems are involved in deciding whether a farmer should use fertilizer on a particular crop. They are the same kinds of decisions that appear again and again in managing a farm.

1. Should the practice be used at all—in this case, should fertilizer be used?
2. If used, in what way will the practice pay best—in this case, how much fertilizer should be used, what kind, and on which crops?
3. How will time and money used in adding this practice to the farm business compare with other profit opportunities—in this case, will the work and money involved pay best if used to put on fertilizer, or would they make a greater profit if put somewhere else in the business?

A farmer must have some facts to start from. In the case of fertilizer he usually gets them from his state experiment station or local experimental field. He needs to know that the results have been carefully measured and checked. Even so, he must be careful to see whether they apply to the kind of soil on his own farm.

Suppose, for example, an Indiana farmer looks at fertilizer results as his experiment station reports them in Table 27. His question is, "Will it be profitable to top dress wheat with nitrogen in the spring?" The experiment station report in Table 27 shows the results of tests when mixed fertilizer was applied to wheat in the fall and nitrogen was used as a top dressing in the spring.

Table 27 shows that thirty-six pounds of nitrogen per acre used in top dressing wheat in the spring gave the greatest in-

TABLE 27
How Top Dressing Wheat Affects the Yield

Treatment	Wheat Yield	Increase Due To Nitrogen
	(Bushels)	*(Bushels)*
No Nitrogen	27.7	....
12 lbs. Nitrogen	29.7	2.0
18 lbs. Nitrogen	31.4	3.7
24 lbs. Nitrogen	32.7	5.0
36 lbs. Nitrogen	34.6	6.9

(Somewhat simplified summary from Purdue Circular 242 [revised])

crease in yields. But that doesn't necessarily prove that thirty-six pounds is the ideal rate of application.

The next step is to take these figures and find out how much extra wheat was produced as more and more nitrogen was used. This is shown in Table 28.

The results now show that the largest rate of increase comes when eighteen pounds is used. But an increase also was obtained with thirty-six pounds of nitrogen per acre. Which is the best amount—eighteen, twenty-four, or thirty-six? To answer that question the farmer needs to know how much will be added both to his income and expenses if various amounts of nitrogen are used. Table 29 shows the net gain per acre from applying nitrogen at different rates. In compiling the table, fertilizer was figured at two price levels. A flat charge per acre was made for the use of the tractor and fertilizer spreader, again at two price levels. Three different selling prices for wheat were used. The detailed arithmetic is not shown, only the gain or loss per acre from top dressing wheat at the different rates.

TABLE 28
Effect on Wheat Yields of Using More Nitrogen Fertilizer

Pounds of Nitrogen Used Per Acre		Extra Wheat Yield Bushels	Pounds of Wheat From Each 6 Pounds More Nitrogen
Total	Additional		
None	None	....	....
12	12	2.0	60
18	6 more	1.7	102
24	6 more	1.3	78
36	12 more	1.9	57

Making the Decision

If the farmer works all this out, he has a definite guide for deciding how much fertilizer to use in top dressing wheat. In using Table 29, however, there is one important point for him to keep in mind: His "out-of-pocket" costs were included but the use of labor in putting on the fertilizer was not included. If the time to top dress wheat comes when he is very busy, he should put a high value on the labor needed. If it comes during a slack period, any additional income he gets for his extra work

TABLE 29

POSSIBLE PROFIT FROM TOP DRESSING WINTER WHEAT

Situation	Price of Wheat Per Bu. Is:	Added Income After Paying for Fertilizer and Machine Cost When Nitrogen Used Per Acre Is				
		12 Lbs.*	18 Lbs.*	24 Lbs.*	24 Lbs.†	36 Lbs.‡
Ammonium Nitrate costs $65 per ton. (10c per lb. for nitrogen) Tractor and machinery cost for spreading is 50c per acre.	$1.00	$ .30	$1.40	$1.90	$1.70	$1.80
	1.50	1.30	3.25	4.30	4.25	5.25
	2.00	2.30	5.10	6.75	6.80	8.70
Ammonium Nitrate costs $100 per ton. (15.4c per lb. N.) Tractor and machinery cost is 70c per acre.	$1.00	$ .45	$ .20	$ .40	$ .00	$-.75
	1.50	.45	2.05	2.80	2.55	2.70
	2.00	1.45	3.90	5.20	5.10	6.15

* Put on in one application.
† Put on in two applications.
‡ Put on in three applications.

in top dressing wheat will be money in his pocket. Moreover, he may have other uses for his money besides buying fertilizer and he should take this into account.

The farmer must allow for the fact that the extra wheat yield will not be exactly as the experiment shows. His soil may differ, and yields from year to year are never the same. Neither does he know when he applies fertilizer in the spring, the exact price he will get for wheat at harvest time.

After weighing all these points, the farmer decides whether it seems worth while to top dress wheat. At $1.50 or $2.00 per bushel for wheat and $65.00 per ton for ammonium nitrate, it looks like a pretty sure thing for the farmer in Table 29. Very likely he will use twenty-four pounds in one application. Or he might try thirty-six pounds in three applications if he has plenty of time and doesn't consider this too much of a chore. But at $1.00 per bushel for wheat, the small additional income might not be worth the risk and effort. And at $100.00 for fertilizer and $1.00 for wheat, he would not consider using the fertilizer.

Look Beyond Experimental Results

Few farmers will take time to do the detailed pencil work shown in Table 29. And this much figuring isn't altogether necessary unless a lot of money is involved in the decision. What the example does is to demonstrate the thinking process that every farmer must go through in making such a decision. In other words, many additional steps are necessary after the farmer looks at the usual report of a yield experiment before he is ready to decide what to do about using the practice on his farm. Sometimes a practice will pay, sometimes not, even when profitable results are shown in the experimental test.

TABLE 30
FERTILIZER RESULTS IN FOUR STATES

Location and Time Period	Treatment	Average Yield Per Acre Per Year: Corn 1st Year	Corn 2nd Year	Oats	Wheat	Hay
		(Bu.)	*(Bu.)*	*(Bu.)*	*(Bu.)*	*(Tons)*
3-year rotation	None	43.8	......	......	18.0	1.4
Lafayette, Ind.	Lime, Manure	65.9	......	......	28.4	1.9
1917–1940	Lime, Manure, 0–12–6	69.6	......	......	33.2	2.1
3-year rotation	None	47.4	......	49.0	......	1.2
Urbana, Ill.	Lime, Manure, Phosphate	66.5	......	67.6	......	2.6
1904–1940						
4-year rotation	None	56.1	51.5	59.9	......	2.1
Ames, Iowa	Manure	67.9	61.1	63.7	......	2.7
	Lime, Manure	70.0	61.5	63.3	......	2.9
1915–1938	Lime, Manure, Superphosphate	75.2	62.3	71.6	......	3.3
4-year rotation	None	44.9	......	29.1	22.4	1.2
Columbia, Mo.	Commercial Fertilizer	50.1	......	40.4	29.6	1.6
1914–1938	Lime and Commercial Fertilizer	51.4	......	45.0	27.6	2.1
	Manure	56.1	......	49.6	26.2	1.9

Many reports of experiments are incomplete. For example, the different rates of fertilizer application may be missing. When this happens, the farmer may want to write his experiment station for information of that sort. Each farmer must find his own way of using the results of experimental work as a basis for decisions on his own farm.

Results of the use of various fertilizers on Corn Belt rotations are shown in Table 30. Only one rate of application is reported, not the several different rates that the farmer really needs to make a good decision.

Local Fertilizer Studies

Fertilizer results vary a great deal on different types of soil, on the same soil type on different farms, and in the same field in different years. It is impossible to give any but general recommendations. On certain soils, especially in the western part of the central states, the use of commercial fertilizer seldom pays. For local fertilizer recommendations, the farmer should see his county agent.

The wise manager continually studies the question of which pays more: to spend money for fertilizer or put it to other possible uses. This means the kind of careful planning that is especially important to the young farmer who is short of capital. Money spent for fertilizer gives a rapid turnover of capital, which is in its favor *where the use of fertilizer is profitable.*

The choice between buying a mixed fertilizer of the separate elements depends on whether a complete fertilizer is needed and the cost of the separate ingredients. With mixed fertilizer, the bag is marked with figures showing nitrogen as the first element, phosphoric acid as the second, and potash the third, such as 4-16-4. Some states require the bags to be labeled not only with the analysis but with the ingredients as well. Although responsible firms put out a dependable product, the results from the use of their fertilizer may not be all that is claimed, since they are likely to report only the most successful results. Mixed fertilizer of low analysis ordinarily contains a good deal of filler.

Crop Fertility and Feed Value

Table 31 shows the fertility elements contained in common Midwest feed crops as well as their feed value per acre. The wide variation in fertility elements removed by the different crops

TABLE 31

FERTILITY CONSTITUENTS AND FEED NUTRIENTS PER ACRE OF CERTAIN CROPS*

Crop	Reasonable Yield	Fertilitzer Equivalent of Fertility Contained in Crop†			Type of Feed	Digestible Feed Per Acre†	
		Nitrogen as Ammonium Nitrate	Phosphorus as 20% Superphosphate	Potash as 60% Muriate		Protein	Total Nutrients
		(*Lbs.*)	(*Lbs.*)	(*Lbs.*)		(*Lbs.*)	(*Lbs.*)
Grains‡							
Corn	50 bu.	127	86	17	Fattening	196	2,210
Oats	40 bu.	76	48	10	Growing	120	915
Barley	30 bu.	84	62	15	Grows and fattens	134	1,130
Wheat	20 bu.	78	60	11	Like barley	136	1,000
Sorghum	20 bu.	55	39	7	Like corn	87	800
Soybeans‖	22 bu.	240	90	51	High protein (also contains oil)	433	1,140
Silage							
Corn	9 T.	205	123	108	Starchy roughage	234	3,370
Sorghum	12 T.	177	110	178	Like corn silage	192	3,620
Alfalfa§‖	4.5 T.	443	134	219	Protein silage	460	2,600
Hay							
Alfalfa§‖	2.5 T.	362	120	203	High in protein	530	2,510
Red Clover§‖	1.8 T.	210	74	114	Med. in protein	250	1,870
Soybean‖	2.0 T.	292	115	66	High in protein	440	2,020
Clover and Timothy	1.8 T.	153	70	105	Varies in protein	160	1,730
Lespedeza‖	1.3 T.	164	56	44	High in protein	240	1,350

Example: 50 bushels of corn as grain contains as much nitrogen as 127 pounds of ammonium nitrate, as much phosphorus as 86 pounds of 20% superphosphate and as much potash as 17 pounds of 60% muriate.

For comparison with the fertility removed by crops, a six ton (average) application of barnyard manure contains as much nitrogen as 180 pounds of ammonium nitrate, 150 pounds of 20% superphosphate and 100 pounds of 60% muriate of potash.

* By feeding the crops to livestock and returning the manure to the land, a good deal of the fertility is kept on the farm.

† Computed from Morrison's "Feeds and Feeding."

‡ Fertility and digestible feed in grain only.

§ The full year's crop.

‖ These crops are legumes. Under proper conditions, much of the nitrogen they contain is taken from the air. They are "soil builders." When all of the crop is removed from the land, their soil building value is greatly reduced.

indicates the large amount of soil fertility that needs to be present in a form available to the plant if continuing high yields are to be obtained. While water requirements are not given, lack of timely rainfall can be a greater factor in reducing yields than fertility shortages. The table is not meant to be a guide to the use of fertilizer, and neither should it be used for a fertility "balance sheet."

Table 31 also indicates the importance of rotations. Corn needs to follow a legume handled so that some of the nitrogen is left in the soil. Oats, on the other hand, requires much less fertility for a normal crop so can readily follow a heavy user of fertility like corn and still give satisfactory yields.

Rotations Increase Crop Yields

While both natural and commercial fertilizers are important to good farm management, "keeping the soil and using it too" depends mainly on sound crop rotation plans.

Good rotation programs will increase total production, reduce soil erosion, and build fertility. Although no set of rotation experiments will show a farmer the exact results he will get on his own farm, he can use them as a general guide. Figure 37 shows the expected production from 100 acres of cropland in the Corn Belt based on rotation experiments in Missouri, Indiana, and Iowa.

The results in Figure 37 are from experimental fields and are on better than average land. Only the effect of the rotations on production is shown. Rotations also affect physical structure of the soil and may increase or decrease both its water holding capacity and its tendency to wash or blow away.

In Missouri, on medium grade land, a rotation with one-third of the land in legumes increased the total crop output by one-fourth over corn alone. A little less grain was raised. On this soil a four-year rotation with two years of small grain had less merit than one year of small grain since oats do not produce a large amount of grain per acre.

In Indiana, on good soil, a five-year rotation with 20 per cent of the land in legumes and 80 per cent in grain gave a larger grain output than where all of the land was in corn and oats. In addition, hay production was good. On rolling land, however, a rotation with three years of row crops out of five would make the erosion control problem harder to handle.

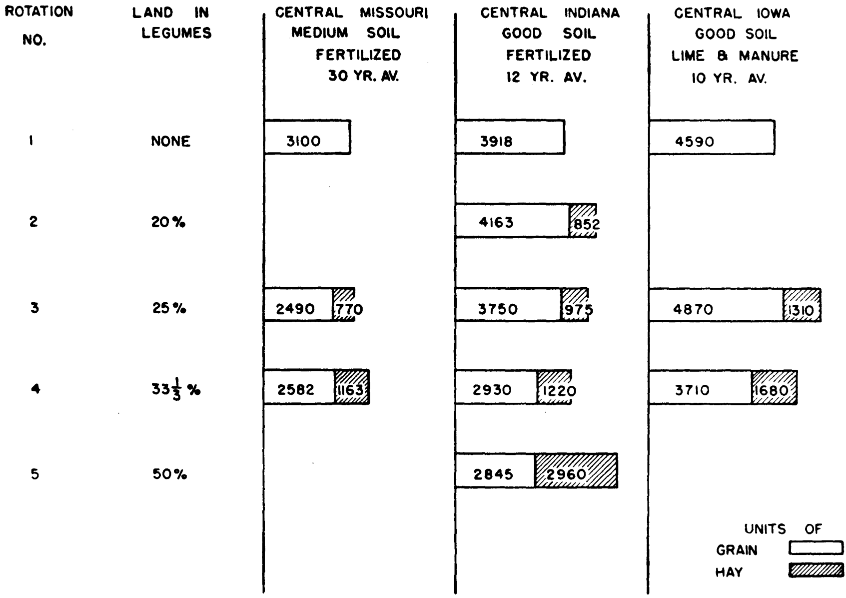


FIG. 37—Feed units per 100 acres with five rates of legume use. One feed unit is one bushel of corn or its equivalent in feeding nutrients.

Rotations:	Central Missouri	Central Indiana	Central Iowa
	1. C	1. C-O (sw. cl.)	1. C-O
	2. —	2. C-C-SB-W-CL	2. —
	3. C-O-W-CL	3. C-C-W-CL	3. C-C-O-M
	4. C-W-CL	4. C-O-CL	4. C-O-M
	5. —	5. C-C-W-A-A-A	5. —

The proper rotation to use depends on the soil, location, prices, costs, and the farm plan. Note how more or less legumes in the rotation affect both the total grain production and the production of all crops. Good managers prefer a rotation that produces a large total amount of grain rather than one that gives the highest grain yield per acre.

One-fourth of the land in legumes on good Indiana soil gave a good balance of crops and a large total yield. But the three-year rotation that kept one-third of the land in legumes had little to recommend it from the production point of view. A three-year rotation of corn-wheat-alfalfa (not shown in the diagram) was much better since it provided nearly as much grain as where half of the land was in corn.

The six-year rotation with three years of alfalfa produced a lot of feed but not as much grain. Nearly half of the feed units were hay, which would fit well only on intensive dairy farms. Farmers producing meat animals would use a larger proportion of feed grain than this.

Iowa Rotation

Many of the most fertile soils in Iowa have been cropped for less than 100 years. As a result the native fertility is not yet drawn down far enough so that a large proportion of legumes in the rotation seems important to many farmers. But on less fertile Iowa soils, the farmers are in a situation more like those in Indiana or Missouri and should plan accordingly.

On fertile Iowa soils, keeping less than half of the land in corn seems to have little merit from the production standpoint. Because of the high yields, farmers on good bottom land soils and some fertile, level uplands plant more than half their acreage to corn. Where more roughage-consuming livestock are kept, however, extra legumes in the rotation are more easily used at a profit. Wherever Iowa soil is highly productive, the low output of the three-year rotation including one year of oats shows up.

If soil erosion is a problem, farmers should consider the erosive effects of the rotations they use.

Rotations in the Plains

An important part of the rotation problem in the western Plains Area is to hold the water where it falls so that enough moisture can be built up to grow a crop. Since corn requires a lot of moisture and has limited drouth resistance, it finds less favor than wheat or sorghum under such circumstances. But in the eastern Plains Area where more rain falls, a cultivated crop like corn may help hold back moisture that otherwise would run away. In the drier areas to the west, alfalfa saps the subsoil so deeply if left down more than one or two years that several years of rainfall are needed to restore the ground water. A moisture-saving measure in these areas is to keep part of the cropland fallow and free from a green growth.

The effects of two cropping plans on wheat production in various parts of the Plains Area are shown in Table 32.

In the lower rainfall area of the Plains States, wheat following fallow yielded much better than wheat every year. Where soil moisture is the main factor limiting yields, as is true in parts of North Dakota and western Kansas, half of the land in wheat brings a higher total yield than putting all of the land in wheat. The production costs of putting in and harvesting fewer acres are less too.

TABLE 32
YIELD FROM 100 ACRES OF LAND

Location	Kind of Wheat	Wheat Every Year	Wheat and Fallow Alternate*
		(*bushels*)	(*bushels*)
S. West Kansas	Winter	930	965
W. Central Kansas	Winter	1,650	1,165
S. West S. Dakota	Spring	1,190	1,035
S. West N. Dakota	Spring	1,100	1,060

* Production from 50 acres since the other is lying fallow.

Fit Rotation to Type of Farming

The rotation and the type of farming to be used must be considered together. Cash crop farmers, for example, give much emphasis to producing a large total of high value crops. When they plan their rotations, these are the considerations that guide them:

1. Both the value of the crop above the cost of growing, and the total value.
2. Whether there is a ready sale for the crop, and whether it can be stored without serious loss.
3. The drain on soil fertility if the crop is sold.
4. The cost of replacing fertility, either now or in the future.

Livestock farmers give special attention to the way the crop plan balances up as to feed supply. If more hay is needed, for example, it will have a high value in the rotation. But if the farm already has a surplus, more grass would have little added value. Often a lower value crop such as oats is included in the rotation simply because it fits well as a nurse crop or supplies a kind of feed that cannot readily be bought. Obviously the usual supply of feed crops in the area, whether scarce or plentiful, will affect the rotation plan of the farmer who buys part of his feed.

Because crops vary greatly in their value per acre, the farmer needs to know what yields he can expect and what the crop usually is worth. He also should be aware of the risk in growing the crop. Some crops are quite dependable producers even with variations in weather, while others are sensitive to abnormal conditions. Flax, for example, is hard to save during a rainy harvest. In the Corn Belt, soybeans, on some soils, is considered a more dependable crop than corn. By talking to good farmers of the community, the beginner can find out what crops fit best in the area and what cropping practices seem to be most profitable.

Getting Maximum Crop Output

The following three-step example summarizes the effect that improving the rotation system can have on crop production where rainfall is not the limiting factor.

1. Suppose a farmer is raising grain entirely and no legumes are being grown in the rotation. He will harvest a certain total production of grain in an average year. Now let the farmer add a small acreage of legumes to the rotation, say one year in five. On most soils, two results will be noted; the total crop output will be increased and the total production of grain will increase as well. Obviously, legumes are unusually valuable at this stage of the rotation plan because they result in additional grain production. The farmer could discard all of the legume crop and still be ahead.
2. Next the farmer adds a larger acreage of legumes to the rotation and reduces the acreage of grain. He soon sees another change. He reaches the point where grain production begins to decline even though the total output of all crops may still increase. The yield of grain per acre may be rising but this is more than offset by the smaller acreage of grain crops. He is now at the stage where forage begins to be a substitute for grain in the cropping system. Farmers often find it to their advantage to stop increasing the legume acreage when the maximum amount of grain is obtained.
3. If the farmer adds an even larger acreage of legumes and decreases the grain acreage further, he comes to still a third change. Both the total production of crops and the amount of grain decline. He now is past the point of largest total production, even though the production of forage still is increasing. The point of diminishing grain output was passed earlier and he has carried the legume part of his rotation plan so far that even total crop output is going down.

On a particular farm, the combination of legumes to grain at which these changes take place depends on many things: the type of soil and its depth, previous cropping program, kind and variety of crops used, kind and amount of fertilizer applied, soil management methods used, effect of the particular season, skill of the farmer, and so on.

The farmer, of course, wants to know the point of maximum production for his particular farm. He is interested in a crop production maximum that covers a period of from one to several years, depending on his situation. His plan may call for either a maximum of grain or a high output of total crops, whichever suits his needs best. But no matter what his production goals are, he takes into account the cost side as well as the quantity produced—the effect of high production on future crop yields and the effect of the crops produced on his total business.

The farm manager should study rotation results from nearby experimental fields and the experience of farmers in his community. In the end he must make the best estimate he can for his particular farm, remembering that no other conditions are exactly like his own. Research and experience are useful guides to him but should not be taken as a rule-of-thumb. There is no substitute for the judgment of the farmer himself.

Keep Weeds Under Control

No crop plan can be successful, of course, if weeds are allowed to get out of hand. Some deep-rooted perennials are so hard to kill out once they become established that the only safe course is to do everything possible to prevent them from getting a start. Using clean seed is a big help in weed control, and proper rotations will keep some weeds in check.

For the more stubborn weeds, spraying may be necessary. Since many of the sprays are selective weed killers, the farmer should follow directions carefully so he will know exactly how and when to apply them.

Farmers in most areas will find that state bulletins are a good source of information on weed control.

Pasture

On most farms, particularly those with roughage-consuming livestock, pastures fit into the general farming program as one of the cheaper sources of livestock feed. Each farmer, of course, should appraise his own needs. If, for example, he is short of succulent, early spring pasture his problem is quite different than if he usually runs short of pasture during a summer dry spell.

Many farmers have a general livestock program that includes the need for clean ground pasture for pigs and chickens, a productive all-season pasture for milk cows, and additional grass for heifers and stock cattle. Others may have a herd of beef cows with calves at side, or perhaps be grain-feeding calves or short yearlings on pasture. For the beef cow herd the farmer will want a succulent, high protein type of pasture. For the calves and short yearlings he'll want more of a fattening type of pasture.

Permanent pastures produce a good supply of high quality feed for a period during the spring. The fresh, green grass—palatable and high in protein content—is excellent feed for young animals and milk cows. However, because the very early spring growth is watery, the grass should be given a good start before the pasture is opened to livestock. During the hot summer months, the feed supplied by permanent pastures begins to fall off and is much lower in protein. If milk cows or cows nursing calves must depend entirely on it for their feed at that time of year, the milk supply drops sharply. And if young stock graze on such pasture, their growth is retarded.

Planning the Pasture Program

Farmers east of the Plains Area use three systems to improve their pasture program. The first is to plow up most of the permanent pasture wherever that is possible, and put it into the rotation. The rotation ordinarily used is corn one year (on the contour if on rolling land), then small grain seeded to a pasture mixture, and the pasture left down from two to four years. Lime and fertilizer often is used with the new seeding. Sometimes the small grain is used for pasture. Many farms have two or more fields of permanent pasture. By plowing them at different times, the farmer will not run short of pasture during the year when one of the fields is in corn.

This is an excellent system for increasing both the amount and quality of the pasture and the length of pasture season. A pasture mixture, with the soil properly limed and fertilized, produces a good supply of feed and will not dry up badly during the summer months, as permanent pastures are likely to do. Moreover, the farmer gets some extra grain to feed when the field is in corn or oats.

A second method is to carry out a pasture improvement program without putting the land into a rotation. The improvement may run all the way from seeding lespedeza on thin pastures to a complete pasture renovation program. To get helpful pasture improvement information, the farmer can obtain experiment station bulletins or talk with his county agent.

For those who have timber pasture of land too steep to renovate, another improvement method is to have an extra rotation pasture to use when the permanent pasture begins to dry up. The rotation pasture may be a legume mixture. Some sow a field to Sudan grass to carry through the summer dry period. However, Sudan grass is a high-yielding plant that needs a fertile soil or the use of manure and fertilizer.

Men who are fattening beef cattle on permanent pasture often feed protein cake, usually cotton cake, to advantage during the

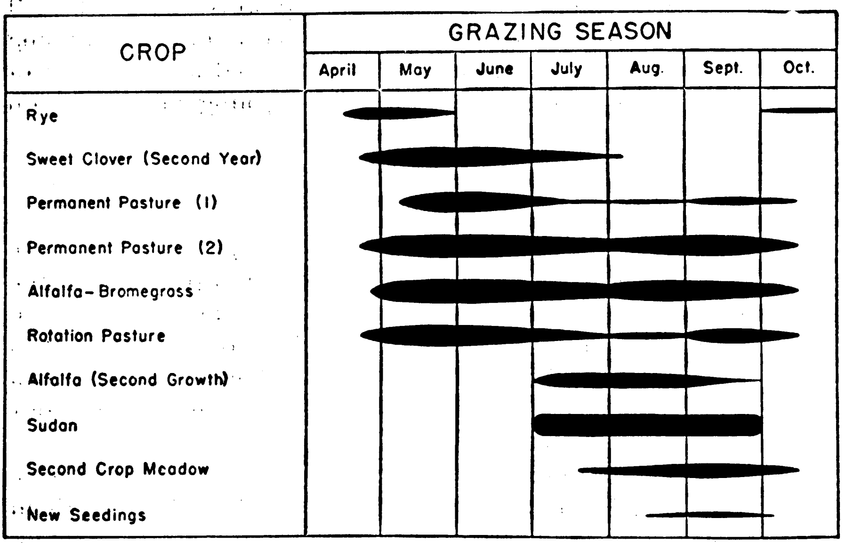


Fig. 38—Pasture calendar. (1) Untreated. (2) Improved with lime, fertilizer, and legumes.

A good pasture program on the livestock farm includes a pasture combination that gives an all-season feed supply during the growing season. The kind of pasture crops to be chosen must fit the location, kinds of soil on the farm, and the livestock program. The calendar is for the central Corn Belt.

TABLE 33
PRODUCTIVITY OF VARIOUS PASTURES*

Type of Pasture	Location	Animal Gains Per Acre
		(lbs.)
Alfalfa	Central Illinois	270
Alfalfa-brome	Central Illinois	250
Brome	Central Illinois	136
Bluegrass (untreated)	Southern Iowa	107
Bluegrass, limed and reseeded	Southern Iowa	174
Bluegrass (untreated)	Missouri	100
Bluegrass and lespedeza	Missouri	155
Bluegrass and lespedeza and sweet clover (lime, phosphate)	Missouri	185

* From Experiment Station Reports.

late summer. The hard summer grass provides a fattening feed but it may need to be supplemented by protein.

In the Corn Belt, a good pasture combination can be worked out by planning ahead for the full pasture season. A helpful guide is the Pasture Calendar, although it must be adjusted to fit local conditions.

Some idea of the productivity of various grasses in areas of good rainfall can be gained by studying Table 33. Quite noticeable is the improvement that comes from having legumes in the pasture mixture. Larger forage yields are obtained because legumes supply nitrogen to the soil and the feed furnished to livestock by the pasture is better balanced. The extra cost of improving the pasture, however, should not be overlooked.

Keep Grassland in Balance

With all the important and good things that can be said about pastures, they have three limitations. First, where land can be used for rotation crops without serious soil loss, the value of pasture per acre usually is lower than that of the better adapted grain crops. Second, most pasture does not "keep" very long. If not used when ready, it has little value later on. Third, a farmer often must use large amounts of capital to get any return from his grass. For example, a man may buy $2,000 worth of steers to harvest $300 worth of pasture—quite a lot of capital to risk for such a small amount of feed. Part of the income from the steers must be credited to capital, management, and risk, and part to the pasture itself.

The farmer's ability to make wise decisions about his pasture land from the soil-saving, fertility, and income standpoints is one mark of a good manager.

Choosing a Rotation

On succeeding pages are common rotations used in the North Central States and comments on their use. Beneath each rotation is the percentage, first of row crops, second of small grain, and third of meadow. If a catch crop for hay, pasture, or plowing under is used, it is shown in parentheses.

Rotation	*Comments*

Rotations for fertile river bottoms or special conditions on good, level land for a short time. These deplete the soil rapidly.

1. Corn – soybeans – small grain (swcl) 66⅔%—33⅓%—0% (33⅓%)	An intensive rotation adapted only to fertile, level land. With sweet clover used as a catch crop in the small grain, and fertilizer applied as needed, this rotation gives a high cash return in the central Corn Belt.
2. Corn – small grain (swcl) 50%—50%—(50%)	Too intensive a grain rotation for long use. Where sweet clover is used as a catch crop on fertile soils, it can be used for a short period of time if the land is level.
3. Corn – soybeans 100%—0%—0%	Not quite as hard on the soil as continuous corn but is not recommended except for short periods under special conditions.
4. Continuous corn 100%—0%—0%	Has little place except on river bottoms that frequently overflow.

Rotations for good to excellent grade cropland, level to moderate slopes.

5. Corn – Corn – small grain – clover 50%—25%—25%	A standard rotation for high fertility soils using 50 per cent row crops. Not so good where erosion is a difficult problem. Corn yields likely will average some 10 per cent less than the comparable three-year rotation, but on good soils the total bushels of corn per farm will be larger.

6. Corn – oats – (swcl) – corn – wheat – clover
40%—40%—20%
(20%)

A feed crop—cash crop combination for good quality land. The cash crop is wheat. By using sweet clover as a catch crop, legumes appear twice in the rotation. Oats can be used twice in the rotation where wheat does not fit in well.

7. Corn – small grain – alfalfa
33⅓%—33⅓%—33⅓%

Preferred by some farmers because the new seeding of alfalfa may be more drouth-resistant and higher-yielding than red clover. The alfalfa hay yield usually is higher but the seeding cost may be greater. Many farmers dislike to plow up a good alfalfa stand after only one year's crop is harvested.

8. Corn – soybeans – small grain – clover
50%—25%—25%

A rather intensive rotation including soybeans as a cash crop. The soybeans may cause sloping soils to erode more than corn does. If winter wheat is the small grain, this will not be so serious since some winter cover is provided. Where wheat is used, the rotation combines a moderate amount of feed crops with considerable cash crops. By using oats, more feed grain is provided.

9. Corn – soybeans – corn – small grain – clover
60%—20%—20%

An intensive rotation for fertile, level soils. Provides both feed and cash crops.

Rotations for medium grade land, or on good land with considerable slope.

10. Corn – small grain – clover
33⅓%—33⅓%—33⅓%

A good rotation from the soil standpoint. On better soils, grain production is lower than with most other rotations. On medium grade soils where erosion is not a serious problem, this rotation can be use indefinitely if phosphate and potash fertilizers are supplied as needed along with manure and lime.

11. Corn – corn – small grain – alfalfa – alfalfa
40%—20%—40%

Rotation with 40 per cent row crops and 40 per cent legumes. The large alfalfa acreage is often difficult to use profitably. Is not widely adapted except on dairy farms or those with a large cattle program. May be used as a minor rotation near the buildings to furnish clean rotation pasture for pigs and young chickens. Corn can be reduced to one year or alfalfa increased to three years if the farmer so desires.

12. Corn – small grain – alfalfa – alfalfa 25%—25%—50%	A rotation that is soil conserving but the proportion of hay to grain requires a large roughage-consuming livestock program unless much grain is purchased. An excellent minor rotation for use near the buildings to provide a clean ground hog system. It also fits dairy farms.
13. Corn – oats – wheat – –clover 25%—50%—25%	A less intensive rotation with only 25 per cent row crops. Fits better on rolling land or less fertile soils.
14. Corn – corn – small grain – clover – timothy 40%—20%—40%	Moderately intensive with erosion control value. Not a very desirable rotation in most areas. Has the fault of the timothy using up the nitrogen provided by the clover crop when it is needed more by corn.

Rotations for fair grade cropland; may or may not have considerable slope.

15. Corn – small grain – clover – timothy 25%—25%—50%	A good soil conserving rotation for soils of medium fertility but is not very desirable from other standpoints. Timothy is a low value crop and would use up nitrogen from the clover crop. It pays much better to follow the clover crop with corn.
16. Corn – soybeans for hay – wheat (swcl) 33⅓%—33⅓%—33⅓% (33⅓%)	A rotation for medium grade, level land with a tight subsoil. Soybeans make a more dependable hay crop than deeper rooted legumes. Uses sweet clover to furnish nitrogen for the corn, help open up the subsoil.
17. Small grain – lespedeza 0%—100%—0% (100%)	A one-year rotation for medium grade soils in the lespedeza area. Provides either grain and hay, grain and pasture, or all season pasture. Helps to control erosion where the land is not too steep.
18. Wheat – clover (red or sweet)	This rotation has limited used. It could be used as a short rotation on sloping land not well adapted to corn or other row crops and where a cash or feed crop is wanted.

Rotations for use in the Plains Area where the moisture supply is limited.

19. Wheat - sorghum - fallow or wheat - wheat - fallow or wheat - barley or oats - fallow $33\frac{1}{3}$%—$33\frac{1}{3}$%—0% or 0%—$66\frac{2}{3}$%—0%	A cash crop-feed crop combination or a straight cash crop rotation for the Plains. Sorghum is commonly used as the feed crop in the winter wheat area and barley or oats in the spring wheat section. Sweet clover may be used as a catch crop in the second year small grain where moisture is sufficient.
20. Wheat - fallow 0%—50%—0%	A standard plan in the western wheat belt where soil moisture is insufficient to grow a crop every year.
21. Continuous wheat 0%—100%—0%	Is used in the Plains States, but is being replaced by a longer rotation.

Although a wide variety of rotations are outlined, the list is by no means complete. Rotations may run all the way from one to six years in length. Many farms can use two separate rotations to advantage on parts of the farm that differ because of soil or slope differences. None of the rotations described on the foregoing pages includes special crops. Such crops usually can be worked into one of the plans in place of all or part of one of the crops that fills a similar place in the rotation. For example, potatoes, tomatoes, sugar beets, or sweet corn can be substituted for field corn. Or field peas could be planted in place of part of the small grain.

All these, of course, are only suggestions. When the farmer sets out to plan his own rotation system they will be helpful. But he also must keep some important general facts in mind. They are:

1. *His farm*—its type and kind of soil; fertility level; whether the land is level or rolling; climatic conditions; size of the farm.

2. *Type of farming*—whether he wants to raise beef cattle or feed them; whether he favors dairying; whether hogs will fit into the enterprise; whether he is interested primarily in grain crops or in other types of crop farming.

3. *The future*—whether his rotation will save the soil or rob it of its fertility and increase erosion; whether he needs to farm intensively at first with the idea of modifying his plan

later; what buildings and other improvements will be needed; the part his family will play in operating the farm as time goes on.

These are some of the questions the farm manager must answer. And if he does a systematic job of acquiring the information he'll need to answer them, his final decision should be a wise one.

Making a Field Layout Plan

Once his rotation system is outlined, the farmer must design the best possible field arrangement. Good planning here will save time in field work, cut fencing costs, make the rotation plan easier to carry out, and reduce erosion on rolling land. Because a well laid out system may last most of a lifetime, farm owners should plan it carefully. Tenants can improve the field layout, too, but unless the landlord cooperates they will be working under a handicap. Usually, though, the landlord can be sold on a better system if the tenant has sound reasons for making the change.

If a minor rotation is to be used around the buildings, this part of the plan should be worked out first. Most minor rotations make use of three or four small fields, although some farmers use two with permanent fences and divide them by temporary fences if necessary. A minor rotation may supply clean ground pasture for pigs and young chickens close to the buildings. Other farms also may need a night pasture for milk cows. The acreage needed depends on its use and the number of livestock of various kinds. For example, one acre of good rotation pasture will handle about three litters of pigs, and one-half acre per milk cow for night use should be ample. Chickens do not use a great deal of grass but do better if they can be moved occasionally.

Fit the Fields to the Land

Farm conditions, as well as the rotation plan, have a lot to do with field arrangement. Level and near level farms can have straight, rectangular fields, while in rolling areas, fields may have curved sides to fit the lay of the land. So far as possible, the farm should be divided into fields of about the same acreage to make it easier to follow a definite rotation plan. Not all fields need to be fenced separately with permanent fences, however, if other rotation fields join them. When some fields are smaller because of ditches or other non-tillable areas, two of these may be matched to make one field in the rotation plan.

On level land, long narrow fields make more efficient use of machinery than square ones and large fields are better than small ones. But square fields require the least fencing per acre so it does not pay to go too far in trying to plan for long fields. Temporary electric fence often can be used to keep out livestock, but does not work well for smaller pigs and sheep. For convenience the end of the field should be toward the buildings, if possible, or the nearest place of entrance. Several outline maps of the farm can be used for trial arrangements before choosing the final plan.

Put Fences on the Contour

In areas where farming on the contour should be the regular practice, the wise farmer will lay out his field arrangement in that fashion. Contouring fields within rectangular fence lines, however, may be used at the start. The farmer will save time in the long run if he moves his fences to fit the contour pattern. Many corners can then be avoided, and the whole plan worked out more successfully.

If a pond, well, or a pipe outlet is a source of livestock water in the field there is a big advantage in having it located where two or more fields join. With this system one water source serves more than one pasture.

Even though livestock farmers generally want to grow all their own pasture and roughage, the beef cattle pasture need not always be on the home farm. By renting satisfactory pasture, the home farm can be cropped more intensively, providing the land is adapted to it. Dairymen, however, want their pasture at home where the cows will be close by.

Finishing Up the Crop Plan

In summary, these are guide posts in making up a cropping plan:

1. Keep as much land in the rotation as seems reasonably possible. Most land yields enough more if used in a rotation to pay better than if left in permanent pasture. But where the farmer has trouble in getting a new grass seeding, this

must be kept in mind in planning for the next year's hay and pasture supply.

2. The crop combination to use is the one that gives the greatest income advantage, all things considered. Crop yields and values, risks, assurance of getting a crop, avoiding undue erosion, operating costs, labor needs, and having a well-balanced plan all go into this decision.

3. The plan should be kept reasonably flexible to allow for the usual crop hazards that occur in the community.

4. The farmer should not spend more time in making up and operating the crop plan than is justified in view of the importance of crops in the whole farm plan. A complicated cropping plan may not be worth the extra time required compared to a simpler plan.

CHAPTER 7 Fitting Livestock Into the Farm Plan

ALTHOUGH THERE ARE OTHER REAsons, most livestock farmers prefer that kind of farming because it gives them a chance to make more money. Livestock farming is not tied so closely to once-a-year production and therefore gives the farmer more opportunities to put extra capital into use than crop farming. He may have idle capital he wants to put to work, or he may want to borrow extra money with the hope of making an extra profit.

Or the farmer may have extra ability that is not fully used in raising crops. Livestock farming will make use of that extra capacity. The farmer may think about it something like this: Suppose he operates a one-man farm and has a good set of machinery. About 1,000 hours of work a year probably is all that is needed to raise and harvest his crops. Maybe 200 or 300 hours more takes care of the odd jobs about the place. If he is an ambitious man, he won't be satisfied with so little work to do. Moreover, it takes a man of unusual ability to make a good living for his family if he works only 1,200 hours a year.

Weather hazards being much greater with crop farming, the farmer may figure on reducing the risks of farming by adding livestock. However, disease hazards, probably greater with livestock farming, may nullify this reduction.

Starting the Livestock Plan

The livestock plan is only a part of the total farm plan and should always be considered with the whole plan in mind. A good livestock plan, like a good crop plan, helps the whole farm business to be more profitable. The resources of capital, labor, and skill that go into the livestock plan are part of the farmer's whole supply of these resources. They cannot be considered separately from other parts of the business and other interests of the family. The farmer is interested in getting the maximum from the total resources used, not a separate maximum from those used in livestock production.

A place to start is to size up the farmer's own situation. He may well give thought to his personal qualifications or lack of them as a livestock manager; his knowledge and skill; the size and type of livestock business he is fitted to manage at the present time. True, he can add to his knowledge and skill from time to time. But, for the present, he must take the situation as it now stands.

Next, he should size up the situation as to things other than himself, such as the following:

1. The present and potential amount and kind of feed grain, hay, and pasture available for a livestock program. How dependable will the supply be from year to year?

2. How easy or difficult is it to buy additional feed "worth the money" in his particular location.

3. How much capital and credit does he have to put into the livestock business, and what are his special skills or likes in relation to this capital?

4. Does he have enough labor already at hand for the size of livestock program he has in mind? If extra labor must be hired, what about the supply, cost, usual skills of workers, and the housing situation?

5. What about his tenure? If he is a renter, can he safely plan for several years ahead or for only one year at a time? If an owner, how suitable is his farm as a livestock unit? What about its size, general layout, and adaptability to the livestock program he has in mind?

6. Are livestock buildings, feed storage, water supply, and fences adaptable to a wide range of livestock plans, or are they designed for a special situation? Can they readily be fitted into an efficient chore system or is the arrangement an unhandy one? How are they from the sanitation standpoint?

7. Are there any special market advantages or handicaps in his situation for a particular livestock enterprise? Is the farm located in a city milkshed area; is there pick-up truck service for eggs; is it on a private road that is difficult to maintain? These are examples of special advantages and disadvantages.

8. What about the price outlook? Is this a good time to expand a particular kind of livestock program or not? Has the latest outlook publication been studied with care?

It is taken for granted in this discussion that the farmer knows a good deal about the limitations and advantages that go with the particular area he lives in. Chapter 2 gave a description of the general advantages of the various type-of-farming areas in the Midwest.

Look Around Your Community

In nearly all areas, the more alert farmers already know the kind of livestock enterprises that fits their particular location. Most of the farming enterprises that have proven to be successful are in use by many farmers in any locality. It is always wise for the farmer to put this knowledge to use. A man who wants to operate a farm in a radically different way than his neighbors had better go slow unless he has the capital to risk or has had successful experience elsewhere.

Livestock Put More Resources to Use

If a list is made of the extra resources that a farmer might employ handling livestock, it would look something like this:

1. Use of the farmer's time that might otherwise not be well employed. Perhaps family or hired labor is available that could be used to advantage.

2. Use of additional capital that might profitably be put to work, whether capital of the farmer or borrowed capital.

3. A supply of feed grain that might be marketed at a higher price if fed to livestock than if sold on the cash market.
4. Good quality roughage that may not have a dependable market.
5. Lower grade roughage that probably could not be sold for cash in any case.
6. Buildings and equipment on the farm that are not productive unless used for livestock.
7. Ability and skill on the part of the farmer that is not well used if only crops are produced.
8. Special market advantages that may be available in the vicinity, but which can be capitalized on only by having a livestock program.
9. The larger productive capacity of the farm in crop production if livestock are kept.

On many farms, full use of such resources as these means the difference between having a good income for the family and a mediocre one. However, some men and some farms are better adapted to a cash crop system. The wise manager appraises the resources and opportunities at his command and then acts accordingly.

There are also other factors to which some give a good deal of weight. For example, some farmers take much more pride in being successful with livestock than they do in raising crops. The greater opportunity for family members to work together, which livestock farming offers, appeals to many people. Children often take more interest in helping with animals than they do in working with crops. On farms having medium or lower grade land, or farms that are quite rolling, livestock farming may be a "must" to be successful.

Resource Needs of Livestock Enterprises

Before going further, it will be wise to study the resources needed for various livestock enterprises. Tables 34 and 35 show the resources of various kinds needed to bring in $1,000 gross income from several kinds of livestock. The gross income is taken after deducting the cost of any livestock purchased—feeder

TABLE 34

Resources Needed to Return $1,000 in One Year From Livestock Corn Belt Conditions—1939–43 Prices

	Dairy Herd	Dual-Purpose Herd	Beef Herd Calves Fattened	Feeder Cattle
Number needed:				
Milk cows	6	5	1	....
Stock cows	....	2	9	....
Young cattle	8	7	10	20
Production secured:				
Gain on cattle	2,500 lbs.	5,190 lbs.	7,920 lbs.	7,200 lbs.
Butterfat	1,600 lbs.	990 lbs.	200 lbs.	....
Prices received:				
Live cattle, cwt	$10.80	$10.80	$11.80	$11.60
Milk, cwt	1.95	....	....	....
Butterfat, lb	.39	.39	.39	....
Income and feed cost:				
Total Income	$1,000*	$1,000†	$1,000	$1,000‡
Feed and pasture cost	570	650	750	780
Remainder§	$ 430	$ 350	$ 250	$ 220
Income per $1.00 of feed and pasture cost	$ 1.76	$ 1.53	$ 1.33	$ 1.28
Land needed to produce feed‖				
Corn	3.0 A.	7.5 A.	12.0 A.	16.0 A.
Silage	2.0 A.	1.5 A.	1.5 A.	1.2 A.
Oats	4.2 A.	5.0 A.	1.5 A.	1.6 A.
Total grain	9.2 A.	14.0 A.	15.0 A.	18.8 A.
Hay	8.5 A.	8.0 A.	7.5 A.	4.7 A.
Pasture	17.0 A.	17.0 A.	25.5 A.	5.0 A.
Total acres	34.7 A.	39.0 A.	48.0 A.	28.5 A.
Protein feed needed††	3,000 lbs.	2,500 lbs.	1,600 lbs.	3,100 lbs.
Labor needed, hours:				
To raise feed crops	180	215	240	240
To care for livestock	780	750	280	240
Total	960 hrs.	965 hrs.	520 hrs.	480 hrs.
Capital for livestock and equipment**	$ 820	$ 950	$1,250	$1,350
Buildings needed for the livestock	Barn for cows Pens for calves; Shed for heifers.	Barn for milk cows; Pens for small calves; Shed or barn for stock cows, and young cattle.	Shed or barn, cows on one side, feeding cattle on other.	Shed or barn.

* Includes $270 income from the sale of cattle and calves. The value of skimmilk fed is included in the income on farms selling cream.

† Includes $54 for value of skimmilk used for livestock feed.

‡ A margin of $1.45 per hundred pounds was secured between the buying and selling price of the steers at the farm. The cost of the steers has been deducted.

§ This is the amount left for labor, shelter, interest on the investment, other expenses, risk, and profit.

‖ Crop yields per acre: corn, 50 bu.; oats, 45 bu.; silage, 8 T.; hay, 2 T.

†† The cost of the protein feed is included in the total feed cost.

** This does not include permanent buildings.

TABLE 35

RESOURCES NEEDED TO RETURN $1,000 IN ONE YEAR FROM LIVESTOCK
CORN BELT CONDITIONS—1939–43 PRICES

	Hogs	Chickens Mainly for Eggs	Turkeys for Meat
Number needed	6 litters	500 baby chicks	360 poults
Number needed	40 pigs	235 hens	....
Production secured:			
Gain in liveweight	9,600 lbs.	2,100 lbs.	5,210 lbs.
Eggs laid	....	3,055 doz.	....
Prices received:			
Live animals or birds	$10.50 cwt.	15c lb.	23c lb.
Eggs	....	25c doz.	....
Income and feed cost:			
Total income	$1,000	$1,000*	$1,000†
Feed and pasture cost	606	515	530
Remainder‡	$ 394	$ 485	$ 470
Income per $1.00 of feed and pasture cost	$ 1.65	$ 1.94	$ 1.90
Land needed to produce feed§			
Corn	12.2 A.	5.1 A.	3.1 A.
Oats	3.9 A.	6.7 A.	6.0 A.
Hay	0.2 A.	....	....
Pasture	2.0 A.	1.0 A.	2.4 A.
Total acres	18.3 A.	12.8 A.	11.5 A.
Protein feed needed‖	2,400 lbs.	7,000 lbs.	12,000 lbs.
Labor needed, hours:			
To raise feed crops	140	80	55
To care for livestock	200	570	200
Total	340 hrs.	650 hrs.	255 hrs.
Capital for livestock and equipment††	$320	$450	$530
Buildings needed for the livestock	Movable houses or central house, feeding floor is handy, not essential.	Hen house free from drafts; movable brooder house.	Brooder house and field shelters.

* Includes $233 from the sale of chickens above the cost of baby chicks. 260 pullets are needed to put in the laying house in the fall to average 235 for the year. Death loss: young chickens, 13 per cent, hens 15 per cent. Eggs per hen, 155.

† Death loss is 16 per cent. The cost of poults has been deducted.

‡ This is the amount left for labor, shelter, interest on the investment, other expenses, risk, and profit.

§ Crop yield per acre: corn, 50 bu.; oats, 45 bu.; hay, 2 T.

‖ The cost of protein feed is included in the total feed cost.

†† This does not include permanent buildings.

steers, for example, in case of feeding cattle, or turkey poults where turkeys are the enterprise—but no feed costs or other expenses are deducted. Prices used are the 1939-43 average. By using other prices, these figures can be changed to those any individual farmer may want to use. The farmers from whose records these figures were taken all had reasonably good livestock skill. The rations used for their livestock were balanced or nearly so.

Points About the Tables

"Production secured" shows the physical amount of production from the number of head indicated. It is the amount available for sale or for adding to the business. In dairy herds, part of the animal gain was sold as veal calves, part as cull cows, and some as breeding stock. In dual-purpose herds, part of the young animals were fattened to a medium to good grade before sale. With beef cow herds, the calves were fattened for six to ten months after the calves were weaned. An occasional cull cow was also sold. In these herds, usually one cow in ten was milked, and this milk is included. The figures used for feeder cattle are a cross-section of several grades of cattle and lengths of feeding period. With chickens, non-laying hens were culled from the flock throughout the year and the remainder were sold in the late summer. They were replaced by pullets in the early fall. Turkeys were all sold in the fall or winter since they are raised only for meat production. With hogs, both spring and fall pigs were raised. Old sows were fattened and sold along with other hogs.

"Price received" was the actual selling price at the farm during this period. Feed prices averaged as follows: corn, 65c per bu.; oats, 41c per bu.; protein feeds, $2.00 to $3.00 per cwt. depending on the kind; silage, $4.80 per ton; legume hay, $8.20 per ton; pasture was priced in relation to hay depending on the kind and quality of pasture, good bluegrass being about $3.50 per acre.

"Capital investment" includes breeding and young stock, and special equipment such as a milking machine, feed bunks, movable hog houses, brooder houses, water fountains, and similar items. It does not include permanent buildings, fences, or equipment such as a manure spreader.

"Returns per $1.00 feed fed" is obtained by dividing $1,000 by the total feed and pasture cost of the enterprise. If $1.00 is subtracted from this figure, the remainder is the gross percentage received over feed cost. This margin must cover labor, shelter, equipment, miscellaneous costs, and profit if any.

"Labor needed" is at the rates shown in Chapter 5 for moderate mechanization.

Livestock Enterprises Vary

The wide range in the proportion of grain and roughage used by various kinds of livestock is evident from Tables 34 and 35. The figures show that nearly 90 per cent of the feed needed by hogs comes from grain crops. Hogs can use some pasture, but not very much. They need comparatively little labor and operating capital; both of these are strongly in their favor. They do not need specialized housing as poultry. A hog house, barn, shed, or even a straw shelter will do.

Chickens and turkeys are most like hogs in the high proportion of grain they use. But they require much more purchased feeds. Most farms do not raise many of the several specialized kinds of protein, mineral, and vitamin feeds needed for efficient poultry production. Also, poultry require specialized buildings, which are not so easily converted if the farmer changes his plans. Chickens require a lot of labor, but turkeys not so much. The labor figure for turkeys is for flocks of 1,500 birds or more, a rather large scale enterprise.

Dairy and dual-purpose cattle use a lot of roughage. But they take a large amount of labor, too. The barn, milk room, feed, and water supply must be laid out in a handy fashion if the labor load is to be reduced as much as possible. A man has quite a lot of capital tied up in permanent equipment when he has all this accomplished. If the farmer lives in a city milkshed area, he may have to follow special building regulations as well. The labor requirement is the thing that goes against the dairy herd on a larger farm. A lot of farm people, though, like the fact that the income from dairy and dual herds is rather steady and dependable.

Plenty of capital and feed are the things that stand out in the case of cattle feeding. No doubt most farmers have already noticed that cattle feeders are nearly always medium to large

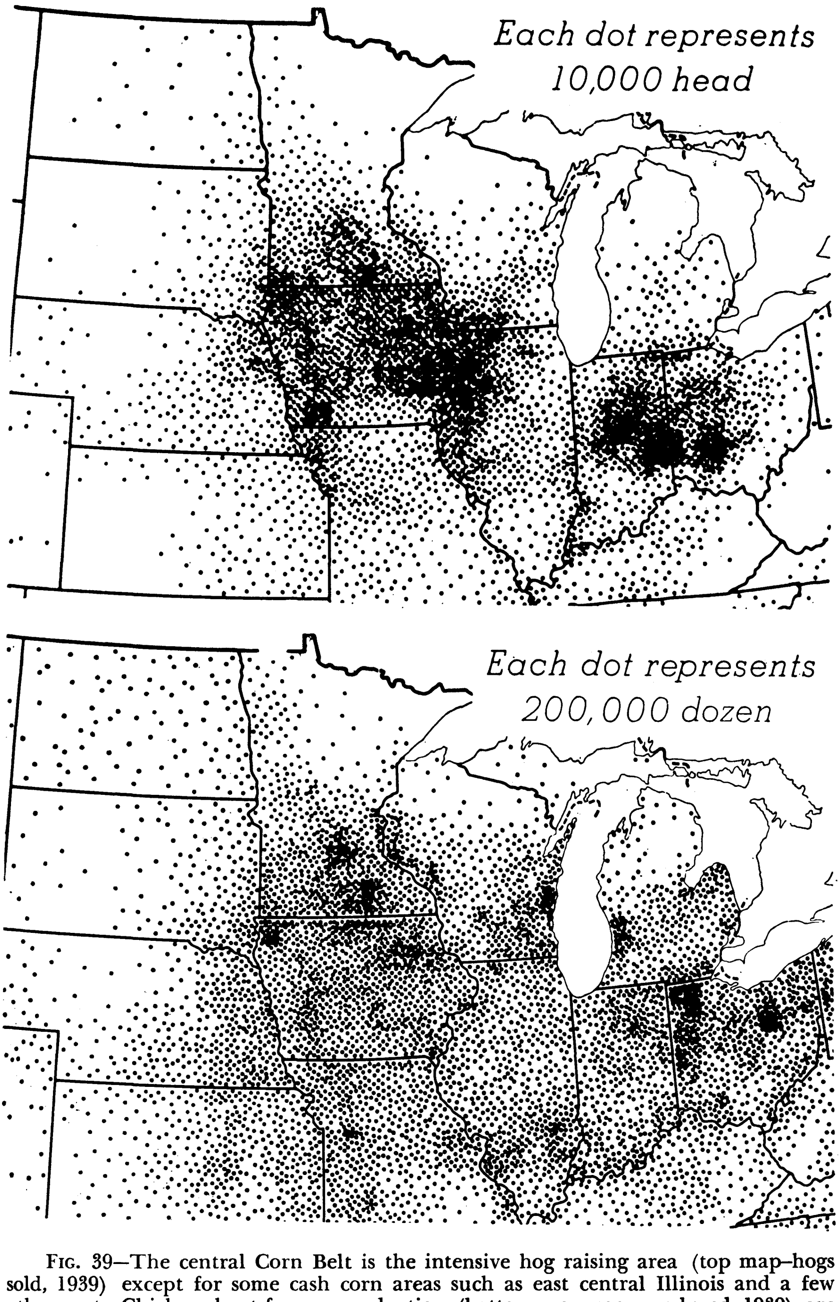


FIG. 39—The central Corn Belt is the intensive hog raising area (top map–hogs sold, 1939) except for some cash corn areas such as east central Illinois and a few other spots. Chickens kept for egg production (bottom map–eggs produced, 1939) are well scattered over the Midwest but numbers are larger at the northern edge of the Corn Belt. *Bureau of Agricultural Economics.*

scale commerical farm operators. The reason is easily seen. Note that in cattle feeding, the margin over the value of the feed fed is not very wide. This, also, is typical of the business. It shows where some of the risk of this enterprise comes in.

Beef cow herds use the most hay and pasture—and a lot of capital, too. But they do not require as much risk as feeding cattle. A modest return over the value of the feed fed with beef cow herds is typical in beef raising.

Livestock and Land Use

Another way to summarize these livestock enterprises is to relate the use of grain to that of hay and pasture. That is done below.

In looking at these figures, it is clear why dairying is found where there is plenty of hay and pasture and less grain, if the area is one where pasture is quite productive and of good quality. Dual-purpose herds are much like dairy herds, except that less milking is done and more grain is used by the young stock in fattening them for market. With the beef cow herd, also, much hay and pasture is used. The roughage for beef cow herds need not be as high in quality as with milk cow herds.

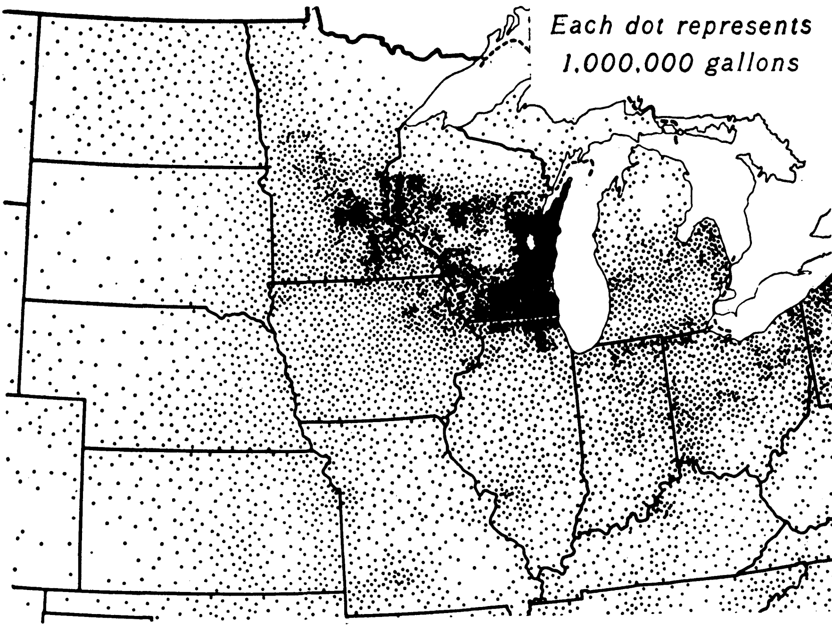
With feeder cattle, the emphasis begins to shift. Large amounts of hay and pasture may be used, but grain takes the dominant place. The shift is even more evident with hogs, turkeys, and chickens.

Farmers Handle Enterprise Differently

Of course, variation is found among farmers as to the rations they use, and the total amount of feed that they give their live-

TABLE 36
USE OF GRAIN RELATED TO USE OF HAY AND PASTURE

	Land For		
	Grain	Hay	Pasture
	(Acres)	*(Acres)*	*(Acres)*
Dairy herd	10	9.2	18.5
Dual-purpose herd	10	5.7	12.1
Beef herd, calves fattened	10	5.0	17.0
Feeder cattle	10	2.5	2.6
Hogs	10	0.1	1.2
Chickens	10	....	0.8
Turkeys for meat	10	....	2.6



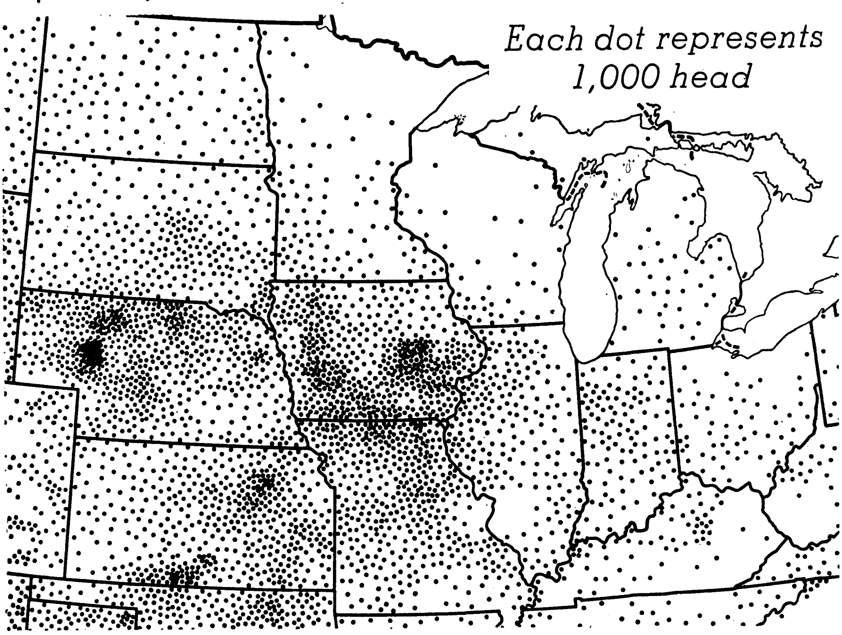


Fig. 40—While milk is produced in all parts of the Midwest, dairying has the greatest advantage compared to other enterprises in an area centering in Wisconsin (top map–milk produced, 1939) and in city milk sheds. Beef cattle raising fits best in an area from Iowa to the south and west (bottom map–beef cows, 1940). *Bureau of Agricultural Economics.*

stock. Some dairymen use more roughage and less grain than is shown in these tables, while others do the reverse. Much depends on the farm supply of the various kinds and relative prices of feed. Cattle feeders can use a wide range of choice in the rations they feed. Some farmers get a large share of the cattle gain with roughage, others with pasture, while still others depend largely on a grain deal. With hogs and poultry, much less choice in rations is possible since these animals are not adapted by nature to consume large quantities of roughage.

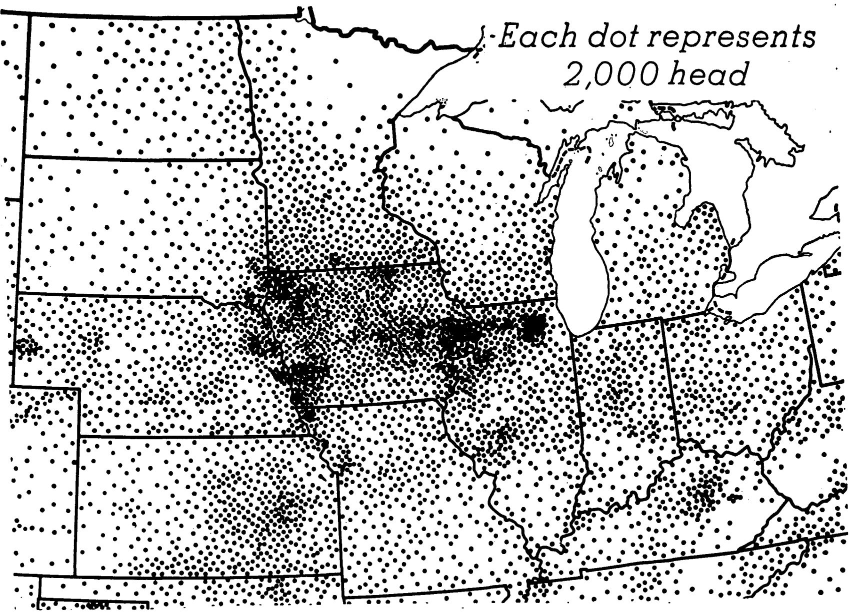
Beef cow herds where the calves are sold for feeders or the calves carried over on roughage and grass and sold as yearlings take somewhat different treatment. More cows would be needed and the herd would require more pasture and hay land to bring in $1,000 at the same price level. Much less grain would be fed. In the Plains Area, little grain, if any, might be fed to cow herds. Probably about 10,000 pounds of animal gain would be needed to bring in $1,000 at 1939-43 prices since stockers and feeders sell for less per pound than grain fed cattle.

Sheep flocks vary greatly depending on the circumstances. On many farms in the Corn Belt and General Farming Area, the small flock of sheep pick up odds and ends of grass about the place, and are fed out of the regular feed supply only during the winter and spring. In that case, very little pasture would be charged directly to them. If a larger flock is kept, sheep consume mostly pasture and hay unless the lambs are fattened out in the feed lot. This is not often done on the farm or ranch where the lambs are raised.

Fattening western lambs requires more hay and less grain than fattening steers, and lambs are somewhat more efficient in the use of feed. But sometimes the death loss is much higher. Usually, fewer pounds of liveweight gain would be needed to bring in $1,000 gross than in the case of feeder cattle.

Margin Over Feed Varies

In the previous tables the feeding margin shown is an average of a five-year period. However, one of the most rapid price changes that takes place in Midwest farming is the relation between feed prices and those of livestock and livestock products. The margin over feed cost received by Midwest farmers in feeding livestock over a period of years are shown in Figure 42



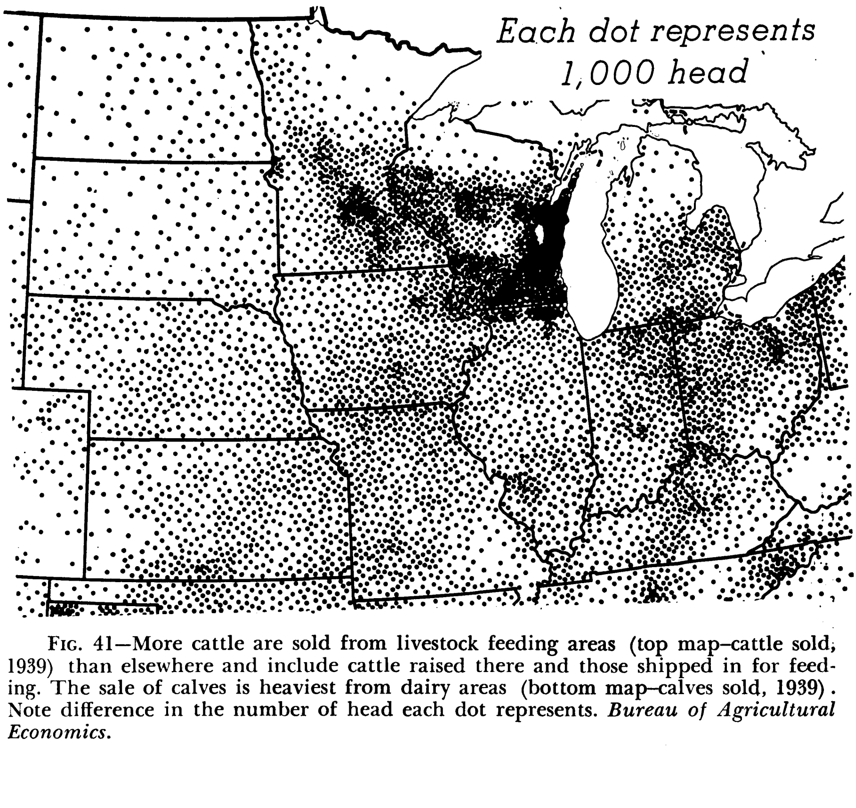


FIG. 41—More cattle are sold from livestock feeding areas (top map–cattle sold, 1939) than elsewhere and include cattle raised there and those shipped in for feeding. The sale of calves is heaviest from dairy areas (bottom map–calves sold, 1939). Note difference in the number of head each dot represents. *Bureau of Agricultural Economics.*

Keep in mind that the feeding margin must cover all costs other than feed; labor, housing, equipment, veterinary bills, use of capital, risk, and—if possible—leave something for profit. No by-products such as manure are included in income. But all direct income from the livestock enterprise is included.

Keeping in mind the low labor and capital requirements, the favor that farmers give to hog raising in the Midwest states is easily explained. Dairy herds have a consistent record of a good feeding margin. But labor and other costs are rather high. As one would expect, cattle feeding has an uneven record. Chickens pay well, but are preferred as a supplementary enterprise on most Midwest farms, not a major one. The narrow margin over feed cost from beef cow herds points out the need for keeping costs down if a profit is to be realized.

These, again, are average figures. Many farmers, whose planning and management are superior, get a wider margin over feed costs than those shown. But, by the same token, many farmers have poorer results than those shown here.

Table 37 shows some of the usual relationships between feed and other costs for various kinds of livestock.

Location of Livestock Production

The several maps accompanying this chapter show where livestock production of various kinds was carried out on a major or minor scale in 1939. In reality, these maps picture the combined judgment of the thousands of Midwest farmers. They show the results of decisions of farmers in total about the num-

TABLE 37

RELATIVE COSTS OF PRODUCING LIVESTOCK *

Enterprise	Percent of Total Cost That Is		
	Feed	Labor	Other
Dairy cows	55	22	23
Hens	55	20	25
Dual-purpose cattle	60	20	20
Sheep flocks	65	12	23
Beef breeding herd	65	10	25
Broilers	67	10	23
Hogs	80	7	13
Lamb feeding	85	8	7
Cattle feeding	85	5	10

* Source: Farm Management Department, Purdue University.

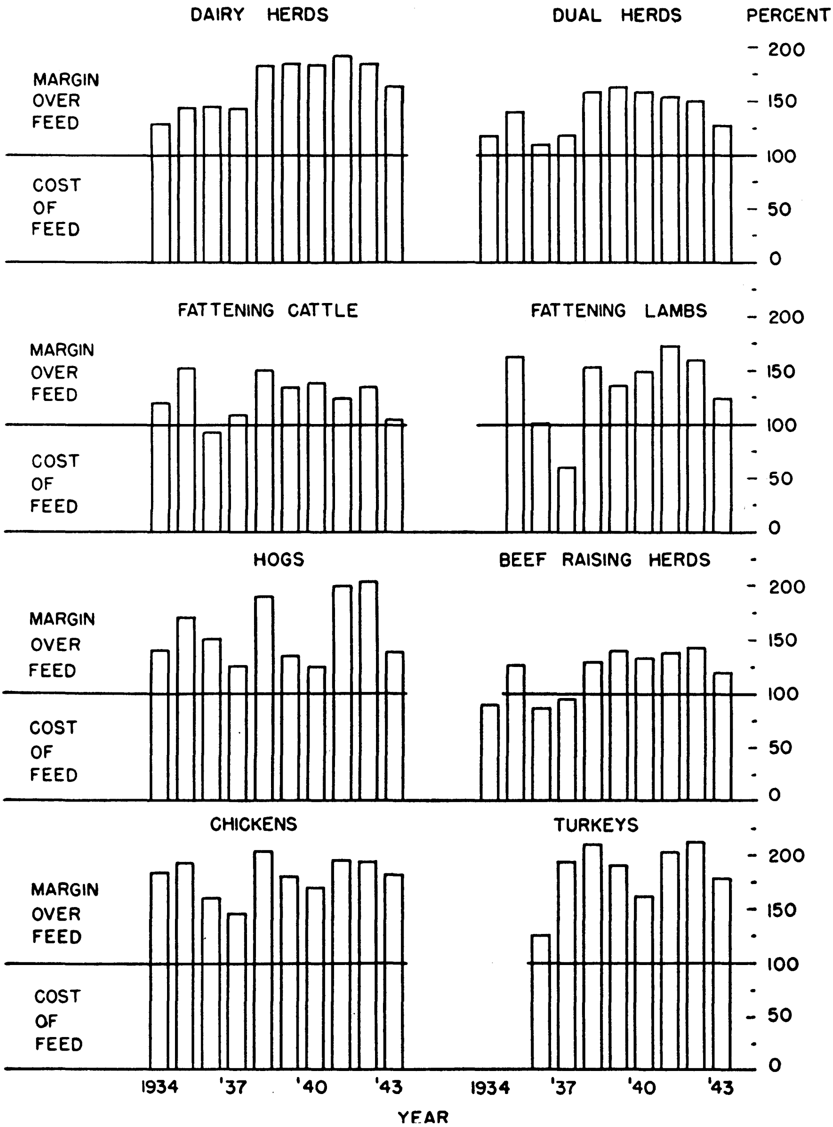


FIG. 42—Livestock feeding margins on Midwest farms, 1934–43. Note two things on the chart above: where feeding margins are widest; where they are most stable. But keep in mind the big differences in labor, capital requirements, and cash costs, none of which are pictured here.

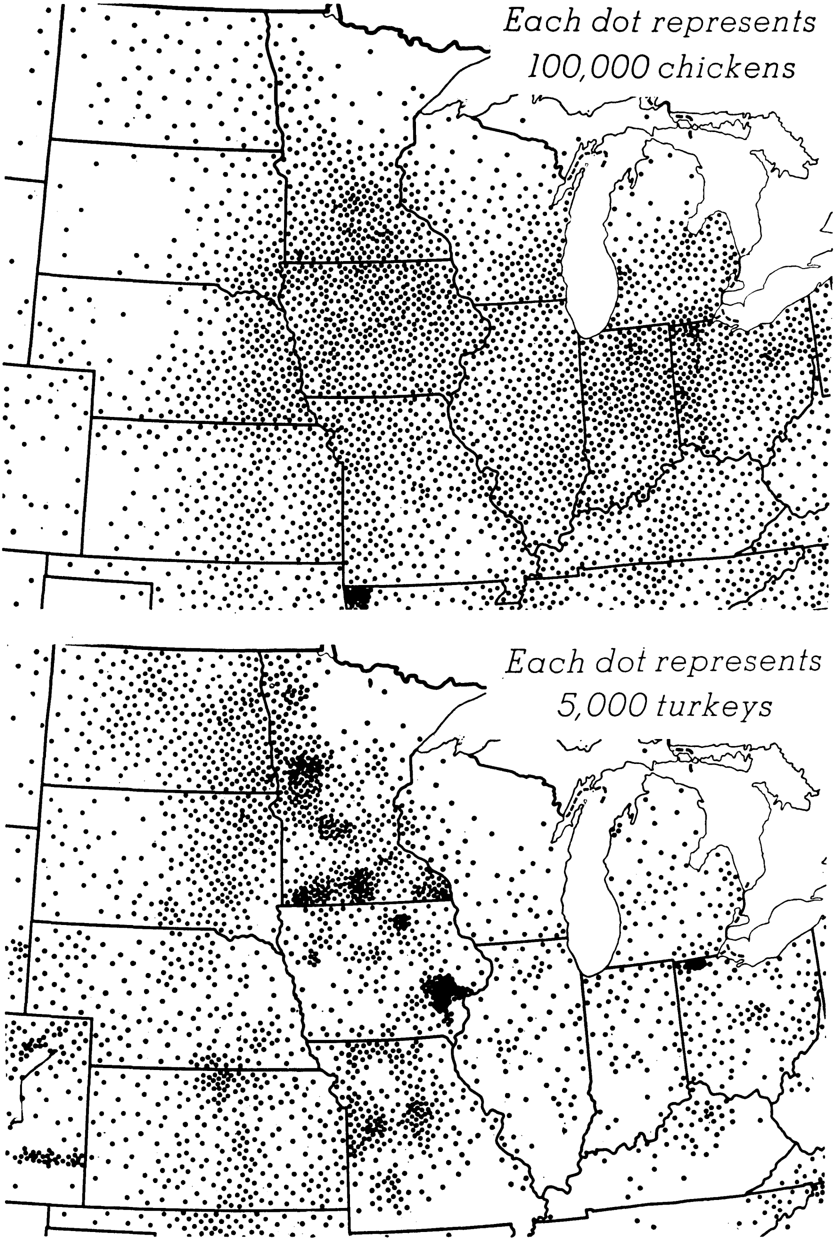


FIG. 43—Most Midwest chicken raising (top map–chickens raised, 1939) goes along with the keeping of a hen flock for egg production. A broiler producing area is shown in northwest Arkansas. Turkey raising (bottom map–turkeys raised, 1939) is more specialized, a flock of 1,500 to 3,000 birds being a typical unit on a family farm. Other turkey areas have developed since 1939. *Bureau of Agricultural Economics.*

bers and production of livestock that, in their judgment, gave them the best livestock plan at the time this census was taken. *It is possible that they were in error to some degree.* But they were the choices that farmers as a group then made. These maps should be related to the crop acreage maps of the previous chapter as well as to knowledge about weather, price, and demand conditions of that period.

How Large a Livestock Enterprise

Is there a minimum size of livestock enterprise that is needed to be profitable?

Some will tell the farmer that he should keep fifteen or twenty head if he wants to make money with milk cows, or else have only two or three cows. Others will tell him that 300 or 400 is the minimum size for a profitable hen flock, or he should be satisfied with thirty or forty hens. The argument is that labor income is too low on in-between size enterprises.

To study this question examine the effects of various sizes of enterprises on a farm business. Take for example a poultry enterprise—the guiding principles about choosing the size of enterprise will be the same for any kind of livestock.

A man and his wife are trying to decide on the most profitable size of poultry enterprise on a family farm. They own a Corn Belt farm, have good crop land, and a typical supply of grain feed. The wife has time to do some outside work and wants to help increase the family income. The hen house on the farm is of medium size—for 150 hens.

First, suppose no chickens are kept. This means the wife's ability to manage chickens will not be used. Also, the hen house cannot be efficiently used for any other purpose. So two resources on the farm will not be well used. In addition, eggs and chickens for the family table must be bought out of other income. It may be that the wife's time can be employed in helping with the milking, or other farm work. But her husband usually manages that part of the business so the wife's management skill will be idle even though some of her labor is used.

Next they consider raising 100 chickens and keeping thirty or forty hens. Now, some of the wife's time is used for the poultry enterprise. The chickens can make use of table scraps and other feeds that might be wasted even though this does not make a very efficient ration. But it will be a cheap one. Eggs and chickens for the family table are produced with very little cash outlay and there will be a small surplus for sale. Most of the income from the chickens is a clear gain even though the labor required per dozen eggs or per pound of chickens raised will be rather high.

A medium size flock is considered next; the raising of 300 to 400 chicks and keeping 150 hens. This makes full use of the henhouse but does not require very much additional investment. Now the enterprise adds quite a little to the cash income of the farm as well as provides for the family table. The work and management can be handled by the wife except for a few of the heavier jobs. Moreover, the enterprise is large enough to make it worth-while for the wife to develop her skill in poultry management. If she does, the total management skill being applied to the farm business by husband and wife together has been increased.

To get better results with this size flock some additional resources will be needed for poultry. Probably they will add a brooder house and other brooding equipment to the investment. They may even want to add a bit to the size of the hen house to bring the flock size up to 200 or so. Quite a bit of farm raised feed must now go to the poultry enterprise, feed that probably could have been used elsewhere. But the enterprise is of a size where many of the better poultry practices can well be used.

With this size of enterprise, a considerable share of the income is a net gain over what it would be with a smaller flock. In other words, the enterprise is mostly in the stage of being *additional* to the farm business. However, it is *competitive* to some degree for feed, capital, and possibly for labor. But it is large enough to justify the development of additional management skill.

A fourth choice might be to keep a flock of some 400 to 500 hens and raise some 700 to 1,000 chicks. Now the enterprise is too large for the wife to handle alone. Some of the time and management skill of her husband must be diverted to the poultry enterprise. This means that he must take some of his time and skill away from something else if he is already fully occupied at other work. More capital is needed, too; for chickens, feed, equipment, and housing. The capital put into poultry housing must be committed for a good many years since a poultry house cannot readily be shifted to another use if the plan does not work out well. The extra capital put into the poultry business might have been added to some other interprise. Also, the chickens are now important users of the farm supply of feed.

With a flock of this size, the poultry enterprise goes beyond the point of being *additional* to other parts of the business. That is, it requires the use of more resources than those that would otherwise be idle or only partly employed with no chickens or a small enterprise.

A flock of this size is becoming *competitive* for the extra feed, capital, labor, and management needed. These extra resources could have been put to work in raising more pigs, milking more cows, feeding more steers, or the like.

Finally, the family might consider a large commercial flock, perhaps 1,000 to 2,000 hens and a corresponding number of young chickens. In this case, chickens would be a major livestock enterprise on the farm. Looking after this many chickens is sure to absorb so much of the farmer's time and skill that he must put a large part of his effort into the poultry part of his business. Thus it crowds out many other things that he might do instead.

Even so, a chicken enterprise of this size may be his best choice. If the farmer, after looking at all the various opportunities open to him in the future, decided that he could make more profit from his resources by keeping a large poultry flock than from anything else, that would be the right decision to make.

Don't Depend on a Rule-of-Thumb

What, then, is the "best" size of livestock enterprise to be profitable? The farmer must first ask himself if a particular size is largely additional to the other enterprises or competitive with them. Does it "go along with" his other enterprises or not? Does he have a more effective use of his total resources by using a particular size of enterprise? If the size already is in the competitive area for the use of labor, skill, and capital, he must decide where to expand to the best advantage.

It will not take a farmer very long to see that rules-of-thumb about the "best" size of an enterprise are almost sure to be misleading. As a business man he wants to keep all of his resources employed where they pay best, not just where they make a profit.

For the farm family, in the case above, no chickens at all or a very few chickens failed to make use of the wife's time and skill to the best advantage. For another family the work of caring for a small flock might have been all the time the wife had to use. When a large flock was considered, questions had to be answered about the best use of the farm operator's time and skill as well as capital and risk. It is the net income from all of the farm family's skill, labor, and capital that is of most concern, not income from the labor, skill, and capital used for any one purpose.

With chickens as with any other enterprise the best size is the one that fits the particular farm situation. The best size may be large or small or somewhere in-between. Each farmer must examine his own problem and find his own answer. If following rules-of-thumb was all that a farmer needed to be successful, most everyone could quickly find the right answer.

Enterprise "Labor Income" Not a Good Guide

Study of each individual livestock enterprise on the farm is worthwhile. More efficient ways can often be found for using feed, capital, and labor whatever the size of the enterprise.

But the points above warn against the error of using the study of the labor income from a single enterprise as a basis for decisions as to how large it should be. If the enterprise is of a competitive size in the farm business, attempts to increase the labor income of one enterprise by making it larger or spending more time on it may turn out to be at the expense of some other enterprise. The income from the whole business must always be used as a guide to efficient management.

The business analysis of farms in the Midwest made by farm management departments have turned up many cases where one enterprise was getting a lot of the farmer's attention at the expense of some other. When a farmer brags about the good results he gets from one kind of livestock, it might be that he is doing other things so poorly that he is losing more elsewhere than the extra he is making on the enterprise he favors. The *law of diminishing returns* from too much concentration of work or capital applied in one place catches up with many a farmer. Nor can the problem be solved once and for all. Questions about the best size and combination will come up again and again.

Fit the Livestock to the Man and the Farm

A preliminary estimate can now be made of how to fit livestock into the farm plan.

Any size and type of livestock farm might be analyzed as an example. Suppose a small family farm in the eastern half of the Corn Belt is chosen.

The man with a smaller size farm, having quite a little pasture and hay and not so much grain, will see some of the things he should or should not do in planning the livestock program. His biggest problem is lack of volume of business. Perhaps finding a way to increase his cropland acreage and feed grain supply would be his wisest move. This may not be possible. If he has a good milk market, he will choose either dairy or dual-purpose cattle. If the choice is a dairy herd, he will depend on milk for the main part of his cattle income. If he has skill with milk cows, he will likely choose a dairy herd as they respond better to special skill than does a dual-purpose herd.

The dual-purpose herd farmer gets about half of the cattle income from dairy products and the other half from the sale of cattle. He needs somewhat more grain than the dairy herd farmer to fatten his young stock well enough so they will sell above the grass fed grades of beef. Likely his milk cows will be somewhat less efficient users of feed than good dairy cows. So he must be careful not to overfeed them—get much of his milk from good roughage and pasture.

More than likely, he wants quite a few hogs. They require less capital and labor than most other stock. They can go to market in less than a year after the sows are bred. If grain is reasonable in price in the community, he may buy a good deal of extra grain so he can raise more hogs. If he has skill with hogs, he can nearly always produce them with a good margin of profit in terms of total resources used.

Probably the family will have a flock of chickens. Family is the right word because keeping chickens is nearly always a family affair. Not much hard labor is involved in their care so the wife and children can help. Young chickens take quite a bit of "looking after" when they are small. This is in the spring when the farmer is busiest with his field work. He usually can't afford to take time from the field to look after them during the day. If the wife is interested in chickens, she can do this work as well as the man. Hence the chicken flock on most Midwest farms is of a size that the wife can supervise this part of the work. In the winter, the man can take care of the hens along with the other chores. Chickens also require a good deal of capital investment, especially the central hen house. So a flock of 150 to 300 hens is a common size of enterprise.

The smaller size Midwest livestock man, then, is likely to be a dairy-hog-poultry farmer or a hog-dairy-poultry farmer for the

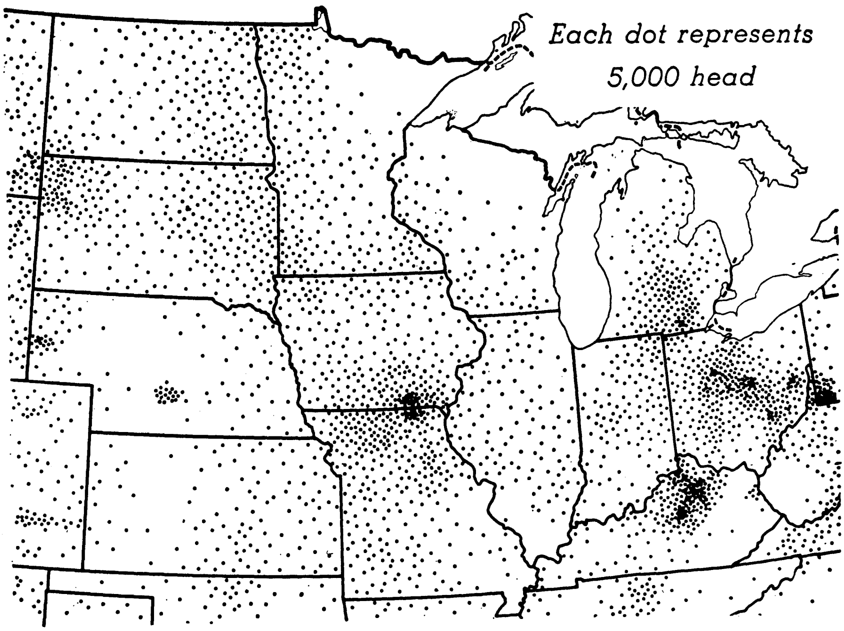


FIG. 44—Sheep on farms, 1940. Sheep raising is a minor enterprise in the Midwest and is seldom a major enterprise on farms where a sheep flock is kept. *Bureau of Agricultural Economics.*

reasons discussed above. He may grow a few acres of some cash crop like tomatoes to add to his income if he has the labor to handle them.

The size of business he should have and the combination of enterprises used should be guided by the principles discussed in Chapter 3. He will try, as best as he can, to make the maximum use of the resources at his command. If he is inclined toward buying a good deal of feed to maximize his income, this will get

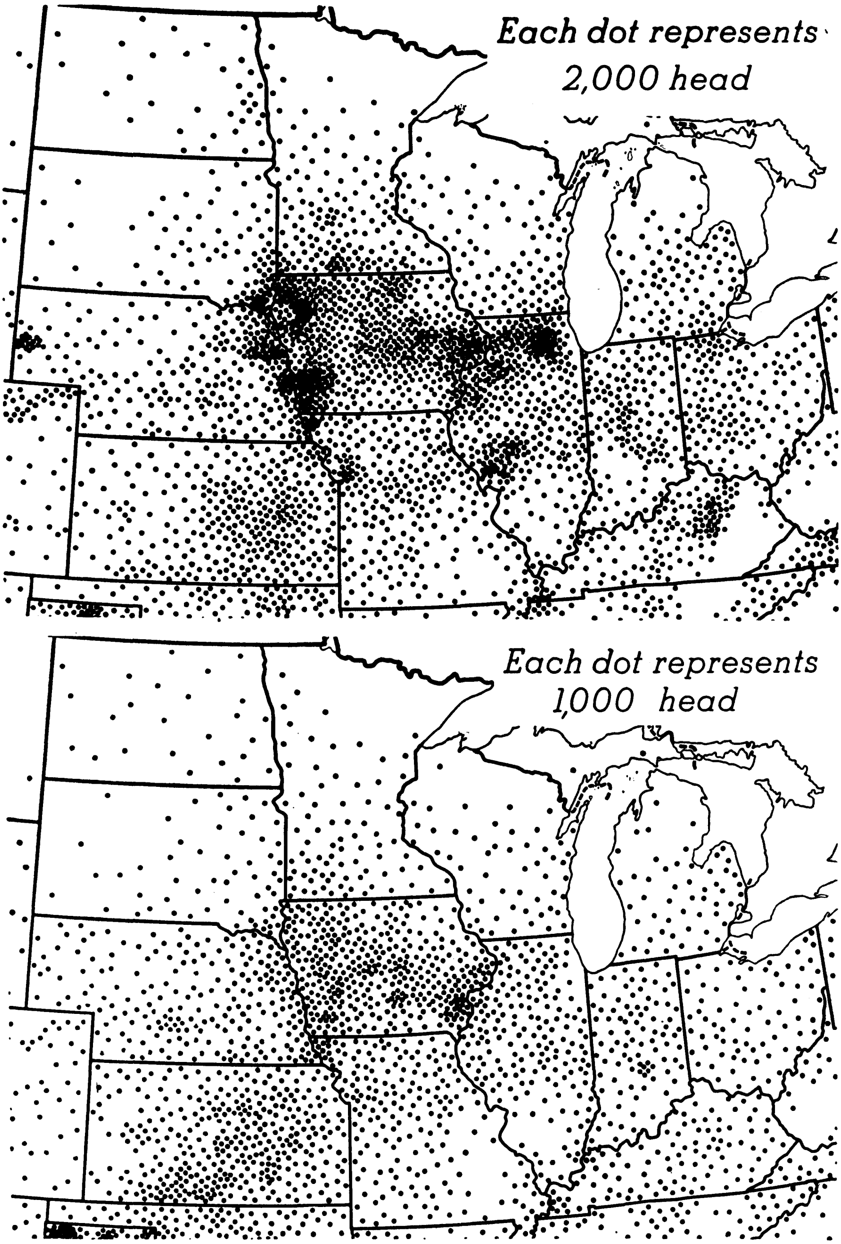


FIG. 45—Although large numbers of cattle are bought by farmers in the intensive cattle feeding areas they are bought by less than one farmer in four (top map—cattle bought by farmers, 1939: bottom map—calves bought by farmers, 1939). Breeding cattle and calves bought by farmers are included in the charts. Note the difference in scale. *Bureau of Agricultural Economics.*

TABLE 38
How Livestock Enterprises Compare

Type of Enterprise	Dependability of Income	Quantity of Capital Needed for: Main Herd	Quantity of Capital Needed for: Movable Equipment	Quantity of Capital Needed for: Permanent Buildings and Fencing	Level of Skill Needed for: Buying or Selling	Level of Skill Needed for: Feeding	Level of Skill Needed for: Breeding	Level of Skill Needed for: Disease Control
Dairy herd......	Very good	Above average	Moderate	Large	Average	Above average	Average	High
Dual herd......	Good	Above average	Moderate	Above average	Average	Average	Average	Average
Beef herd.......	Good	Large	Small	Moderate	Average	Average	Above average	Average
Feeding cattle...	Uncertain	Large	Small	Moderate	Very high	High		Average
Sheep flock.....	Good	Above average	Small	Moderate	Average	Above average	Above average	High
Lamb feeding...	Uncertain	Large	Small	Small	Very high	Very high		High
Hogs...........	Good	Moderate	Moderate	Small	Average	Average	Average	Above average
Chickens.......	Good	Moderate	Moderate	Large	Average	High	Average	High
Turkeys........	Uncertain	Moderate	Above average	Small	High	Very high	Average	Very high

a good deal of attention. If he is more conservative, or extra feed is not readily available, he will give more attention to being more efficient in the use of his land for crops and in the use of feed for livestock. That is, with a limited acreage and less volume, it is more important to get high yields per acre, but with an eye on money costs, and a large output per animal as compared to feed used.

Such a farmer usually is in the position of being long on one resource—labor—and short on land and perhaps capital. If so, he tries to find a more effective use of his most plentiful resource—labor—either by adding more capital in the form of additional livestock and feed or by using the kinds of crops and livestock that will pay for a more intensive use of labor applied to them.

The Larger, Rougher Farm

The farmer on the larger, rougher farm seldom will look to milk cows for the solution to his problem. He is long on land compared to labor so is not looking for a labor-intensive enterprise. He might consider dairying if he has a special market for dairy products and other opportunities look less favorable. But even then, the chances are that his pasture and roughage supply far exceed his labor supply. So he looks for roughage-consuming livestock with a low labor requirement that consume a lot of what he has to sell—pasture and hay. Most likely, a beef cow herd is the answer. He might consider buying steers to graze. But that kind of a program requires a lot of capital to market a relatively few dollars worth of hay and pasture. Most likely, the farmer's comment would be, "It isn't worth the risk." Beef cows require a large amount of capital, too, but the risk is fairly low and the farmer isn't engaged in large scale buying and reselling operations as he is with steers. No doubt he would fit hogs, a few milk cows, some chickens, and perhaps a flock of sheep into the livestock business. If he has special skill with sheep, these could be expanded to use more of the roughage.

The Farmer With More Feed

The farmer with a good supply of grain, hay, and pasture has many alternatives. The answer as to why many different types of successful livestock farming are found in the central Corn Belt Area lies in the fact that a large and varied feed supply is found on these farms. Such a feed supply permits farmers to choose from a large number of different livestock combinations, many of which can be quite successful.

Guiding Principles

Some of the principles that guide the setting up of the livestock program should be clear by this time. Among these are:

1. The farmer should maximize the use of the resources he has available to him. These are feed and other resources from production on the farm, resources of feed or livestock available for purchase, resources of managerial skill, labor, capital, and special marketing opportunities or unusually favorable price situations.

2. The livestock and crop program should fit well together rather than be in competition for the farmer's time, managerial skill, capital, or land.

3. The size of the livestock business and risks should be in keeping with price conditions and the skill and capacity of the manager.

4. The man who is able to obtain better than average margins between feed and other cash costs on the one hand and income per head of livestock on the other usually will do better to push for expansion in the size of his livestock program than for higher output per head. In other words, farmers who get the largest income in proportion to resources used are seldom the ones with a dairy cow herd producing 400 to 500 pounds of butterfat per cow annually, the feeders of prime cattle, the men who get 250 eggs or more per hen, and so on. If good profits per head are being made, profits come faster from expanding numbers than from more output per head. But don't overdo a good thing.

5. The principle of "getting equal pay from various enterprises from the last resource used," which was discussed in detail in Chapter 3, is especially important to livestock farmers.

The good manager continually compares the profit opportunity available to him from changing the size of each of his enterprises. A summary of the key points about the main kinds of livestock is shown in Table 38. It may help in relating the manager and his capital to the essentials for success with each of these enterprises.

The usual management problems encountered in handling these nine common Midwest livestock enterprises are discussed in Chapter 8.

CHAPTER 8 Making the Most From Your Livestock

ALL OF THE IMPORTANT LIVESTOCK enterprises common to the Midwest are included in the list of nine discussed here. While many livestock farmers have three different livestock enterprises on their farms, the number may vary from one to five. The operator, however, must be highly skilled and versatile to do an efficient job with four or five important livestock enterprises.

The general problems of fitting livestock to the farm were discussed in Chapter 7. In this chapter, the more common management problems encountered in handling the various kinds of livestock are discussed. Little is said about the many additional problems peculiar to the specialized producer. Such operations fit only a very limited number of farms if the farmer is trying to maximize the use of his resources.

The Dairy Enterprise

Milk is the main product of the dairy herd. But the income from surplus cattle and calves or cull animals should not be overlooked.

Milk contains a large amount of protein, about one-fourth of of all the solids in milk. A cow producing 10,000 pounds of 3:5 per cent milk a year needs about 700 pounds of digestible protein to supply the protein in the milk and to maintain her body.

So a dairy cow must be fed a good deal of protein if she is to produce well. Protein in the milk comes only from protein in the feed—the ration must contain the amount needed. Of course, feeding plenty of protein does not guarantee high milk production. But it makes it possible. There are other elements in milk as well. A ration made up of grain and good quality roughage, plus salt and mineral, will usually supply plenty of the other needs if the protein requirement is met.

Good pasture and high protein hay are basic to a satisfactory, low cost milk cow ration. It is possible to make a good ration from other feeds, but it usually is much more expensive. Silage makes an excellent feed and gives a high yield per acre. More concentrates are necessary if too little or too low quality pasture and roughage are used.

Dairy cows require a lot of labor. For this reason, one of the keys for success is to have cows with good milk-producing ability, but not necessarily extremely high producers. A production level of 250 to 350 pounds of butterfat per cow or 6,000 to 10,000 pounds of milk, depending on the breed, is acceptable. To do better than this, the extra time, feed, capital, and the like must add more to profits if used for a higher rate of production per cow than if used for more milk cows or for other farm enterprises.

Cows Should Not be Under or Over Fed

The question of how much grain ration should be fed is one that requires a good deal of study. Much depends on the individual cow's ability to produce milk, the price of dairy products compared to grain and other feeds, and other uses that might be made of the feed if not used for milk cows. From the profit standpoint, the problem is to use the feed where it returns the greatest profit, not simply to give it to milk cows because it increases milk production. A good dairy-feeding bulletin should be studied especially as to the kind of grain mixtures to use. The following tables suggest how to size up the rate at which grain should be fed.

In this feeding test, good dairy cows of equal milk-producing ability were fed varying amounts of grain. In all cases, the cows had access to all the good quality roughage they cared to eat. The results are shown in Table 39.

TABLE 39

How a Good Milk Cow Responds to More Grain in the Ration *

Roughage Ration	Grain Ration Fed †		Milk Produced ‡	
	Extra Grain	Total Grain	Extra Milk	Total Milk
	(lbs.)	*(lbs.)*	*(lbs.)*	*(lbs.)*
	none	none	....	6,440
	1st 450	450	580	7,020
	2nd 450	900	500	7,520
	3rd 450	1,350	430	7,950
Corn Silage	4th 450	1,800	370	8,320
and Hay..........	5th 450	2,250	320	8,640
	6th 450	2,700	280	8,920
	7th 450	3,150	240	9,160
	8th 450	3,600	210	9,370
	9th 450	4,050	180	9,550
	10th 450	4,500	160	9,710

* Derived from USDA Technical Bulletin 815.
† Grain that makes a balanced ration.
‡ Pounds of four per cent milk.

This table shows how milk production increases as more grain is fed. Note how similar the pattern of change is to the results secured from top dressing wheat with fertilizer which was discussed in Chapter 6. In fact, a general truth is demonstrated here: That as more units are applied, the output from each additional unit becomes less and less after a certain point is passed. This principle has a wide application in farming. The pattern of results reported here will show up more than once as other kinds of livestock are discussed.

Obviously, in feeding dairy cows, a particular rule should not be applied too strictly. In the test above, the milk cows used were good producers. When fed 4,500 pounds of grain ration, each cow produced 9,700 pounds of 4 per cent milk, or close to 400 pounds of butterfat, per year. Not all milk cows are of this capacity.

The other shortcoming of the figures is that they do not tell a dairy farmer the most profitable level at which to feed cows of this sort. That is the answer the farmer wants. Suppose prices are now applied to these data. As the cows were fed more of the grain ration, they ate less hay and pasture. If a farmer has hay and pasture to spare but not so much grain, how should he count the value of the hay and pasture that is saved by feeding more grain? Some farmers might not count it any saving at all. Others would. In the example below, milk, grain mixture, and hay (pasture is included as hay) are all charged at the prices indicated and credit is given for any hay saved by feeding more grain. But no allowance is made for other costs such as labor and shelter, nor any credit given for calves born, manure produced, and similar items. These other items are not greatly affected by the rate of feeding.

Table 40 shows results using one price for milk and three levels of feed prices.

Now the farmer has a guide to help him in deciding how much grain to feed to his cows. With milk at $3.00 per cwt. and grain ration at $3.00, he would feed no more than 1,800 pounds of grain per cow during the year (assuming the cows had all the good silage, legume hay, and pasture they wanted).

A good deal of the gain comes in the saving of hay. He would feed even less if he didn't value the hay and pasture saved at current hay prices. The 1,880 pounds of extra milk produced by feeding 1,800 pounds of grain would bring in $56.40, but the grain would be worth $54.00. It would hardly be worth $54.00 investment to get only $2.40 more in net income.

If feed were cheaper compared to milk or milk higher compared to grain, the farmer could go much further in grain feed-

TABLE 40

INCOME ADVANTAGE OR DISADVANTAGE FROM FEEDING MORE GRAIN TO A MILK COW*

	Situation I	Situation II	Situation III
Price of 4% milk, cwt.	$ 3.00	$ 3.00	$ 3.00
Price of grain mixture, cwt.†	3.00	2.25	1.50
Price of hay, ton	24.00	18.00	12.00
1st 450 lbs. grain fed resulted in‡	$ 7.38 gain	$ 9.90 gain	$12.40 gain
2nd 450	5.10 gain	7.57 gain	10.05 gain
3rd 450	3.00 gain	5.47 gain	7.95 gain
4th 450	1.32 gain	3.77 gain	6.21 gain
5th 450	.06 loss	2.35 gain	4.77 gain
6th 450	1.26 loss	1.17 gain	3.57 gain
7th 450	2.34 loss	.05 gain	2.43 gain
8th 450	3.12 loss	.75 loss	1.59 gain
9th 450	3.90 loss	1.57 loss	.75 gain
10th 450	4.50 loss	2.17 loss	.15 gain

* Based on the cows previously described.

† Grain mixture that makes a balanced ration.

‡ The gain in dollars is figured as follows: Figure the value of the extra milk, subtract the cost of the extra grain, add the value of the hay saved by feeding more grain.

ing his cows provided they had the ability to produce more milk.

The purpose of the above example is to supply the dairy farmer with the principles that should guide him in deciding on the most profitable rate of feeding grain to his cows. Farm conditions are varied, individual cows are of many different levels of milk producing capacity, and prices change from time to time, so about all that can be done here is to explain the principles involved. Based on these principles each dairy farmer will have to find the best answer he can for his own situation.

Use Well-Bred Bulls

Good bulls are needed to improve the herd. However, they are expensive and often hard to find. Artificial breeding associations are organized in many places and if well-managed, are likely to have better bulls than an ordinary dairy farmer can afford. Most farmers will welcome not having to keep a bull because herd bulls require a lot of extra labor to say nothing of the capital, barn room, and risk involved.

Raising heifers costs money, and therefore needs to be closely watched. Heifers should be well-grown but they can easily "eat their heads off" in feed costs if a great deal of grain is fed. Many an other wise good dairy farmer lets his young stock eat up some of the profit from the milk cows. He should find ways to raise heifers by methods that keep these costs in hand. Good pasture, legume hay, and silage should make up most of the heifer's ration.

Disease is one of the biggest hazards in the dairy business. While milk cows are subject to many diseases, abortion and mastitis (garget) are common ones. Another common problem is calf scours. It pays to learn how to keep these diseases under control.

Since labor makes up nearly one-fourth of dairy herd costs, efficient use of labor has an important influence on profits. Two points are especially worthy of attention. The first is to have the barn layout arranged so that the handling of milk, grain, hay, silage, and manure is reduced to a minimum. Many men have found that changing the layout and re-organizing their way of doing chores, like using a feed cart instead of carrying grain by the scoopful to each cow, has saved 20 to 50 per cent of the time formerly spent for chores. The second labor saver is what is called the "quick" method of milking. The use of the pen-type barn has much to recommend it. The local county agent will probably have information on these things.

Dual-Purpose Cattle

As the name suggests, these are herds where the farmer is interested both in milk and beef. Such cattle fit the man who neither wants to be a full-fledged dairy farmer nor a beef raiser. Usually he keeps a small herd, more than a dozen cows being unusual. Milk must be produced largely from grass and roughage. Dual-purpose cows are not "milky" enough, on the average, to warrant feeding a great deal of grain. Individual cows may be very good milk producers. The point discussed, under dairy cows, about feeding the right amount of protein and grain, holds for the milk that they produce. And it is equally important to have good quality hay and pasture.

The advantage of a dual-purpose herd is that the farmer can shift back and forth between beef and milk. When dairy products sell for a good price compared to beef, he can milk all the cows and hand feed the calves, using skimmilk and grain after he gets them well started. Or, if beef is higher, he can put two calves on one cow and milk only half of the herd. Also, he has a wide range of choice in the sale weight of the calves. If grass and hay are plentiful, but not grain, they can be grown mostly on roughage with only a little grain. Or they can be grain fed just as a cattle feeder would do except they are usually sold by the time they weigh 750 to 800 pounds.

Because of the lack of uniformity in breeding, it is difficult to maintain a particular balance between "beefiness" and "milkiness" in the cows themselves. Thus the herd may lean one way or the other at different times, with rather wide differences between cows in the same herd. Dual-purpose herds have a place in the Corn Belt and General Farming Area, but do not fit so well in the strictly dairy or beef areas.

Another type of dual-purpose enterprise is to use dairy-type cows and a beef-type bull. Holsteins on the cow side have an advantage over most other breeds since they are large, growthy animals. That is what is needed in a dual-purpose herd. Usually, a short, compactly built Angus bull is used to give the calves a uniform color and more of the beef type.

This plan works well where artificial insemination for dairy cows is available. The best milk cows in the herd can be bred to a dairy bull to get heifers for replacement. The other cows can be bred to the beef bull. Bull calves of the dairy breed are raised and fed out along with the other calves. In using this system, the calves should be kept growing rapidly. They are grain fattened as much as seems most profitable, and as grain is available. The young cattle are sold as medium to good quality fat beeves at around 700 to 900 pounds in weight. It seldom pays to feed them longer because their dairy breeding is more in evidence as they grow older.

Beef Raising—A Roughage-Using Enterprise

Use of high quality breeding stock is of first importance in beef-raising herds. It costs little more to raise a high grade rather than a low grade calf and the selling price is considerably higher. In starting a beef herd, it may be cheaper in the long run to buy some good quality cows or heifers than to start with ordinary cows and breed them up by using high quality bulls. This does not necessarily mean the purchase of purebreds. Some men prefer to buy older cows with calves at side or cows soon to calve that have come to the markets from the range country. Others prefer to buy good quality heifers and breed them. Unless done at the wrong time in the cattle cycle either method will not be too expensive. The latter method takes a little longer. Many good native cows and heifers are available as well as those from the range. Care must be taken to avoid culls, non-producers, or diseased animals.

Raising beef cattle does not fit the small farm. It is an extensive enterprise, that is, it requires many acres of land to produce a given amount of income. This was seen in Table 34. The land required to produce $1,000 gross income from beef cows is more than with other livestock. Where the calves are not fattened on grain, even more land is needed.

Some men keep beef cows on a small scale. This may work well as a supplementary enterprise on cash crop farms; but if beef raising is an important part of the business, small operations are certain to result in a low income. In the Corn Belt, a herd of twenty cows is about the minimum where beef cows are one of several enterprises. Where much corn is raised, the farmer

TABLE 41
BEEF COW HERD—CORN BELT
(Amount of Feed and Feed Cost per Cow—Breeding Herd)

	Southern Iowa Bluegrass Area		USDA Corn Belt Studies
	Low Cost Farms	High Cost Farms	
Feed per cow per year			
Corn	6.9 bu.	3.0 bu.	2.4 bu.
Silage	0.2 T.	1.8 T.	0.36 T.
Hay	0.4 T.	0.6 T.	0.96 T.
Straw and stover	0.4 T.	0.2 T.	0.30 T.
Weight per calf at weaning time	412 lbs.	380 lbs.	not given
Feed and pasture cost per cow*			
1939 prices	$10.68	$17.55	not given
1921–30 prices	$18.44	$29.35	not given

*Prices:	Corn (*Bu.*)	Silage (*Ton*)	Hay (*Ton*)	Bluegrass Pasture (*Acre*)
1939	$.39	$3.00	$ 6.50	$2.00
1921–30	$.67	$4.00	$10.00	$3.60

usually finds that it pays to feed out the calves as fat baby beeves. In the range area where beef raising is the major farm enterprise, 75 cows is a small herd and 100 or more would be better.

It is most important to keep down the feed costs on the cow herd. This can best be done by having a long pasture season of good grass, and feeding cheaper roughages during the winter. Beef cows cannot pay for much grain and leave a good margin of profit. The grain and the better roughage should go to cattle that are to be marketed in the near future. The larger the percentage of the total feed that goes into marketable cattle, other things being equal, the better the chances for profit.

Since the sale of calves is the main income from the enterprise, a high percentage of calf crop is very important. A calf crop at weaning time of 85 per cent is considerd satisfactory one year with another. This means that diseases, especially contagious abortion, must be watched for carefully. Most men prefer to have the calves come in the spring. Pastures are usually good at this time of year so the calf gets a good start. Most cows will furnish plenty of milk under these conditions and the calf should grow rapidly. The normally dry pasture period during the summer months may need to be supplemented with special pasture or extra feed that does not cost too much. The calf's growth should not be slowed down if it can be avoided without too much expense. With well bred cattle and good pastures, spring calves should come in at weaning time during the fall weighing some 450 pounds or more under good conditions.

In the range country and on some Corn Belt farms, steers are wintered-over rather than fed out. Either they are sold in the spring or after another pasture season. Feeder cattle prices are usually higher in the spring than in the fall. If the farmer has surplus feed over that needed by the breeding herd, he may prefer to wait until spring to sell. If he has surplus pasture or if pasture can be rented cheaply, he may run the steers over to the yearling stage.

Some points about wintering steers are shown in Table 42. This feeding test reports the results of several methods of wintering steer calves weighing about 400 pounds in the late fall. Winter gains were measured as well as the summer gains of the same steers during the following pasture season.

These results are another example of the same kind of truth that was discussed in the case of feeding more grain to milk cows; that is, as more and more units of feed are added, less and less additional results are secured.

This can best be shown by rearranging the figures in the table. If this is done the results are as shown in Table 43.

The results can now be better understood. It is evident that prairie hay alone is not a satisfactory winter ration for calves.

TABLE 42

METHODS OF WINTER FEEDING BEEF CALVES AND EFFECTS ON WINTER AND SUMMER GAINS *

Group	Winter Ration	Gain Per Head		
		Winter	Summer	Total
		(*lbs.*)	(*lbs.*) †	(*lbs.*)
1......	Prairie hay alone	21	263	284
2......	Prairie hay + ½ lb. cotton cake daily.	125	231	356
3......	Prairie hay + ¾ lb. cotton cake daily	166	210	376
4......	Prairie hay + 1 lb. cotton cake daily	177	207	384
5......	Prairie hay + 1½ lb. cotton cake daily	185	190	375

* Results condensed and somewhat simplified from Nebraska Bulletin 357.
† Gains when on pasture.

TABLE 43
EFFECT OF FEEDING MORE PROTEIN ON BEEF CALF GAINS*

Group	Protein Fed per Head		Gain per Head Winter and Summer Combined		Extra Gain From Each 10 lbs. Additional Protein
	Total Protein	Additional Protein	Total Gain	Additional Gain	
	(lbs.)	*(lbs.)*	*(lbs.)*	*(lbs.)*	*(lbs.)*
1.....	none	none	284	....	....
2.....	85	85	356	72	8.4
3.....	130	45	376	20	4.4
4.....	170	40	384	8	2.0
5.....	250	80	375	−9	....

* The calves reported in Table 42.

It is much too low in protein. Calves of a 400-pound size need to grow rapidly. Protein is necessary in their ration to put muscle on them. When they do not get enough protein, they simply do not grow very much. But notice how well these poorly fed calves did when they were turned out on fresh, green pasture that contained plenty of protein. They almost made up in the summer for what they got behind in the winter. But not quite.

When one-half pound of protein per calf per day was fed in the winter, they grew right along. But since they had more of their growth by spring, they didn't gain quite so fast during the summer. Nature has a sort of typical rate of growth that she sets as the standard. Under ordinary conditions, this rate is seldom exceeded. The growth rate on the better fed calves is an indication of this.

Here, then, is a case of an increasing rate of return when the first addition of protein is added to a poor ration. But as more and more protein is fed, the additional gain is small in amount. The third eighty pounds of protein fed per head in the winter gave no additional gain for the full period. It simply replaced part of the hay.

Usually, the price of one pound of live weight feeder calf of good quality will buy four to six pounds of cottonseed cake. This gives the farmer a guide for deciding on how much cotton cake he can afford to feed. If he planned to sell the calves in the spring, he could afford to feed a good deal more than if he expected to keep the calves and put them on his own pasture.

By feeding them better, the calves not only would be somewhat heavier, but they also would be fleshier. Feeder cattle buyers would likely bid more for them.

Note that the feeder buyer who gets the different lots of calves in the spring would likely be wrong about the better fed calves being worth more if the two lots were of the same breeding. The rancher would have the benefit of cheaper winter gains in the case of the well fed lot while the man buying them would have bought steers that would make slower gains for him. Cattle that are not so well wintered will be less attractive in appearance but are ready to gain rapidly if well fed in the spring. But it takes a cattle man with a sharp eye to tell the difference between good quality cattle that have been poorly wintered and cattle of poorer breeding that have been well wintered. By the same token, a stockman can winter poorer grade but well-colored cattle extra well and pass them off in the spring for being of much better quality than they really are. The importance of "the eye of the master" is proverbial among beef cattle men and for a good reason.

Other Winter Rations

Many feeds other than prairie hay can be used as a winter ration for calves or yearlings. Sorghum silage is a favorite in the Plains Area and corn silage in the Corn Belt Area. Either feed gives good results when some protein and mineral is fed with it. Oat straw and protein, or oat straw and alfalfa, can be used but do not give as good results. However, in some places, such feeds may be very cheap to use. Sorghum or corn fodder may be used but are considered inferior to the silage form, especially for lighter weight cattle. In Kansas, when wheat pastures are good, only a limited amount of harvested feed is needed if the winter is an open one.

Feeding Protein Cake on Summer Grass

Another time when the use of protein cake may pay extra well is in the late summer. By then the grass has hardened, is lower in protein content, and grazing may be less abundant. A pound or so of protein cake per head fed daily to cattle that will be marketed in the fall may pay unusually well. One feeding test from Kansas gives information on this (Table 44). Being only one year's results, it is not very conclusive and the figures should be taken only as a general guide.

One pair of the lots of cattle was considerably lighter in weight than the other due to ration differences during the previous winter. The cattle were of about the same general breeding.

TABLE 44
FEEDING COTTON CAKE TO YEARLING STEERS ON BLUESTEM PASTURE; 90 DAYS, LATE SUMMER *

	Lighter Yearlings		Heavier Yearlings	
	Lot 1	Lot 2	Lot 3	Lot 4
Number of days	90	90	90	90
Weight in, lbs.	568	586	624	624
Weight out, lbs.	726	645	770	677
Gain per head, lbs.	158	59	146	53
Cotton cake fed, lbs.	135	none	135	none
Extra gain per 10 lbs. of cotton cake, lbs.	7.3	....	6.9	....

* Reported by the Kansas Exp. Station in the *Kansas Stockman*, June 1948.

Obviously, feeding cotton cake was highly profitable under these conditions. Information is available for only the one rate of feeding. Experience elsewhere indicates that feeding protein cake is often a profitable practice.

It must be recognized that beef cattle raising is using a roughage-consuming kind of machine. Beef cow herds are not efficient in converting high quality crops into net income. This means that costs must be watched closely as margins are usually narrow. Thus the cost of silos and equipment per head must be kept low. Cow herds cannot pay a great deal for overhead costs and have much profit left. Beef herds convert lower quality feeds into a valuable product and one that is in strong demand by consumers. But a knowledge of their limitations is essential if they are to be a money-making enterprise for the farmer.

Cattle Feeding

Cattle feeding and corn raising go together. Cattle feeding also has a place where grain sorghums are raised and in some barley-producing areas. It is a popular enterprise for the farmer who wants to handle a large volume of business and is willing to accept the risks that go with it. Some systems of feeding use mostly pasture and roughage. Others are very largely a grain feeding proposition.

It is well for the cattle feeder to know the nature of the product that he is producing. Practically all of the physical product he produces is a certain increase in weight of the fattening animal. An additional economic product is the improvement in the value of the beef carcass from the consumer's point of view because fattening the animal makes the meat more palatable. Other physical production includes an increase in hide, bone, and various other such cattle products.

Part of the increase in carcass weight is commonly described as lean cuts, part as carcass fat. In reality, a good deal of fat is distributed throughout the lean cuts. Table 45 shows the increase in the two common carcass products as a result of fattening calves, yearlings, and two-year-olds to a choice grade.

Note that the increase in the amount of lean is rather uniform throughout the feeding period. This indicates that a certain amount of protein is needed in the ration all through the feeding period since lean meat requires protein in its production. A certain amount of additional protein is needed to carry on the body functions as well.

The amount of fat added increases sharply with each additional gain in weight. This is the reason that more and more fattening feeds are required as the feeding process goes along. In the case of the two-year-old, the amount of direct fat added

TABLE 45

INCREASE IN WEIGHT OF THE BEEF CARCASS DURING FATTENING * †

	Lean Cuts—lbs.			Carcass Fat—lbs.		
	Calf	Yearling	Two	Calf	Yearling	Two
In carcass of feeder steer ‡...	144	218	281	23	52	74
Added in:						
1st 200 lbs. gain per head	58	55	50	34	55	79
2nd 200 lbs. gain per head	60	60	51	55	85	121
3rd 200 lbs. gain per head	60	....	......	83	....	......
Total at end of period......	322	333	382	195	192	274

* Fat and lean cuts that can readily be separated with a knife.
† USDA Technical Bulletin No. 900.
‡ Liveweight: calf, 400 lbs.; yearling 640 lbs.; two year old, 835 lbs.

during the second part of the feeding period was well over twice the weight of lean cuts added. This also explains why a carcass quickly becomes "wasty" if the fattening process goes too far.

Requirements for Success in Feeding

The ability to use the following four points effectively seems to determine whether a cattle feeder is likely to be successful.

1. Knowledge of when to buy and when to sell. In other words, ability to estimate fairly well the price outlook over the time covered by the feeding period.
2. Knowing how to fit the available feed and the right kind of cattle together. This is the ability to determine the proper kind of cattle to buy to fit the feed supply.
3. Being a good buyer and seller of the grade of cattle being fed. This is a different point than the use of price outlook. It means that the farmer must have the kind of knowledge that tells him what a particular lot of feeders or fat cattle are really worth on the market at the time he is buying and selling. He must be able to tell when the cattle are "well bought and well sold."
4. Ability to secure efficient gains from the kinds of feed being used. This requires a knowledge of feeds and rations that produce good results both in gain put on the cattle and in keeping the cost of gain in line.

Two Sources of Cattle-Feeding Profit

Making money from feeding purchased cattle is different from the profit problem common to most other livestock enterprises. The profit comes from two parts of the operation. Success in buying and feeding western lambs or feeder pigs includes the same kind of problem. One part of the profit comes from using the cattle to process feed and get a higher than market price for the feed used. Separate from this is the income the farmer will get if he is able to sell the cattle for a higher price per pound than was orginally paid for them, thus getting a price gain on the original weight of the animal. The following assumed figures illustrate these points for three weights of cattle.

Not many cattle feeders, in their accounts, take the trouble to separate the two sources of profit. But any experienced feeder

TABLE 46
The Two Sources of Profit in Cattle Feeding

	Calf	Yearling	Two-Year-Old
Weight of feeder steer, pounds	400	700	900
Sale weight, pounds	900	1,100	1,200
Cost per cwt. (at farm)	$11.00	$10.50	$ 10.00
Sale price (at farm)	12.00	12.00	12.00
Cost of original weight, purchase price	44.00	73.50	90.00
Sale of original weight, sale price	48.00	84.00	108.00
Dollar gain on original weight of steer	$ 4.00	$10.50	$ 18.00
Feedlot gain in weight, pounds	500	400	300
Feed cost per 100 lbs. gain in weight	$ 9.00	$10.50	$ 12.00
Sale of feedlot gain in weight, at sale price	$60.00	$48.00	$ 36.00
Cost of feedlot gain at feed cost rate	45.00	42.00	36.00
Dollar gain from feeding	15.00	6.00	none
Dollar gain on original weight	4.00	10.50	18.00
Total per steer	$19.00	$16.50	$ 18.00

is aware that getting a margin on the original weight, especially with heavier cattle, is important to profit. The above illustration brings out this point clearly. With calves, most of the profit is made from the feeding process. This means that economy of gain is important when feeding calves. With heavy cattle, the opposite is the case. Here, much or all of the profit depends on getting a substantial margin between the buying price and the selling price of the cattle.

Because of these differences, feeding heavy cattle is a more risky enterprise than feeding calves. It is possible to make a large profit on bigger cattle if a wide margin is received. It is also easy to incur large losses. Yearling cattle, as shown in Table 46, fall between the other two. A drop of $2.00 in the selling price below that used in the example above would leave a $1.00 gain on the calf, $5.50 loss on the yearling, and a $6.00 loss on the two-year-old.

This illustrates the importance of making a careful estimate of the price outlook before starting on a cattle-feeding program. While future prices cannot be judged with great accuracy, success in anticipating the outlook is a big factor in the cattle feeder's success. If he cannot do this reasonably well, he may be wiser to stay out of the cattle-feeding business on other than a small scale. He should follow closely the price outlook reports of his state agricultural college and the Bureau of Agricultural Economics.

Fit the Cattle to the Feed Supply

Part of the cattle feeder's decision should be based on the kinds of feed he has or can readily buy, and what they are worth. This helps in deciding on the kind of cattle to buy. His own skill as a buyer and seller of the different grades and his experi-

	Weight		Feed per Head				
Kind of Feeder	of Feeder (lbs.)	Added by Feeding (lbs.)	Corn (bu.)	Protein (lbs.)	Hay (lbs.)	Pasture (days)	Months on Farm
Mostly drylot 2-year-olds Good-choice	880	320	49	170	1100	28	6
Common-medium	860	260	33	140	1100	20	5
Yearlings Good-choice short-fed	670	370	50	200	1200	30	7
Good-choice long-fed	600	490	64	240	1400	42	10
Common-medium	660	300	37	150	1300	40	6½
Calves Good-choice steers	440	560	63	260	1400	36	11
Good-choice heifers	420	390	44	200	1200	16	9

FIG. 46—Seven drylot cattle feeding programs. The careful cattle feeder plans a program that fits his feed supply and feeding skills as well as the price outlook. Note the wide variation in feed, capital, and time needed by the seven feeding programs above. Successful feeders can be found that use each of these programs or a combination of them.

ence in feeding them as well as the outlook for the various grades would also be taken into account. General rules-of-thumb run as follows:

1. The better the quality of feed, the better the grade of cattle that should be fed.

2. Good to choice grades are usually sold during the last half of the year and are started on feed accordingly. A heavier feeder steer may be finished in three to six months while a calf requires nine or more.

3. Cattle of medium or common grade should be sold during the first half of the year. More of the gain should be made on roughage. They seldom pay for a long grain-feeding period.

4. The cost of putting on the gain increases with the age and weight of the cattle. For grain feeding to a good finish, a fair rule is to count on using ten to eleven bushels of corn per 100 pounds of gain for a calf, twelve to fourteen for a yearling, and thirteen to fifteen for a heavy steer. Roughage is in addition.

5. Calves make cheaper gains, but they also require more care and better shelter than older cattle. The death loss is higher. Farm records on a large number of cattle show an average of 2.5 per cent death loss with calves, compared to a 1.5 per cent loss of yearlings and two-year-olds.

6. Most feeder cattle should be bought in the fall, especially calves and light yearlings. The supply is largest at this time, the selection is best, and the price is seasonally lowest under steady business conditions. Feeder cattle prices for the same grade are usually higher in the spring. Medium grade and common cattle are often bought in the late summer or early fall.

Table 47 shows the proportion of grain to roughage used with these various systems.

Figures 46 and 47 picture the amount of various kinds of feed needed by different weights and grades of cattle. Not all kinds are included. The kinds shown include the majority of cattle-feeding methods most commonly used.

TABLE 47
FITTING THE CATTLE PROGRAM TO THE FEED SUPPLY*

Kind of Program	Acres for 10 Head		Hay and Pasture Used for Each 10 Acres of Corn	
	Corn	Hay & Pasture	Corn	Hay & Pasture
Strong on corn (mostly drylot)				
Good-choice long-fed yearlings	10.7	6.7	10	6.3
Good-choice steer calves	10.5	5.3	10	6.0
Good-choice short-fed yearlings	8.3	5.3	10	6.4
Good-choice 2-year-olds	8.2	4.9	10	6.0
Good-choice heifer calves	7.3	4.2	10	5.8
Intermediate on corn				
Common-medium yearlings	6.2	6.4	10	10.3
Common-medium 2-year-olds	5.5	4.3	10	7.8
More hay and pasture				
Good-choice steer calves	8.7	14.5	10	16.7
Good-choice yearling steers	8.3	11.4	10	13.7
Medium-good steer calves	6.8	9.5	10	14.0
Medium-good yearling steers	5.3	9.8	10	18.5

* This table is based on Figures 46 and 47. Yields used are 60 bu. of corn per acre 2, tons of hay and high yielding pasture. Most drylot cattle are run on pasture for a short time before being fed. This pasture is included.

A Deferred Feeding Program

One cattle feeding program that is growing in popularity is not pictured here. Farmers who have more grass may use what has come to be called a deferred feeding program. Good quality calves or lighter yearlings, often the latter, are ordinarily purchased in the fall. They are wintered well, largely on roughage, on a type of ration that keeps them growing. In the spring, they are put on good pasture. By summer, they are put on grain feed either on the pasture or in the dry lot depending on conditions. Ordinarily, they are marketed anytime from October to December, depending on feed costs and market conditions. This plan permits the marketing of a good deal of grass and roughage, but with enough grain finish at the end so the steer will sell in the higher price brackets. Heifers cannot well be used for this long a program. Its disadvantage is the larger market risk that goes with a program that requires a year or more to bring the steer to market finish.

Kind of Feeder	Weight: of Feeder (lbs.)	Weight: Added by Feeding (lbs.)	Feed per Head: Corn (bu.)	Feed per Head: Protein (lbs.)	Feed per Head: Hay (lbs.)	Feed per Head: Pasture (days)	Months on Farm
Pasture fed Yearlings							
Good-choice	650	430	50	190	1300	105	9
Medium-grade	600	300	32	100	1600	75	6½
Calves - Steers							
Good-choice	450	550	52	190	1800	130	11
Medium-grade	420	430	41	150	1200	85	9

FIG. 47—Four programs for feeding cattle on pasture. Feeding cattle on pasture is growing in popularity. Such cattle are usually raised or bought in the fall, wintered well, and fed out for the summer or fall market. Several kinds of cattle can be used for a pasture feeding program though most men prefer the better grades.

Where To Buy

Feeder cattle may be bought at many places. Besides the many natives that are fed, well over 2 million head annually are brought into the Corn Belt Area from the range states. Figure 48 shows the month-to-month sale of feeder cattle shipped in from the range and how they are marketed. A large number go through the central markets, especially the Missouri river markets of Kansas City, Omaha, and Sioux City. So. St. Paul, Chicago, Denver, and Ft. Worth are other important feeder cattle markets.

In recent years, other sale methods have been on the increase. A considerable number of cattle and calves go through auction markets either in the range country or in Corn Belt towns. Some are bought and re-sold by cattle dealers. The better auction barns and dealers sell by the pound rather than by the head. Even then, the buyer needs to use caution as many salesmen are experts at putting on a big "fill" before the cattle are weighed. Dealers may serve a useful purpose in getting cattle together and sorting them into uniform lots.

Some cattle feeders prefer to deal directly with the range producer. This requires a rather high degree of skill on the part of the buyer. He will be buying the cattle under unfamiliar conditions. The inexperienced buyer will do well to hire the services of a reliable and experienced cattle man at least until he learns the business. Many successful cattle feeders believe that it is good business always to hire the services of a skilled buyer. Cattle raisers have similar problems in marketing their feeder cattle.

How To Feed

There are any number of good feeding methods. Most cattle men prefer to start with plenty of roughage and only a little corn, and gradually get the cattle on feed. Heavy cattle bought

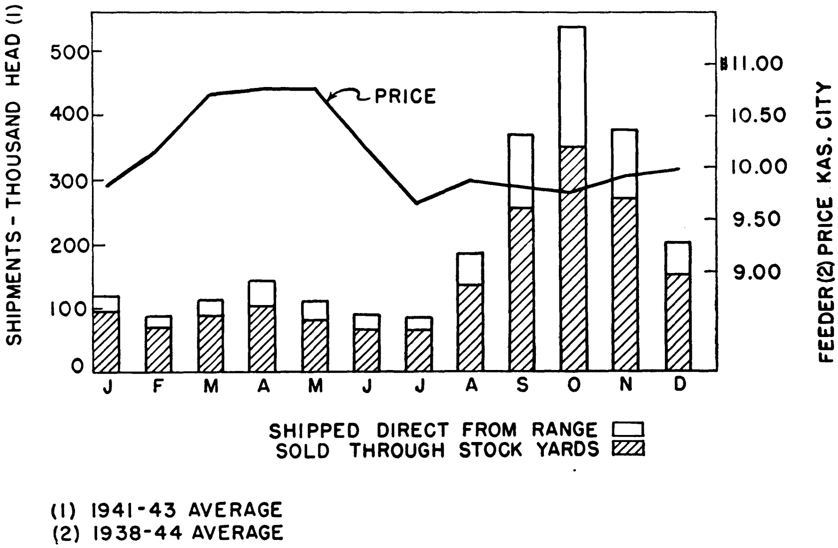
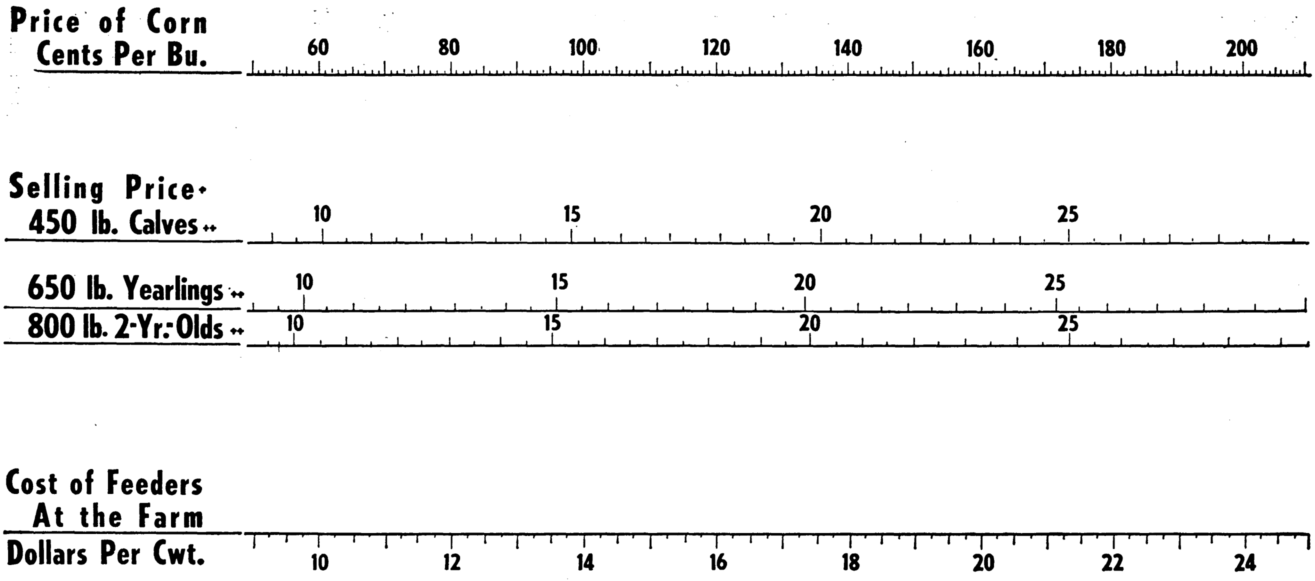


FIG. 48—The month-to-month number of feeder cattle sold and seasonal change in feeder prices. The supply of feeder cattle is largest during the fall months as cattle are sold from the range. The price is usually lowest then and a wider selection is available. The demand for cattle to put on pasture usually raises the price of stockers and feeders in the spring months.

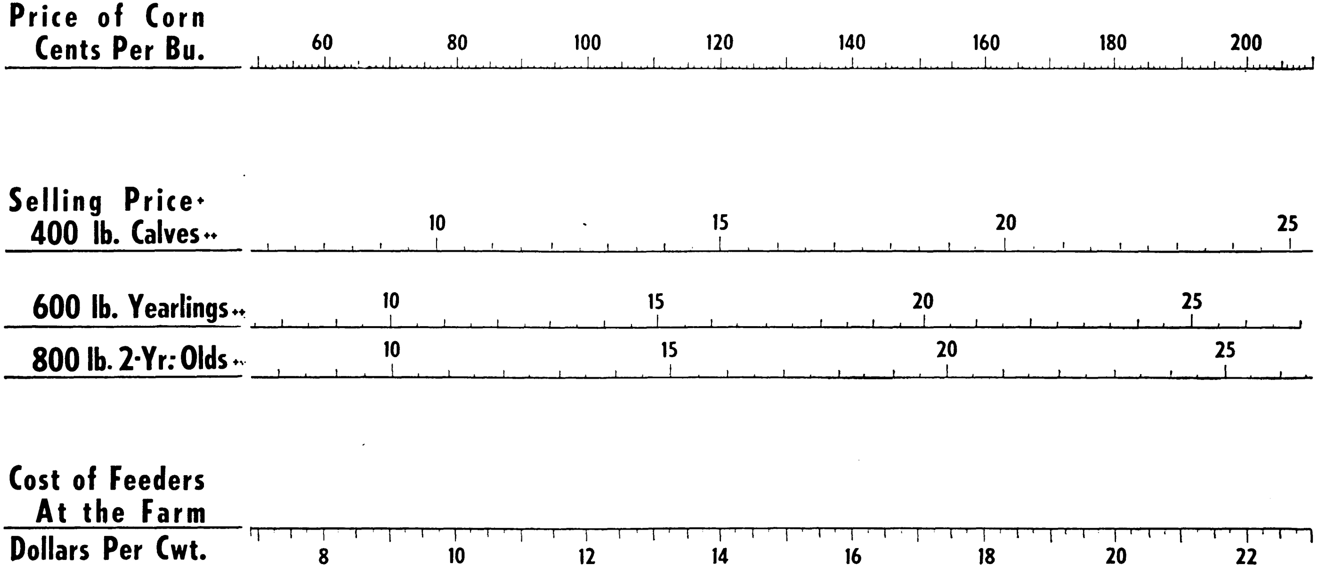
for a short turn are an exception. They should go on feed quickly. A common method is to let the cattle clean up pastures and stalk fields before starting them on winter feed. With good grass, protein feeds are not necessary, but extra protein will be needed for cattle in stalk fields and on dry lot feed. Plenty of water, salt, and lime, or simple mineral, should be handy so the cattle can get all they need. Hogs should follow grain-fed cattle, if possible, to salvage waste feeds. This is often an important part of the profit.



*Needed to pay feed, interest and death risk

** Weight and kind of feeder steer put in the feedlot. The weights shown are those at place of purchase. The calves were fed to gain about 550 pounds, the yearlings 400 pounds and the 2-year-olds 350 pounds. The selling weight is the weight of the feeder plus the amount of gain and is the weight to which the selling price applies. Selling price is that of the steer when marketed.

FIG. 49—Use this chart to figure selling price needed for choice steers. Lay a ruler across the chart for the kind of cattle you plan to feed. Place the edge on the cost of feeders laid down on the farm and the price of corn. The point where the ruler crosses the proper center line shows the selling price needed with average feeding results. The cost of all feeds has been included.



+Needed to pay feed, interest and death risk

++ Weight and kind of feeder steer put in the feedlot. The weights shown are those at place of purchase. The calves were fed to gain about 470 pounds, the yearlings 300 pounds and the 2-year-olds 250 pounds. The selling weight is the weight of the feeder plus the amount of gain and is the weight to which the selling price applies. Selling price is that of the steer when marketed.

FIG. 50—Use this chart to figure selling price needed for medium steers. Lay a ruler across the chart for the kind of cattle you plan to feed. Place the edge on the cost of feeders laid down on the farm and the price of corn. The point where the ruler crosses the proper center line shows the selling price needed with average feeding results. The cost of all feeds has been included.

Silage is an excellent feed. It makes more pounds of beef from an acre than does the grain alone, but will not put as high a degree of finish on the cattle. With better grade cattle most farmers feed corn in addition to silage, especially toward the latter part of the feeding period. However, common to medium grade yearlings and two-year-olds can be fed out largely on silage. A pound or two of protein feed per head daily should be added depending on the size of the cattle and the amount and kind of hay in the ration. With alfalfa, only a little protein will be needed. Some men do not like alfalfa because of difficulties with bloat. Straight protein feeds, soybean meal, linseed or cottonseed are commonly used. There seems to be no advantage in using protein mixtures for cattle. The choice should largely be based on price although linseed meal gives a somewhat better "bloom" to long-fed cattle.

Feed requirements per pound of gain increase as the animal becomes heavier and fatter. With calves, the increase in feed requirements needed comes slowly at first. With heavier feeders, the increase comes more rapidly. The table below shows the additional feed needed for calves, yearlings, and two-year-olds as they increase in weight.

Both feed costs and margins affect the necessary selling price for cattle to make a profit. These are shown in Figures 49 and 50. The necessary selling price to pay for feed, interest on the money invested in the feeder steer, and allowance for normal death loss is shown. These necessary selling prices are based on the

TABLE 48

FEED NEEDED TO PUT 100 POUNDS OF GAIN ON STEERS AT VARIOUS WEIGHTS *

Kind of Feeder	Feed Units Needed for 1st 100 lbs. Gain	2nd 100 lbs. Gain	3rd 100 lbs. Gain	4th 100 lbs. Gain	5th 100 lbs. Gain	6th 100 lbs. Gain	7th 100 lbs. Gain
400-lb. calf	8.7	9.7	10.9	12.4	15.6	17.4	21.9
640-lb. yearling	10.5	12.3	14.3	17.5	22.4	......	......
840-lb. 2-year-old	10.7	13.1	16.8	23.4	(16.3) †	......	......

* A feed unit as here used is the amount of digestible nutrients equal to that in a bushel of shelled corn (44.8 T.D.N's). This data is based on research with good-choice drylot fed steers. From USDA Technical Bulletin 900.

† Needed for the next 50 lbs. gain.

kind of cattle and feeding efficiency shown in Figures 46 and 47. They can be used as a rough rule-of-thumb measure for necessary selling prices at various costs of feeders and feeds.

County agents will usually have bulletins on the details of feeding methods which we do not have space to consider here. The advice of successful cattle feeders can also be a big help to the beginner and he should seek their counsel. In any cattle feeding area, the county agent can point out a number of successful men.

The business-like cattle feeder pays much attention to the other parts of his business as well. This will be especially true of his hogs. Generally, the more successful cattle feeders produce hogs and beef in the proportion of fifty to sixty pounds of hogs to forty to fifty pounds of beef. The best plan is to raise all or most of the hogs. It is the very exceptional man that can buy both feeder cattle and feeder pigs and make a profit one year with another.

Hogs—The Corn Belt's "Mortgage Lifter"

A good hog raiser centers his time and attention on the things that make the hog business pay good dividends. As pointed out before, the hog enterprise does not require a great deal of labor per $1.00 of sales. But certain key jobs must be well done and at the right time if the enterprise is to return more than a nominal profit. Some points that many hog raisers consider important are:

1. To have a hog system that fits in with the rest of the farm plan. There are several critical times in the hog raiser's program when he must be "on the job." His hog plan and overall farm plan should fit together so that his work does not pile up at these critical times. The most important jobs cannot be delegated to the hired help.

2. Strong, healthy pigs are the kind that make a good profit. Keeping the hogs healthy comes from the use of a good sanitation system in raising them, good breeding stock, proper rations, and use of disease-prevention practices.

3. Large litters are essential for success. The farmer needs to have good breeding stock and use practices that result in large, strong litters.

4. A farmer can't make much money by raising only two or three litters once or twice a year. A man that is a good hog raiser and lives where hog raising is a major enterprise should be able to handle from ten to fifty litters at one time, and do a good job.

5. The market price for hogs is quite changeable from month to month. The farmer should plan to have hogs for sale during some of the months when prices are above average.

About the Plan

The skilled hog raiser commonly uses one of three general plans.

▶ *Plan One* is a system using both spring and fall pigs. It calls for farrowing spring litters during the late winter or early spring. A second group of litters is farrowed in the late summer or early fall. Whether the two sets of litters should be of the same size or one group larger than the other depends on what fits the whole farm plan best.

The man who uses this plan must have good, though not expensive equipment for his early spring pigs. The farrowing houses should be tight and protected from drafts. Most men use electric pig brooders at this time of year. The farmer must be the kind of man who is "on the job" to see that houses are kept dry, litters are well fed, not too many litters kept together, both sows and litters are given a balanced ration, and clean sod or other arrangements are provided so the pigs will not develop anemia.

Before the pigs are farrowed, houses and pens must be free from worm eggs and disease organisms that may have been left there by older hogs that occupied the quarters earlier. Scrubbing the houses with scalding lye water is standard treatment. Some men prefer to clean them well and use some kind of flame thrower as a disinfectant. Sows should be free of mange before farrowing time or this will be troublesome.

With this plan, the farmer should make sure that he has enough feed on hand or in sight to finish the pigs for early market—any time from August to October, depending on conditions. It takes quite a bit of capital to provide, until market time, enough feed for a good sized bunch of early pigs. There is little merit in going to the trouble of starting with early pigs if they do not reach market weight until well into November or December.

Early farrowed pigs should go out on clean ground as soon as the weather is fit. Legume pasture is best.

With this system, fall pigs are usually farrowed in August, or early September. New oats or wheat will be available for feed by this time, but some old corn may be needed depending on the season. Fall pigs are usually farrowed either in the field or in a clean, central house and moved to a clean pasture in a few days.

► *Plan Two* is one-litter system for the larger operator having a program calling for from 25 to 100 litters or more. Gilts farrow in late May and early June, between corn planting and hay making. At this time of year the weather is warm enough so that keeping the pigs from chilling is usually no problem. The pigs are generally farrowed in the field. Some farmers on rolling land let the sow find her own place and have a supply of small, hinged shelters that they place over each sow after she has farrowed. Others prefer to use one, two, or three pen movable houses, and see that the sows farrow in them. If a group of sows farrow within a few days of each other, quite a large number of sows and pigs can be kept in the same group with no serious difficulties. But groups of pigs that vary more than a week or so in age should be kept separate until the pigs are weaned. Some men prefer to keep them separate until market time.

This system makes use of a maximum of pasture and a minimum of labor and equipment. A well-planned water and self-feeding system for use in the field is needed for this system, as is true of most clean ground systems.

With this plan, the sows usually go to market during the higher priced August period. The pigs are carried along more slowly so they can use the new corn crop and perhaps run behind feeder cattle for a while. They ordinarily go to market at rather heavy weights on the Febaruary or early March market. Profit with this system comes as a result of lower costs, larger volume, and a better chance of keeping the hogs healthy.

One variation of this system is to wait until late July or early August to have the pigs farrow. This works especially well on farms that have timber pasture and make use of the shade during the hot summer days. But a rotation in the use of the timber pasture must be practiced, or diseases will accumulate if the pigs are farrowed in the same ground every year.

► *Plan Three* is really a combination of plans one and two. Pigs are farrowed in early spring from a set of gilts or old sows, in early summer from gilts, and the third set of pigs are farrowed in the fall. Usually the fall farrowing is from gilts that are kept over to farrow their second litter in the spring.

This plan is used only by the larger operator, the man who farrows forty litters or more per year. Otherwise he would find the labor requirement per hog marketed to increase considerably if he breaks his hog raising up into several small groups of litters at different times of the year.

The advantages of this system are:

1. Having hogs on the market several different times during the year.
2. More efficient use of equipment.
3. Greater ease in keeping disease under control by not concentrating his hog raising so much at any one time.

It has at least one disadvantage. Three times during the year the farmer must go through the specialized work which is necessary if pigs are to be given a good start. But if the farmer is quite interested in raising hogs, he is likely to become highly skilled at this work.

Still other hog-raising plans are possible. A common plan is to farrow spring pigs in April and raise them in the old lots. They may or may not be followed by other litters in the fall. Such spring pigs usually reach the market during the lower price period of the winter from late November until January. With such a plan, the efficiency is not very high. Some profit may be made but likely not a great deal.

Hogs Respond to Good Practices

Hogs are very efficient converters of feed into meat and fat, where good practices are used. They can be a very inefficient animal under poor circumstances. The list of practices which follows was taken from observing those commonly used by several Iowa Master Swine Producers. Many of these farmers raise several hundred hogs annually with a high degree of efficiency. They are not only good hog men, but good general farmers as well.

Some of the hog-raising practices reported by these Master Swine Producers are:

1. The hog enterprise should be a first interest of the farm operator and not be neglected because of other demands on his time.
2. Crossbred pigs ordinarily have more vigor than straight bred pigs. Crossbred sows are proving to be satisfactory.
3. Where the two-litter system is used, there is a big advantage in having the gilts farrow their first litter in the fall, the second in the spring. This system makes possible the better timing of the farrowing period. Yearling sows have less trouble with "flu" during the winter than gilts.
4. Select gilts from large litters where the sow was a good mother.
5. Have gilts in good condition at breeding time. Flush with extra feed two weeks before breeding.
6. Pen breeding seems to be of no advantage.
7. A good winter ration for sows: ground corn and chopped alfalfa hay, equal parts by weight; self fed; and a simple mineral mixture. Oats may be added to this. Sows should have plently of exercise, especially during the winter.
8. Early spring pigs should be farrowed in a central location, sheltered by windbreaks. Use an electric pig brooder in cold weather. Temporary wooden lanes from the central house to clean, rotation pasture is satisfactory as well as putting the pigs in the field.
9. A flame thrower or boiling lye water may be used to kill worm eggs and disease germs after the farrowing house has been thoroughly cleaned out.
10. Do not feed heavily for two days after farrowing. Start with bulky feeds such as oats, bran, or chopped alfalfa. Give plenty of water. Get the sow on full feed in ten days.
11. Creep-feed young pigs using rolled, hulled, or ground oats with the light oats fanned out.

12. If little pigs are kept on concrete, feed chunks of sod dug from a fence row. Lay up a supply in the fall. Clean floors every day. Pigs started on a floor require a more carefully planned ration than when farrowed in the field.
13. Castrate at four weeks, vaccinate at six weeks, wean at eight weeks.
14. If enteritis is present, use of crystal violet vaccine may be better than the regular double treatment for cholera prevention.
15. Prepare spring and summer hog pasture locations with equipment, fencing, etc., during spare time the previous fall.
16. Alfalfa makes excellent pasture, but many prefer red clover if it fits better in the regular crop rotation.
17. An adequate water supply is very important. Use of shallow wells, sand points, tile drain outlets, ponds, or similar sources save much labor over hauling water if the pigs are kept in the field.
18. If ear corn is fed on the ground, change feeding locations frequently.
19. Make plenty of use of temporary straw shades during hot weather.
20. A concrete feeding floor is almost essential during the spring mud season.
21. Clean ground pasture, balanced rations—including proteins and minerals—use of self feeders, and plenty of clean water are prime requisites to a good hog program.

What Is the Best Sale Weight?

The best weight at which to sell depends on decisions of several kinds. One is the hog-raising plan in use. The man with the two litter system may want to get the older pigs moved along so he will have more room, time, and feed for the smaller pigs. The one-litter man may figure that much of the extra work and risk in raising hogs is in getting the pig past weaning time. After that, little risk is involved, and he can market several more bushels of corn through each hog by putting more weight on before he sells them.

The time of year makes a big difference. The price discount for heavy hogs is quite a bit at some times of the year, but not at others. The seasonal price trends during the two or three months period during which the hogs might be sold is most likely the biggest factor of all in determining the best sale weight.

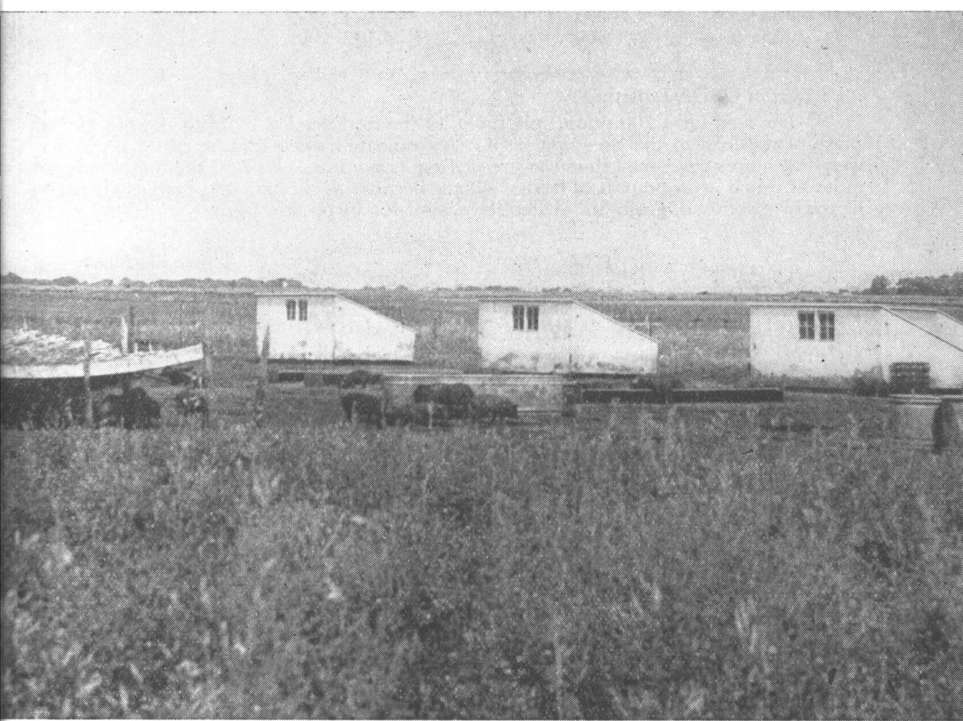


FIG. 51—Clean ground pasture, balanced rations, plenty of water and shade for hot weather, and labor saving equipment are the keys to a good hog program.

The hog farmer needs three sets of facts at this point. One is the usual seasonal hog price trends. Second is the cost of taking hogs to heavier weights. Third is any special price outlook considerations for the particular year or part of a year when the problem is up for a decision.

Table 49 supplies the basic facts needed about the additional feed required to take hogs to heavier weights. Current feed

TABLE 49

Feed Required to Bring Hogs to Heavier Weights *

Weight Added to hog	Total Weight of hog	Feed for 25 lbs. Additional gain on hog	Total Feed per hog †
(*Pounds*)	(*Pounds*)	(*Pounds*)	(*Pounds*)
....	200	....	814
25	225	112	926
25	250	118	1,044
25	275	124	1,168
25	300	132	1,300

* From USDA Bulletin 894.

† The feed for a 200 pound pig includes the feed needed by both the pig and its share of the feed to the breeding herd. As indicated, each additional 25 pounds of weight requires more feed than the preceeding 25 pounds. In cost, the increase is not quite as much as in pounds of feed. This is because as the hog gets heavier, it eats a larger proportion of grain and a smaller proportion of protein feed.

prices applied to the amount of feed shown in the table can be used to estimate costs at the time the question is being considered. The farmer must remember that these are average feed requirement figures; his own hogs may either do better or not so well. Also he must take into account the risk of "flu" or other disease hazards while putting more weight on the hogs.

A hog feeding bulletin from the state agricultural college will be useful in deciding on low cost rations. Hogs can use "home grown" feeds for the most part. Additional protein is usually needed as well as a simple mineral mixture. But guard against the use of expensive feeds whether protein mixtures or minerals. A lot of potential profit will soon disappear if such feeds are used in quantity. Home-grown grains, legume pasture, protein, and plenty of good quality home-grown, ground alfalfa during the winter should make up the bulk of an economical ration.

Table 50 furnishes the hog man with information that combines seasonal price trends with the usual weight discounts or premiums. Average prices are used. This table can easily be changed to fit the price of hogs in any particular year. Suppose hogs are around $17.00 in September. The figures in the table should then be doubled and the table used as before. If hogs were around $13.00, all the figures would be increased by about 50 per cent.

This table tells approximately the best time to market hogs one year with another. The man that farrows his pigs in February would not sell them in August since the price usually rises between August and September, ($7.84 to $8.56). By waiting, he might have more weight to sell, besides getting a higher price. However, he would not be wise to wait another month since prices usually drop in the next thirty days, ($8.56 to $7.72). Such a drop would likely more than cancel any profits from feeding to heavier weights.

The man with May pigs, on the other hand, is likely to carry them to heavier weights. He not only has more weight to sell, but a 300-pound hog would frequently sell for more per pound the following February than a 200-pound one would in December. The man with September pigs usually has a much wider range of choice as to selling them.

As this book is being written, a possibility exists that a government program will be used to support hog prices. If this should be the case, the operations of the price support plan may greatly modify the seasonal price trends formerly expected.

TABLE 50

CHOOSING THE BEST WEIGHT AND TIME TO SELL HOGS*

Month of Farrow	Marketing Results			Month of Farrow	Marketing Results		
	Time	Weight	Price		Time	Weight	Price
February	Aug.	150	$7.84	June	Dec.	150	$6.58
	Sept.	200	8.56		Jan.	200	7.20
	Oct.	250	7.72		Feb.	250	7.38
	Nov.	300	7.03		Mar.	300	7.34
March	Sept.	150	7.76	August	Feb.	150	7.10
	Oct.	200	7.62		Mar.	200	7.63
	Nov.	250	7.09		Apr.	250	7.39
	Dec.	300	6.77		May	300	7.23
April	Oct.	150	7.01	September	Mar.	150	7.17
	Nov.	200	7.03		April	200	7.45
	Dec.	250	6.89		May	250	7.40
	Jan.	300	6.86		June	300	7.39
May	Nov.	150	6.61	October	Apr.	150	7.07
	Dec.	200	6.93		May	200	7.43
	Jan.	250	7.04		June	250	7.61
	Feb.	300	7.20		July	300	7.61

* The prices given are average monthly prices for good to choice butcher hogs of weight shown. USDA Technical Bulletin 894.

It is impossible to say what the effects of such a price support program are likely to be at this time.

But the main problems of making a profit from raising hogs would remain the same even then. The efficient hog producer would likely end up with good profits most of the time. The inefficient man, just as is the case now, would have little to show for his work, capital, and risk over the value of the feed he was using for the hogs. It isn't hard to learn to be an efficient hog raiser. Those who apply themselves well enough to learn usually get big dividends for their efforts.

Raising Sheep

As the Midwest livestock maps show, sheep raising is not uniformly distributed over the North Central states. One reason is that sheep raising is not well adapted to all areas. Another is that successful sheep raising requires certain kinds of specialized knowledge that many farmers do not have. In other words, the "pool of common knowledge" about successful sheep raising methods in most communities is a smaller "pool" than is the case for most other kinds of livestock.

Men who like sheep and are willing to learn how to do a good job with them are likely to be successful. Otherwise they probably are better off not to try sheep raising.

The small flock finds a place on many farms because it does not seriously interfere with other enterprises. It brings in additional income, and sheep are useful in keeping odd corners about the farm cleaned up and the grass used to advantage. They have little place on very small farms unless the land is mostly pasture. While sheep will eat weeds better than other livestock, this does not mean that weeds alone make a satisfactory ration. Sheep respond to good feed the same as any livestock. The bigger flocks are kept on larger farms with a high percentage of pastureland.

Good quality breeding stock should be used. They can either be natives or ewes brought from the western range. A well-bred mutton type ram should be used in either case. Where early lambs can be handled, breeding the ewes to lamb in February or in early March will make it possible to market choice fat lambs before the heat of summer. The ewes need some legume hay in winter, but can also make use of a part-ration of good quality but cheaper roughage such as corn stover or silage. Little if any grain need be fed during the winter, but some may be needed around lambing time. Salt and simple mineral should be kept available.

The farmer who raises lambs for early market must have his plans well made in advance. The lambs must come on schedule. Early pasture is a big help. Many men sow a field of rye rather early in the fall just for this purpose. If the rye is on good soil, it will make early feed, especially if on a southern slope. Some extra fertilizer on the rye may pay well. Here is another place where top dressing the rye with nitrogen may pay good dividends in the spring. Winter wheat can be used instead of rye, but it does not grow as rapidly as rye. Where grain is available, many farmers creep feed their lambs. But extra costs must be balanced against extra gains.

TABLE 51
FEED REQUIRED PER YEAR BY FARM SHEEP FLOCKS
(The Breeding Flock-Midwest Farms) *

	Southern Iowa Medium Wool	Western Ohio Medium Wool	Eastern Ohio Fine Wool	Minnesota Medium Wool
Feed per head				
Grain and supplement...	145 lbs.	80 lbs.	96 lbs.	67 lbs.
Hay..................	204 lbs.	114 lbs.	129 lbs.	244 lbs.
Corn stover...........	85 lbs.	182 lbs.	....	....
Silage................	....	....	434 lbs.	126 lbs.
Death loss, sheep.........	14%	not given	not given	11%
Per cent lamb crop.......	98%	not given	104%	97%

* Data from farm records compiled by respective Experiment Stations.

Table 51 shows feed requirements for native sheep flocks based on farm records from various states.

Sheep are subject to several diseases—stomach worms are a usual hazard. Rotating the sheep between pastures and the use of a phenothiazine-salt mixture will help prevent worms, but a more specific worm treatment may be needed. Some death loss must be expected, mostly among the ewes. A large lamb crop is a big factor in having a profitable flock. An average of one lamb per ewe from westerns and up to one and one-half from natives is a reasonable accomplishment.

Raising sheep in large numbers in the range country of the west is something of a special problem. The farm management department of the state agricultural college may well be consulted as to profit possibilities. The animal husbandry department should be consulted about feeding methods and day-to-day management problems.

Lamb Feeding

Much the same kind of ability is needed for success in feeding western lambs as is needed by farmers in feeding heavy cattle. The weight of the feeder lamb purchased is usually larger than the gain in weight that is added by feeding. Feeder lambs commonly weigh 60 to 70 pounds when bought and are sold around 95 to 105 pounds in weight. Buying such a high proportion of the weight finally sold makes this a high risk enterprise. Another risk comes from the fact that fat lambs cannot be held long for a better market after they are fat enough to sell. Often, too, the death loss is high. A 2 to 4 per cent loss is considered normal, but losses up to 10 per cent and more have

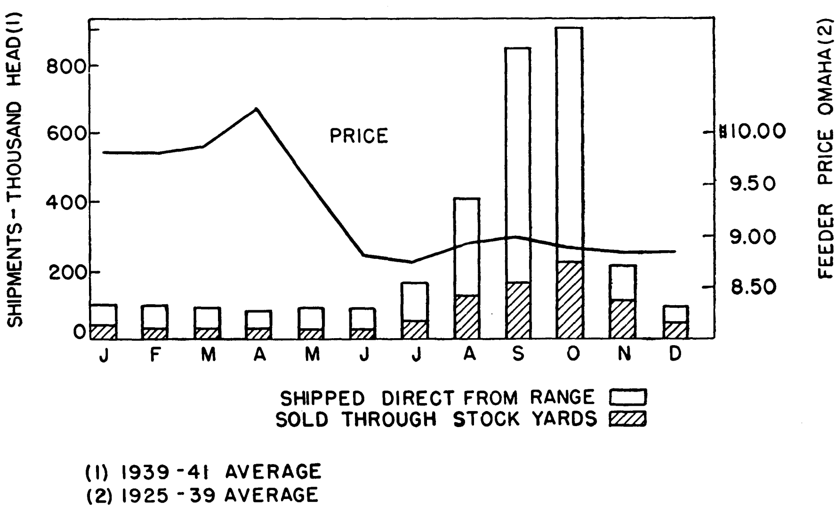


FIG. 52—The month-to-month number of feeder lambs sold and seasonal change in feeder prices. Lamb feeders buy most of their lambs during the fall months but some are available from the southern Plains and California at other times. After July, there is little seasonal change in price in average years. More lambs move direct from the range than go through terminal stock yards.

occurred in many cases where the farmer lacked the special knowledge and skill needed.

Lambs use somewhat more roughage in proportion to grain than many kinds of fattening cattle. Success in fattening lambs on pasture or in the corn field is more difficult than in the dry lot. Lambs are sensitive to off-grade feeds. Using them is almost certain to result in a high death loss.

Lamb feeding gives a rapid turnover of capital since 90 to 120 days is a normal feeding period. Many finishers feed out two lots during the winter, one early in the winter and a second lot later. Around 450 pounds of grain and 550 of hay is a good average per 100 pounds of gain. Considerable skill is needed to get rapid gains. The poor manager may find that a 100 day feeding period leaves the lambs only a little heavier than at the beginning. However, skilled feeders often find lamb feeding a highly profitable enterprise. As in cattle feeding, good judgment of the price outlook is vital to success.

Since special knowledge and skill is needed, most men do not care to learn the business unless they carry it on as a fairly large scale enterprise. Three hundred head is considered a rather small operation. Many handle 500 to 1,000 head a year, and a good many operate on a much larger scale. In other words, feeding western lambs is not often thought of as a smaller scale, side line-type of enterprise.

Guides to Success

One of the most successful Midwest lamb feeders offers the following suggestions. A large scale operator, this farmer has fed hundreds of thousands of lambs and has made large profits out of his lamb feeding operations. These are his suggestions:

1. To be a successful lamb feeder, one must have an honest liking for the business and have a personal desire to care for and understand the habits of lambs and sheep.

2. Learn the many ideas that lie back of the statement, "The eye of the master fatteneth his stock."

3. Plan the lamb feeding program for at least one or two years in advance. It is most important to see that both the lamb

feeding plan and the general farming plan fit together so they will work in harmony and not be in conflict.

4. Study the long-time and short-time production cycles of sheep and lambs and learn how they are related to other species of livestock, and to consumer demand for lamb and mutton.

5. Make adequate financial arrangements that go beyond the length of the feeding period that is planned. This will give the farmer flexibility in choosing the best time to complete his feeding program.

6. Be well informed on the important points about lamb feeding. Make plans carefully and then have confidence in those plans and decisions.

7. Do not spend profit before it is made.

Lamb-Feeding Methods

Many different feeding methods have been successfully used. The Kansas Experiment Station reports the results of several years of physical feed balance studies. They believe that the following points are important in successful lamb feeding:

The proportion of 45 per cent grain to 55 per cent roughage by weight consistently gave the best results. Lambs finished well, death loss, and digestive disturbances were low, gains were good, and the finished carcasses graded out well. The proportion of 35 per cent grain to 65 per cent roughage resulted in a lower grain requirement, and very little death loss. But gains were considerably slower, lambs did not finish well nor bring as high a selling price as when they got more grain. The proportion of 65 per cent grain to 35 per cent roughage gave well-finished carcasses. But death loss was higher and many more lambs went off feed. Considerably more grain was required for 100 pound gain. Daily gains were not as high as in the first case, probably because of the difficulty of keeping the lambs on full feed.

The rations described above are those used after the lambs were on feed. Some time is always needed to get the lambs up to a full grain ration.

Many feeders grind the grain and hay together so the proportions can be controlled. Another advantage is that greedy lambs do not overeat and get off feed so frequently. The slower eating lambs have a better chance to get their share of the feed.

Other rations and methods are being developed to help reduce the death loss. A recent bulletin on lamb feeding should be studied to keep up to date on the progress being made in research work.

Nearly all feeder lambs are purchased in the fall at the close of the range season. Figure 52 shows the time when western feeder sheep and lambs come to market and how they are sold, and the seasonal price pattern for feeder lambs in the past.

Chickens—A Common Farm Enterprise

Nearly every farm family keeps chickens. The size of flocks varies widely from farm to farm depending on the interest of the family in chickens, how well the farm is equipped, and chicken and egg prices. Here is one description of the several kinds of Midwest flocks.

First are the "table use" flocks. These are kept to furnish eggs and chickens for family use. The 1945 Census reported that nearly one-fourth of Midwest farms kept flocks of fifty or less. If these small flocks are well fed, the hens will lay as many eggs as in larger flocks. But not if table scraps and the like make up much of the ration. Such feed is not uniform enough in nutrients to keep a flock of hens laying at a high rate. But the use of low cost feed may be more important.

Second are the "pin money" flocks, somewhat larger but handled mostly by the wife and children. Nearly one farm in three had flocks of 50 to 100 hens, not counting additional chickens for sale may be more important than the sale of eggs rented farms, furnish eggs and poultry for the family and provide the wife with some ready cash of her own. The raising of chickens for sale may be more important than the sale of eggs on many of these farms if the landlord does not provide a fair-sized and reasonably well-built hen house. These flocks often return a good profit for the resources used.

A third type are the "grocery bill" flocks running from 100 to 250 hens. About 30 per cent of Midwest flocks are in this group. Chickens are now a larger farm enterprise, though still not a major one in the farm business. More equipment and care are need for flocks of this size, which means that the farmer as well as the wife must take an interest in the enterprise if it is to be efficient. This is the size of flock reported in Chapter 7. It is a common size of family farm enterprise where it is counted on by the man of the family as well as by the wife to contribute a share of the farm income.

Finally, there are the "commercial enterprise" flocks where poultry are an important enterprise on the farm. On many farms, these bring in a substantial part of the farm income, even though the farm would not be considered a poultry farm. Many Midwest farms have flocks of 250 to 400 hens, but only one per cent are larger operators with flocks of 400 hens and up.

As indicated above, farm families with small flocks may give a good deal of attention to meat production. Large scale poultrymen usually center their attention more on egg production. The meat side of the enterprise cannot be dismissed lightly in the latter case. Failure to be efficient in meat production can greatly reduce the profits.

In this discussion, the raising of broilers is omitted. At the present time, broiler raising is not a common poultry enterprise in the Midwest. Where raised, broilers are frequently a large-scale, highly specialized business.

Start With Good Chicks

Good breeding stock back of the baby chicks is important. One would be wise to check closely on the reputation of the hatchery as to the quality of the flocks from which the hatching eggs are secured. Many hatcheries merit a high rating, but there are wide differences in the quality of chicks that are offered for sale.

What About Breeds?

The main decision will be to choose between a light or a heavier breed. There is no one best answer for all farmers.

Those who have warm hen houses and plan to give a good deal of attention to the hen flock often favor light breeds. White Leghorns are the most popular. With light breeds, eggs usually furnish the main income, bringing in 75 to 80 per cent of the total poultry income. It is important to secure chicks from breeding stock with high egg production records.

Many farmers who have poorer housing conditions, especially those on rented farms, prefer the heavier breeds. Those who keep smaller flocks usually do. Of the heavier breeds, no one is outstanding. One breed may be more popular than others in a particular community, and higher quality breeding stock may be available. If so, this breed would be the one to use. In any case, strong chicks that are well bred and free from disease should be obtained.

Many so-called hybrid chickens are sold. Most of these are secured from crossing two breeds and are not real hybrids. Apparently, there is little special merit in cross-breeding chickens. They may or may not have desirable qualities.

True hybrid chicks, produced from inbred breeding stock, are being sold in some areas. Where backed by a careful breeding program, they often have superior qualities. Whether they are likely to be more profitable than ordinary chickens should be considered before they are purchased. Usually the baby chicks cost considerably more than those of regular breeds.

Table 52 gives information on feed requirements, death loss, and labor requirements in raising chickens. Note that the death loss is usually higher with the light breeds. Apparently, in breeding for high egg production, vitality has been sacrificed to some degree.

TABLE 52
REQUIREMENTS FOR RAISING CHICKENS*

	Smaller Flocks		Larger Flocks	
Location	Iowa	Iowa	Iowa	New York
Sex	Straight Run	Straight Run	Straight Run	Sexed Pullets
Breed	Heavy	Light	Light	Light
Number started	450	400	1,500	1,200
Death loss	10%	18%	18%	12%
Feed per bird raised				
Grain lbs.	...	...	...	10.7
Mash lbs.	...	...	...	19.7
Misc. feeds lbs.	...	...	...	0.3
Total feed, lbs.	28.1	21.9	20.2	30.7†
Labor per 100 birds raised, hours	42	48	25	62

* From farm flock records in these states.

† With sexed chicks, practically all of those raised are kept until ready to put in the laying house. With straight run chicks about half are sold earlier as market chickens. Those sold earlier require less feed and labor per bird. The cockerels of heavier breeds are usually carried to heavier weights than is true with the light breeds.

Proper Feeding Essential to Success

Except when they are small, chickens will live on nearly any kind of grain or scrap feed. But proper feeding is necessary to secure a rapid growth of young stock and high rate of lay from the hens. For this reason, a knowledge of feeds and good feeding methods is essential to success. Many farmers feed commercial mashes both to growing chickens and hens.

Where farm grown grains are plentiful, a common recommendation is to use an 18 per cent protein starter and grower for the first twelve to sixteen weeks. Then gradually change to a higher protein mash (26 per cent is a common one) with home-grown feeds for the later stages of growth and for egg laying. Some use a very high protein mash and more of their own grain, others the reverse. Feeding recommendations for hens should be accurately followed in any case.

Chickens need good housing to do well. This is true both of the brooder house and the laying house. For winter laying the house needs to be dry, reasonably warm, and ventilated—but free from drafts. The straw loft type of laying house is standard in the Midwest and is a considerable help in keeping the house warm and dry and yet permitting good ventilation. In colder climates, many flock owners insulate the walls and sometimes the ceilings of their laying house. An even winter temperature inside the house is a big help in maintaining a uniform rate of egg production.

Keep Them Healthy

Chickens are subject to many diseases. One mark of good management is to have a system that will keep the flock healthy. It is much more a matter of keeping the birds healthy than it is of doctoring them after they become sick. Good flock health is started by securing healthy baby chicks from a reputable hatchery. Next see that the brooder house is thoroughly cleaned and disinfected before the baby chicks are put in. Disinfectants will help but plenty of boiling water and "elbow grease" are important.

The next step is to raise the chicks on clean ground and keep them entirely separate from the old flock. Only then is there a real chance to keep the pullets free from disease. The final step is to sell off all the old hens early in the fall, thoroughly

TABLE 53
REQUIREMENTS OF HENS IN FLOCKS WITH GOOD MANAGEMENT*

	Leghorn (Iowa)	Leghorn (Ohio)	Heavies (Ohio)	Leghorn (New York)	Heavies (New York)
Size of flock	250	500	180	1,400	800
Death loss for year	23%	no data	no data	26%	21%
Eggs per hen	170	160	130	168	167
Feed per hen, lbs.					
Grain	....	47	56	46	50
Mash	....	40	37	45	55
Shell and grit	....	3	2	4	3
Total†	98	90	95	95	108
Feed per doz. eggs, lbs.	7.0	6.8	8.8	6.9	7.9
Labor, hrs. per hen	1.6	no data	no data	2.2	2.4

* From farm flocks record in respective states.
† Average per hen for the year. About 125 pullets were put in the house in the fall to obtain an average of 100 hens for the year.

clean and disinfect the laying house, and give the pullets a clean start. With these condition and proper housing, most diseases can be avoided. Leukosis or fowl paralysis is not so easily handled and a competent veterinarian who knows poultry diseases should be consulted.

Table 53 gives details about hens of light and heavy breeds. Heavy breeds require somewhat more feed. But the hens themselves bring more when they are sold.

Have Pullets Mature Early

Getting a good income from the flock depends not only on having a healthy flock, but also on having the pullets mature early enough in the fall so a considerable share of the eggs will be laid during the fall months. This means that the pullets should be ready to lay not later than October first. Earlier than this is somewhat better. If pullets mature too early, however, other troubles may be encountered. The importance of winter eggs is easily seen in that 20 dozens of eggs sold in November are usually worth as much as 30 dozen sold in April. The feed required in either month will be about the same, so there is usually more profit from the eggs produced during the fall and winter.

More Feed Is Needed As Meat Birds Get Heavier

The sale of chickens for meat may be an important part of the poultry business. In most flocks, meat production consists

Fig. 53—On the family farm, the poultry enterprise makes use of the skill and work of family members who usually do not help with the heavier jobs. Here mother and daughter look after the family flock on a South Dakota farm. Photo USDA Extension Service.

TABLE 54

FEED REQUIREMENTS OF MARKET POULTRY PER BIRD*

Class of Bird	Age	Live Weight Added	Total Live Weight	Additional Feed Needed	Total Feed Fed	Feed per Pound of Added Gain	Feed per Pound of Total Gain
	(*wks.*)	(*lbs.*)	(*lbs.*)	(*lbs.*)	(*lbs.*)	(*lbs.*)	(*lbs.*)
Broiler	8	....	1.47	....	3.80	....	2.58
Broiler	12	.91	2.38	3.66	7.46	4.00	3.13
Fryer	16	1.24	3.54	5.57	13.03	4.80	3.68
Light roaster	20	1.24	4.78	7.54	20.57	6.10	4.30
Heavy roaster	24	1.26	6.04	9.08	29.65	7.20	4.91
Capon	28	.82	6.86	9.04	38.69	11.00	5.64

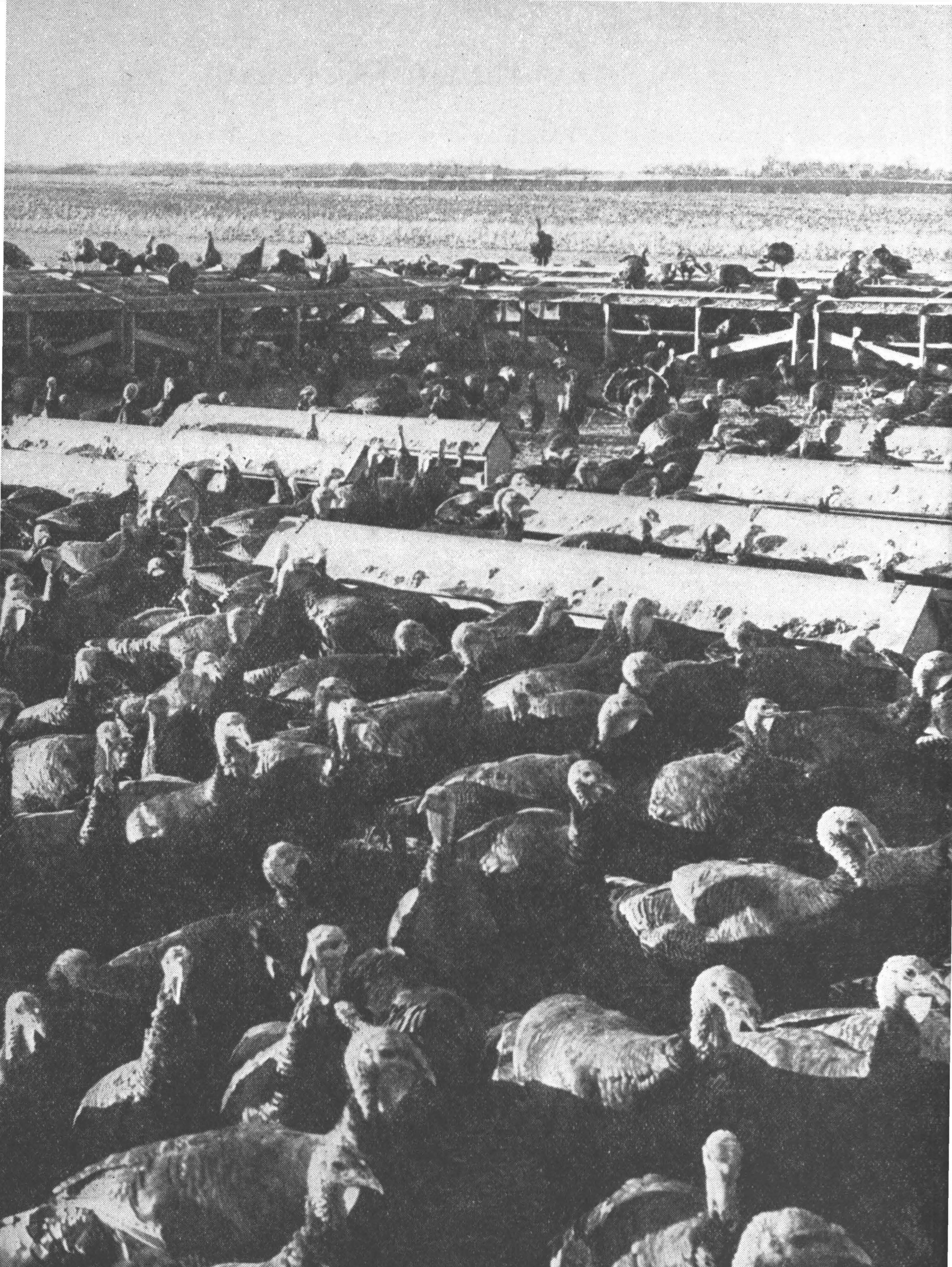
* Wisconsin Exp. Station.

of selling the cockerels and cull hens. Some who lack room for a fair-sized laying flock or for other reasons, raise a good many chickens to sell. It is a business that has a rapid turnover of capital. While it requires a good deal of labor, it is the kind of labor that the wife and children can do for the most part. The problem of keeping feed costs down and choosing the best time and weight at which to sell are much the same as similar problems met in the hog raising business.

As with hogs, more feed is needed for a pound of gain as chickens become heavier. However, the rate of increase in feed requirements is considerably more than with hogs.

Table 54 shows the increased feed requirements as the chickens become older.

This table will serve as a guide as to the time to sell chickens grown for meat. Of course, the price outlook will also have to be taken into account. Usually, the price of chickens goes down in the fall as more of them come on the market. On the other hand, this will have to be balanced against the fact that the costs of the baby chick and that for brooding are the same regardless of the sale weight and price of the bird. Also, the death loss is usually highest when the chickens are small. Since death risk is small after chickens reach the fryer stage, many people take heavy breeds to the roaster stage before selling them. But higher feed costs should be balanced against selling price.



It is easy to see why capons must bring a very high price to bring in a greater profit than a fryer or roaster. The question of the other possible uses for the feed that would be fed in making the chickens heavier will be a part of the problem.

Raising Turkeys

Turkeys are another kind of poultry grown mostly for meat. Formerly most turkeys were grown in small numbers per farm. But in recent years they have become one of the most highly specialized kinds of farm production in the Midwest. Most growers figure that 1,000 to 1,500 turkeys are a minimum number for economical use of labor and equipment and a good many prefer larger numbers.

Turkeys are between hogs and cattle in efficiency of converting feed into gain on the animal. Minnesota farm records reported by the farm management department show that about 560 pounds of feed (330 pounds of grain and 230 pounds of protein feed) were required to produce 100 pounds of live weight where turkeys were raised for meat alone.

Six factors seem to be especially important to the success of the turkey grower:

1. Having a turkey-raising plan that fits in with the rest of the farm plan so that the whole farm operation goes along smoothly and effectively.

2. Having the necessary knowledge and skill to bring the turkeys to sale weight without having too many culls and with efficient use of feed.

3. Keeping disease losses and losses from other causes low.

4. Being able to appraise the price outlook for turkeys far enough in advance to avoid unfavorable seasonal markets. The feed outlook must be analyzed before the season starts. This ordinarily means making plans at least a year in advance. But plans must be kept flexible as they may need to be modified during the growing season.

FIG. 54—Turkeys are a specialized enterprise requiring lots of knowledge and skill. Few farmers care to go into turkey raising unless it is a common enterprise in the community. Here we see a typical turkey flock on a family farm in north central Iowa. Note the feeders and range shelters.

5. Being adequately financed so advantage can be taken of quantity discounts on feed purchases rather than being at the mercy of a dealer or feed company who may be financing feed and "services" at a rather high price. It is also important for the farmer to be able to decide when and how the enterprise should be completed rather than have the decision made by the firm financing the enterprise.

6. Having an efficient size of enterprise so that equipment, labor, and similar costs can be kept in hand.

Turkeys are considered a rather high risk enterprise. They require a good deal of investment in equipment and in poults. Probably more than half of the feed bill is in purchased feeds, the starter and growing mash being rather expensive. Disease is an important factor, and considerable skill is needed to keep losses down. Finally, marketing cannot be readily extended over a long period of time unless more than one brood of turkeys is being raised.

On many specific problems your local county extension office can furnish information or bulletins.

CHAPTER 9 Putting the Farm Plan Together

A GOOD PLAN FITS THE FAMILY members who will use it. It is geared to the special conditions of the farm they operate, the time and skill they can put into the farming operation, the capital they have to use, and the risks they are willing to undertake.

The general farm plan cannot be separated from the family living plan. The larger the share of the family income that is put into the farm business the less money there will be for living expenses and savings. The money comes from the same pocket.

The plan should be developed by the farmer and his wife working together. True, the farmer may take on the bigger end of the planning job. But major decisions about the use of time and money for the farm business, for family living or for saving *should be made jointly. Only then is family farming most effec*tive and family living more harmonious. If older children are at home, they should take part in the planning, both to learn and to contribute their ideas.

The goals the family has in mind—and there are many kinds—must guide the farm plan. An important goal with some families is to increase the income from the farm business. Other families may decide that shorter working hours or a vacation are more important because their income is reasonably good. The goal may be to make better use of the time of 'teen age children or perhaps to lessen the need for their help so they can go to college. Sometimes the goal may call for investing additional money in the farm; such as remodeling the house, building additional farm buildings or changing them, putting in a windbreak, or beautifying the farmstead. In another case, the goal is to lessen the soil loss that threatens to reduce future income. Obviously, the list of possible farming goals is a long one. General family goals are discussed in Chapter 13.

In any case, a good plan is one that helps the family members use their time, capital, and ability more effectively. Most people prefer a plan that looks ahead for several months, usually a year or more. They want it made up in enough detail so it will serve as a guide as they put the plan into operation—therefore it should be written down. But it should be flexible enough to allow for new circumstances that may arise.

Purposes of the Farm Plan

A good plan helps the farmer and his family in eight or more ways.

1. It helps them work out a better farming combination—that is, one that pays them better for the land, labor, and capital they use.
2. It helps them choose money-making practices that are adapted to their conditions.
3. It helps in getting the main jobs timed so they do not conflict with each other.
4. It helps them look farther ahead than they otherwise could.
5. It helps in avoiding waste; and there is waste whenever any resource is poorly used—labor, capital, land, management.
6. It furnishes a guide to go by, a yardstick when progress is to be measured.
7. It helps the farmer and his family keep a better balance between making money on the one hand and using it for family living or savings on the other.
8. It helps fit the farm business into a well-rounded family life so the family can master their own affairs instead of the farm being master of them all.

Start From Where You Are

The kind of plan that is needed depends on the situation. A beginning farm couple must start from scratch unless they can start out as partners in an operating business. They must decide on the many points already discussed in Chapter 4. Tenants need a somewhat different plan than a farm owner, especially if they are not reasonably sure they will get to stay on the same farm for a good many years. Operating farmers may need a readjusted farm plan or perhaps a completely remodeled one.

The first requirement for planning is to size up the present situation. To do this effectively, the farmer must begin by studying himself as the manager of the farm. He also will study the resources he uses; the farm, crops, livestock, machinery and equipment, workers, and the like. He will appraise market opportunities and price prospects. He may look to see how well farmers get paid for their farming in his community compared to opportunties elsewhere.

If the farm brings in a reasonably good income compared to that of other alert farmers in the neighborhood operating under similar conditions, this is good evidence that the present plan is basically sound. This does not mean that time spent in planning will not be well used. Most any plan can be improved. It simply says that the basic plan now in use will likely be continued.

But on thousands of farms, more extensive changes are needed. Evidence of needed changes would include such points as these:

1. The farmer is receiving less income than his work, skill, and capital would bring in if he were employed in some other occupation.
2. The farmer's time is not efficiently employed.
3. The farmer is using less capital per worker than good standards suggest.
4. Yields and production are low and uncertain.
5. Soil erosion is reducing the producing ability of the farm.
6. Costs are excessively high per unit of product produced.
7. The plan is hard to manage and keep on schedule.

As a general rule, only a reasonable number of changes should be considered at one time. This is because there is a limit to the number of new things that a manager can put into effect at one time and do a good job of it. But alert people are willing to undertake the necessary changes.

About the Life Cycle

Before going far with their planning, the family members should review their own position in the life cycle. This makes a good deal of difference in many decisions.

The Younger Family—Under forty years of age. This is the age of capital accumulation. Since most farm families start with much less capital of their own than they need for an efficient farm operation, they have a strong urge to accumulate capital. In addition, as they gain experience, they will likely want to increase the size of the farm business.

Probably they start with a good deal of borrowed capital and they want most of it to be their own. Saving, then, to expand the business and increase their own capital will have a high claim on earnings. This usually means that family living expenses must be kept down—no small undertaking. It also means taking on a good many risks in the farming business in order to attain this goal. "Nothing ventured, nothing gained" will fit their planning. But too much risk might mean disaster. Finding a logical middle ground is where careful planning comes in.

Younger Middle-Age—forty to fifty-five years. This is the age of highest family living costs. The plan must take this into account. Children are of high school or college age. Perhaps the parents are helping the older children get started in life. Many farmers are paying for a farm as rapidly as possible.

Farm operations are usually larger than in earlier years. The farmer has more capital and experience—knows how to manage a larger unit. Older children usually help with the farm work and the plan must make their work effective. Home and farm improvements are frequently made; modernizing the house and adding to farm buildings. These may cost a good deal of money. Or maybe the parents plan to travel a bit to broaden their own lives and those of their children.

If the farmer has been successful in taking risks at a younger age, he may want to continue to do so. He feels more confidence in his judgment. But, during the period of middle age the family should build up their equity rather than take on large, new ventures. Most farmers who "go broke" do so because of taking too many risks during this period of life.

Older Middle-Age—fifty-five years and over. The farmer should plan to do less physical work and make better use of his accumulated experience and capital. Often, the farmer shifts to a plan requiring less labor than the one of previous years. If he is about out of debt, money needs for the farm business are much less than formerly. The cash needs for living will be smaller after the children are gone. Security is more important now and risks should be reduced. If a man loses much of his capital at this age it is late for him to expect to recover it.

Father-son plans, often established to operate during this period of the father's life, may be in some difficulty. The basic money needs of the younger family and the older one as well as the risks that are logical for the two families are different. If they operate together, their plans must take this into account. Even so, conflicting needs are bound to be present.

Watch How Others Plan

Farmers always should be alert to the plans used by the "money makers" in the community. Pay special attention to those who are near the same age and are operating under reasonably similar conditions. The reference here is not to the flashy kind of operator who may "hit the jackpot" once or twice. Rather, it refers to those who are steady and efficient operators but financially quite successful. Try to pick out the key points that make them successful. Make joint planning with neighbors useful. If neighboring farmers use their winter "get-togethers" in an organized way, they find such discussions of great use in helping them improve their farm business.

Don't simply be an imitator. The business-like farmer learns all he can from his neighbors as well as getting information elsewhere, but applies only what fits his own case.

How "Big" a Farmer Are You

The plan must fit the man. The farmer himself is the most fixed part of any plan. He can use more or less of other resources in the plan, but there is only one of himself to use. Even so, he can improve his ability as a manager if he will.

Many farmers have a plan that is smaller than they could readily manage if they tried. They are like an automobile that never gets out of second gear. The production and income from their farm will always be lower than it should be—the level of living for the family will be lower, too.

Others make the opposite mistake. Like a machine that is continually overloaded, they are always in trouble. It may be high expenses, low yields, death losses of livestock, or waste on every hand. Trying to operate on too large a scale is about as bad as not trying to do enough—maybe worse.

How Complete a Plan?

A complete farm plan is probably the best goal. This would include making a plan of the expected use of land, labor, and capital and what the farmer expected his income and expenses to be. Doing a good job of planning, like anything else, requires skill and experience. To start out the first time by making a plan in great detail may be almost as bad as doing no planning at all. A man who makes a plan each year can do a lot better job of planning the second year than the first, the fifth year than the second.

The farmer who doesn't want to go very far with detailed planning should work on the over-all farm and home plan. He can take a brief but careful look at his whole farm operation—crop plan, livestock plan, labor plan, marketing plan, investment plan—and then look at the family spending plan. He will soon be able to pick out some of the weak spots and try to improve them.

A Part-Plan Not Good Enough

Avoid having only part of a plan and then using it for making important decisions. Common part-plans are: a crop plan, a soil conservation plan, a livestock plan. True, something is usually better than nothing. But a part-plan can easily be misleading unless it is fitted into an over-all plan.

Certain detailed plans may be needed on occasion. If the farmer is putting a set of terraces on the land, this is a detailed engineering job. So details will be needed . This also will be true if a new rotation is to be set up, a drainage system is to be put in, main fences are to be re-located, or new buildings are to be built. In the latter case, a detailed study should be made so the new building can be located where it will serve its purpose best, save steps, be of the right size, add to the farmstead appearance, and the like. Errors in planning the farmstead are costly to correct. Make certain that building and farmstead plans are good ones before starting construction. Buildings should be designed to fit the farmer's needs, not only for next year but for many years in the future.

Make the Plan Yourself

Most of the planning will, of necessity, be done by the farmer and his wife. In some counties, a professional worker is available to help with farm planning. The farmer can use the help of a skilled person to good advantage. But the farmer must make his own plan and know why he decided that the plan should be as it is.

Where a father and son operate a farm together the plan should never be made only by the father. This may be a hard lesson for the father to learn. If the son is to help operate the

FIG. 55—Careful planning is an important part of the operation of the successful family farm. A good plan furnishes a guide to follow and a yardstick when progress is to be measured. Here the father, son and son's wife talk over farm and family plans for the months ahead.

plan, he must help make the plan. The father can help with counsel and suggestions. The son's wife should not be overlooked in the planning efforts either.

Starting the Plan

Most families do their main job of planning during the winter months after the crops are harvested. They have more time then. They can look more clearly at past accomplishments and future problems than when they are engaged in important day-to-day operations.

Some farmers need to make plans at other times. The cash grain farmer raising winter wheat must make major decisions about next year's cropping program by late summer. Many cattle feeders buy most of their feeding cattle during the fall and must have the main features of their year-ahead plan ready by this time. But for most farmers, more time can be used in making up the plan.

The farmer and his wife should consider several questions as they start their planning.

About the Farm Plan

1. Is the farm business the right size at present to use the skill and labor of the family effectively? Note that this does not suggest how large the farm business should be. In some cases, the best size would be a one-man farm; in another case a two or three-man unit.
2. Is the operating capital used per worker as nearly the right amount as possible under present conditions? And is capital well distributed within the plan, that is, where it will return the most profit?
3. Has the family looked ahead to price prospects?
4. What are the rules to be used in taking on risks?
5. Did last year's plan fail to make good use of all resources—soil, capital, workers, management?
6. What are the special skills and abilities of the manager—and his wife?

Between Farm and Home

1. How will the balance be struck between the importance of money making and that of family living?

2. Are both short and long-run family goals clearly in mind so the immediate plan can be guided toward them?
3. How will the needs of the various members for congenial and happy family living be fitted into the plan?

A Case Study

To point up some of the planning problems, an actual case may help. A farm might be chosen from any Midwest location—in the wheat country, Dairy Area, Corn Belt Area, or at any other place. The principles to be used will be the same, the details will differ.

The example chosen is a farm located in the south central part of the Corn Belt Area.[1] The farm of 160 acres had been considerably run down by a heavy cropping program when the Foundation took it over as the landlord. It had been rented with a grain share lease, although the farm is not adapted to cash grain farming.

First in importance was knowledge about the capacity of the man and the land. Since the landlord bought the farm as a profit making proposition, he appraised both the farm and the tenant as to their possibilities. He believed that the farm was worth developing—that was the reason for buying it. Obviously, an experienced tenant with adequate capital would hardly come to such a run-down farm. He noted, though, that the tenant was a good worker, honest, had a cooperative wife, and looked as though he could handle the business.

The farm was of fair to medium grade soil but it had been abused in the past and part of it was considerably eroded. Quite a lot of surface soil was gone. Many gullies, too deep to cross with machinery, led back up into the sloping fields. The buildings were in fair shape and would serve the immediate needs of the farm.

The landlord and tenant got together and went over the situation with an eye toward making the farm pay a larger profit. Both would gain if it did and they discussed this point. The time of this appraisal was during the late nineteen-thirties.

First they looked over the results of the farm plan as operated under the previous landlord. What they found is shown in Table 55.

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[1] This farm is one owned by the Iowa State College Farm Foundation, J. J. Wallace, manager.

FIG. 56—A tenant house before and after remodeling. Here, a wise landlord spent a share of the higher income that came from better planning and farm operation on improved housing for the tenant's family. This was a real incentive for the tenant to try to increase the farm income for the landlord as well as himself. Photos by J. J. Wallace, I.S.C. Foundation Farms.

TABLE 55
OLD PLAN

Workers on the farm: Man-months	13	The work is done by the operator with the help of his wife.
Capital: Furnished by tenant	$1,220	Power, machinery, livestock, feed
Furnished by landlord	$4,480	160 acre farm at $28 per acre.

	Acres	Usual Yield	Operator's Share	Landlord's Share
Crops:				
Corn	20	30 bu.	300 bu.	300 bu.
Oats	16	25 bu.	240 bu.	160 bu.
Hay (mostly timothy)	20	0.9 T.	9 T.	9 T.
Rotation pasture	6	...	...	...
Crop land	62	...	...	...
Permanent pasture	70	...	...	...
Roads, lots, waste	28	...	...	...
	160 A.	...	...	...
Livestock:				
Milk cows			4	...
Stock cows			6	...
Young cattle			8	...
Pigs raised			15	...
Chickens raised			200	...
Hens kept			60	...
Income items:				
Value of crops			$348	$316
Value of pasture			100 (rent pd.)	100 (rent rec'd)
Total crop			$448	$416
Income over feed cost from feeding crops to livestock			300	...
Total income for year			$748	$416

Out of the tenant's income of $748, he must pay farm operating expenses, rent, and living costs of the family.

The landlord's income of $416 must pay for taxes on the farm, insurance and upkeep on the improvements, and any grass seed that he furnished. The rest will be the income from his investment plus that for the work of looking after the farm.

Neither had much net income under these conditions. In fact, the tenant had a very poor living with little, if anything, left for savings. The landlord's income would hardly justify owning a farm for the small amount that is left.

Next, they listed the weak spots in the situation. Here is their list:

1. The income is low both to tenant and landlord.
2. Crop yields are low.
3. The acreage of crops is small for a one-man farm. One man should handle seventy to eighty acres of crops with a tractor and ordinary machinery, in their judgment, on this type of farm.
4. The tenant is not using much capital to go along with his labor.
5. The landlord is not furnishing much in the way of productive land. The crop yields and value of the land show this.
6. The tenant is not making much additional income from his livestock program. He is not well-employed during the fall, winter, or early spring months with so little livestock. He would like to keep more cows but the pasture is so poor that five acres are needed for one cow. Even then, pasture is short in the late summer and the cows give little milk at that time. He has little grain for hogs and chickens.

A Remodeled Plan Needed

Obviously, this farm needs a remodeled plan, not just some changes in the present one. After going over the present situation in detail, they agree that this is the case. The next problem is to set up a good plan—a potentially money-making one for this farm. It is not an easy task. But by putting in a lot of discussion both around the kitchen table and out in the fields where they can see specific changes that need to be made on the land, they work out a revised plan. Note that cooperative effort is what does the trick, not a dictatorial attitude on the part of either landlord or tenant. Here is a summary of the problems and the solution they agreed on.

Problem	*Solution*
Lease plan gives the tenant a low income. He has little incentive to do better.	Shift to a livestock share lease so the landlord can help furnish the needed capital and share in both risks and income. The land is not adapted to grain share rent anyway. In

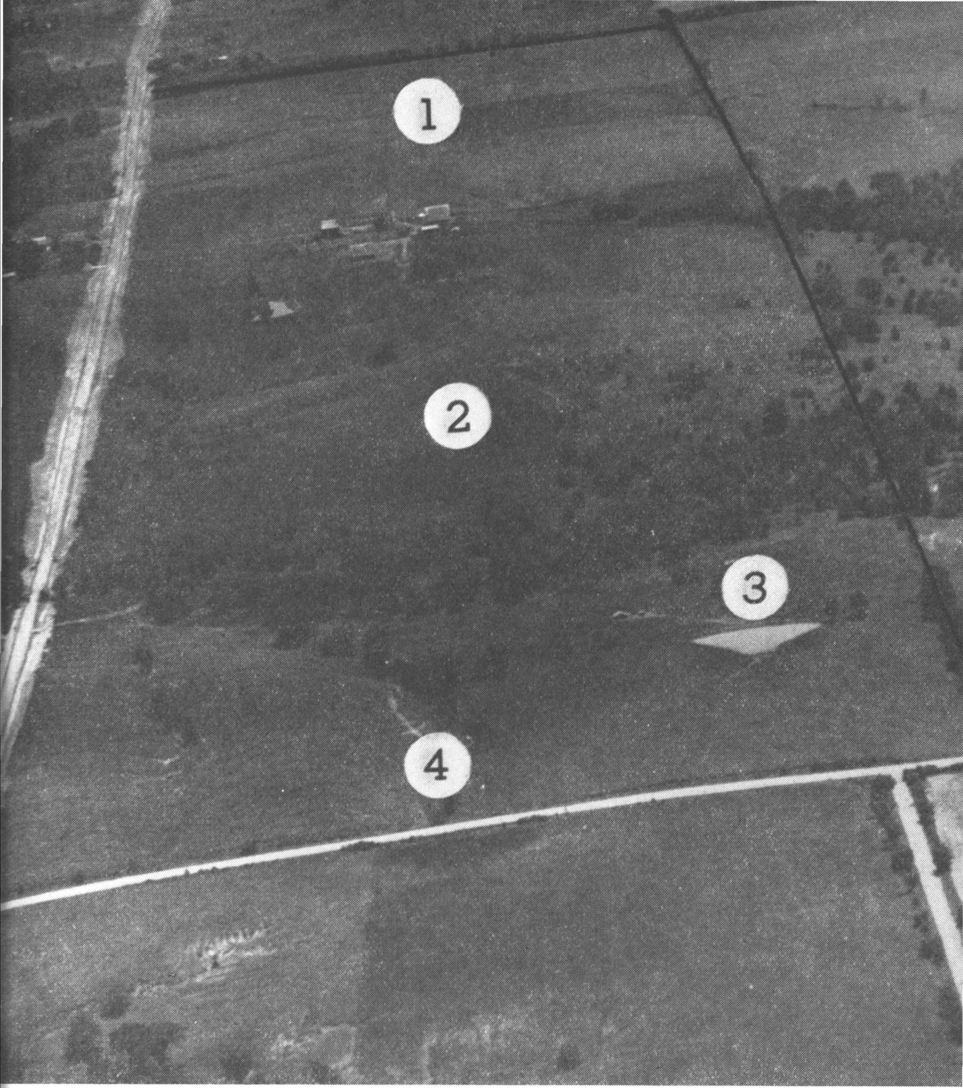


FIG. 57—By changing the crop plan on this farm and adding improved practices, the crop output was greatly increased and soil erosion brought under control. The crop plan was made a part of the over-all farm plan and not developed separately.

A few of the steps taken in replanning this farm:

1. A rotation was set up that was suitable for the 40 acres of better land and 20 acres of poorer land on this end of the farm and soil conservation methods used. Note how gullies, formerly too big to be crossed with machinery, were heeled in and grassed waterways established.
2. This 70 acres, formerly a poor bluegrass and timber pasture, supported ten cows. Now half of it has been added to the regular crop program to provide corn, oats, and alfalfa-brome pasture in sequence. A cow needs only 1 to 1½ acres of this pasture for the season.
3. A large pond to supply livestock water in a tank below the pond was built on the back end of this mile-long farm.
4. This 18 acres of nearly abandoned land was reclaimed with a lime, phosphate and sweet clover program. It now produces about 1,000 bushels of corn once in four years along with oats and hay or rotation pasture in other years. Photo by J. J. Wallace, I.S.C. Foundation Farms.

	addition, the landlord can find ways to give the tenant more incentives with stock share rent.
Landlord income also low. Total production must be markedly increased if either is to make money.	Landlord will add more capital since he is not putting in much now with a low producing farm. To build up the land, he will furnish all grass seed, lime, and fertilizer; improve the buildings and fences and pay for skilled labor needed to put them in shape. The landlord also will share in ownership of livestock and feed. To match landlord's extra contribution, the tenant will: clean up the place; furnish labor to put in and maintain grassed waterways; farm on the contour; help build terraces where needed; dynamite stumps; fill in ditches and do similar jobs from which both will benefit. This will be in addition to the regular farm work. If the tenant needs extra help in soil and land improvement jobs, the landlord will pay for the labor as well as for all materials.
Crop and pasture production and yields are low; all soil on the farm shows need of lime and phosphate; some crops now used such as timothy have a low value as feed. The soil is eroding badly.	Adopt a suitable rotation as soon as possible; corn-oats-(sweetclover)-corn-oats-alfalfa-alfalfa on the better land, corn-oats-alfalfa-alfalfa on poorer land; spread more manure since more livestock will be kept; lime and fertilize the soil (landlord's expense); use legumes in rotation on crop land, also in permanent pasture; add more land to rotation by plowing up less rolling parts of permanent pasture, getting more grain and higher yielding pasture after one crop each of corn and oats; put in grassed waterways wherever needed and maintain them; farm rolling fields on the contour; build terraces where needed; use improved crop varieties.
Tenant's labor is not efficiently used throughout the year.	Shift to a dairy herd. The tenant likes good milk cows. With a good cow herd, the tenant can sell the results of his labor and get a higher rate for it—farm is not well adapted to beef cattle; dairy herd also will furnish market for the increased hay and pasture program outlined above; landlord to add

milkhouse and milking machine in due time as the herd gets large enough. Build pond on back of place for livestock water.

Since hogs pay a high return for grain, increase hog business using early spring and fall litters and better breeding stock; use clean ground system; save labor with self-feeders. Buy some additional grain until the new rotation gives larger grain production later on.

The wife and two children are not able to contribute much to the family income. They would like to do so.	Landlord will remodel hen house so it can handle 175 hens; buy a share in a brooder house. This will permit getting eggs in the fall and winter when prices are best. Wife and children also will help with milking. Landlord will encourage wife to cooperate by furnishing paint and wallpaper for inside of house; provide fencing for yard, tenant to construct; furnish material for work table and kitchen cupboards in kitchen that tenant can install—he is handy with tools.

Both agree that this list of changes cannot all be made at once. In fact, the above list includes the changes that were worked out over a series of years and added to the farm plan a few at a time. The basic outline of the new plan was made at the beginning. The additions and details were then worked out from time to time after certain of the changes had been tested out to see that they really were profit-making changes.

Further, both tenant and landlord put additional capital into the business under the new plan. The tenant could borrow some money but most had to come out of his share of the farm earnings. The landlord had the wisdom to know that this was a better idea than for him to furnish all the needed capital immediately. In no case did the landlord lend money to the tenant. The tenant had to use credit that was a sound loan in the judgment of the local credit agency.

Ten Years Later

The new plan has worked. Not perfectly, of course—many adjustments were necessary from time to time, and more will be

TABLE 56
PRESENT PLAN

Workers on the farm: Man-months	17	Operator, help of wife and children, 1½ to 2 months of hired labor.

Capital: (At 1940 prices)	Tenant	Landlord
Machinery and equipment	$2,180	$ 480
Livestock and feed	2,050	2,050
Land and buildings		5,600
Total	$4,230	$8,130

	Acres	Usual Yield	Jointly Owned
Crops:			
Corn	36	50 bu.	1,800 bu.
Oats	30	40 bu.	1,200 bu.
Hay	30	2.0 T.	60 T. (mostly alfalfa)
Rotation pasture (Alfalfa mixture)	24		
Permanent pasture	25		
Lots, etc.	15		
Total	160 A.		
Livestock:			
Milk cows			16
Young cattle			8
Pigs raised: spring			80
fall			70
Chickens raised			300
Hens kept			175
Income items: (At 1940 prices)			
Crop value			$2,360
Pasture			220
			$2,580
Income over feed cost from feeding crops to livestock			$2,000
Total income from farm			$4,580
Income in 1938			$1,164
Increase from new plan			$3,416

needed. The present situation is shown in Table 56; the same farm, the same farmer, a remodeled plan.

The increase in gross income is striking, going up from less than $1,200 to nearly $4,600 when both are figured at 1940 prices. This is the gross income after paying for any feed and livestock purchased. Out of this gross must be paid all farm operating and fixed expenses.

This change in production and income shows what was accomplished on a particular farm by changing from a very poor plan to a very good one. Note that the farm itself had a potential producing capacity far in excess of what it was showing under the old plan. Likewise the tenant had far greater producing ability than he could apply under the old system. In fact, he surprised himself by the amount that he was able to produce. By teaming up with a landlord who cooperated in working out a plan designed to help the tenant do his best work and get the most out of the farm, and who helped set up a lease system with incentives in it, the tenant's best abilities and those of his wife were put to use.

Today, the tenant is as proud of the farm as though it were his own. The landlord is proud of it and both are getting a very satisfactory income. Formerly considered one of the least desirable farms in the community, it is now one of the most desirable. The present situation is the result of foresight, additional capital and ideas, hard work, thrifty and careful management, and a good plan. The principles of making a good income from farming have been applied in good measure. The tenant and his family have a good standard of living and can afford a vacation each year. They are looking forward to owning a farm of their own before long.

Specifically the steps taken by the landlord and tenant in the planning are as follows:

1. First, they sized up the total situation and faced it fairly; the farmer and his ability, the farm and what it might become, local markets, price prospects, capital needs and sources, and the like.

2. They checked to see if the farm could be made into a satisfactory business unit so that the farmer and the capital being used could be fully and profitably employed.

3. They worked out a lease plan suited to their special conditions. They wanted it not only to be fair but to give incentives to both tenant and landlord so they would make their best contribution to the farm business. They saw to it that good living conditions were possible for the tenant's family and would improve as the tenant demonstrated money-making ability.

4. They worked out a basic plan that fit the man and his family, the farm itself, market conditions, and the price outlook.

5. They started from where they were—didn't jump from the old plan into a brand new one all at one time. They left room for adding to or subtracting from the plan as experience and study indicated.

6. They worked hard both in designing the plan and in making the plan work. They used the best information they could get. Once they had reached a decision, they carried it through to see how well it worked out. But they kept an eye out for useful new ideas and for changing conditions.

Where Adjustments Are Needed

Farms where a remodeled plan is needed are all too common in the Midwest, especially on rented farms and smaller units. Another large group of farms can use various kinds of adjustments for the plan that is already in operation.

In some cases, the acreage of cropland does not fit the supply of labor very well. Before trying to adjust this, a man needs some idea of what a reasonably good acreage of crops per worker should be. The acreage per man-year of labor shown in Table 57 was taken from records kept by successful farmers in the various states.

To have a well-balanced unit from the labor point of view, a man should have an acreage of crops for harvest somewhere near the amounts shown above. A good deal depends on the other parts of his production combination. The dairy farmer has a lot of chores to do, so cannot handle so many acres of crops.

TABLE 57

ACREAGE OF HARVESTED CROPS PER MAN-YEAR OF LABOR *
(All Farm Work)

State	Dairy or Dairy-Poultry		Hog-Dairy	Hog-Beef Feeder	Cash Corn-Livestock	Plains Wheat
	(Smaller)	*(Larger)*				
Minnesota	35–45	60–70	60–80	80–100	...	...
Wisconsin	35–45	50–80	...	...	...	...
Ohio	35–45	50–70	...	...	...	...
Indiana	40–50	50–70	60–70	80–100	90–120	...
Iowa	40–60	...	60–80	80–100	90–140	...
Kansas	...	...	80–120	100–140	...	200–500

* From farm business records from respective states.

But the cash crop farmer can put in long days in the field during the busy season and cover a lot of ground. Much depends on the size of the power unit and machinery that the farmer uses. The dairyman seldom finds that it pays him to use large field machinery since he does not depend on crops for so much of his income. But the grain farmer must produce a lot of crops with his labor if he is to make much profit one year with another.

The man who has less land than is needed for an efficient unit should strive, first of all, to get more cropland to make his labor effective. That is, he should, if more income is important to the family. If unable to do so, then his plan should be to intensify by using his unused labor on whatever additional livestock can profitably be added to his business. He is probably aware that simply running a feed-processing factory, as some farmers do, requires special knowledge and a good deal of capital as well. Most men do better to work out a larger unit that is balanced between crops and livestock if their present acreage is too small.

Another alternative is to use an intensive cash crop with the extra time he has to use. An illustration of this is given a little later in this chapter.

What Crop Combination

The direct crop and soil problems were discussed in Chapter 6. The planning question here deals with three points. First, the farmer will choose the combination of crops that results in the largest returns, one year with another, and that does not unduly deplete the soil. He will study the seasonal labor needs of crop rotations; also the problem of fitting the feed supply and livestock plan together.

As an example, consider a farmer with 100 acres of typical good Corn Belt cropland and enough pasture on the farm so that all the crops are harvested. He is trying to choose between four different rotations. What are his problems?

First he would want to know what kind of feed supply the various rotations will provide. He might work this out as shown in Table 58.

Rotation C looks like the best deal by a good margin. It produces the largest total of feed and the most protein. It is a little low on grain, to be sure, but the other advantages look good. But if the farmer thinks about the kind of livestock he will feed the crop to, he may have other questions.

TABLE 58
FEED FROM 100 ACRES OF CROP LAND
(Assumed Yields) *

No.	Years	Rotation	Amount Raised†			Digestible Feed‡		
			Grain	Hay	Percentage Hay	Protein	Carbohydrate	Percentage Protein§
			(Units)	*(Units)*		*(Tons)*	*(Tons)*	
A....	4	Corn-Corn-Oats-Clover	2,950	810	22	9.5	80.5	10.6
B....	3	Corn-Oats-Clover	2,505	1,080	30	10.0	78.7	11.3
C....	5	Corn-Corn-Oats-Alfalfa-Alfalfa	2,538	1,800	41	16.1	91.5	15.0
D...	5	Corn-Soybeans-Corn-Oats-Clover	3,057	648	17	12.2	73.4	14.3

*Yields assumed: Corn, 50–55 bu., oats 40–45 bu. depending on rotation, soybeans 22 bu., clover hay 1.8 tons, alfalfa hay, 2.5 tons.

† Feed units:

Corn	1 bu.	1.00 unit	Clover	1 T.	17 units
Oats	1 bu.	.45 unit	Alfalfa	1 T.	18 units
Soybeans	1 bu.	1.34 unit			

‡ Computed from Morrison's Feeds and Feeding. 5,300 lbs. of soybean oil meal contains 1 ton of digestible protein; 50 bu. of shelled corn contains 1 ton of digestible carbohydrate.

§ A dairy cow ration needs 13 to 15 per cent digestible protein; young stock and fattening cattle 14 to 16 per cent; beef cows, 7 to 10 per cent; and fattening pigs 14 to 18 per cent, for a balanced ration.

Next, he may want to look at the labor requirements to put in, tend, and harvest the crop. Figure 58 shows these requirements under rather typical farm conditions on a month-by-month basis. An ordinary amount of mechanization is used in handling the crops.

Here the farmer finds some interesting questions to consider in his planning. In total, the labor requirements work out like this.

Rotation A produces 5.0 feed units per hour of labor.

Rotation B produces 4.9 feed units per hour of labor.

Rotation D produces 4.9 feed units per hour of labor.

Rotation C produces 3.7 feed units per hour of labor.

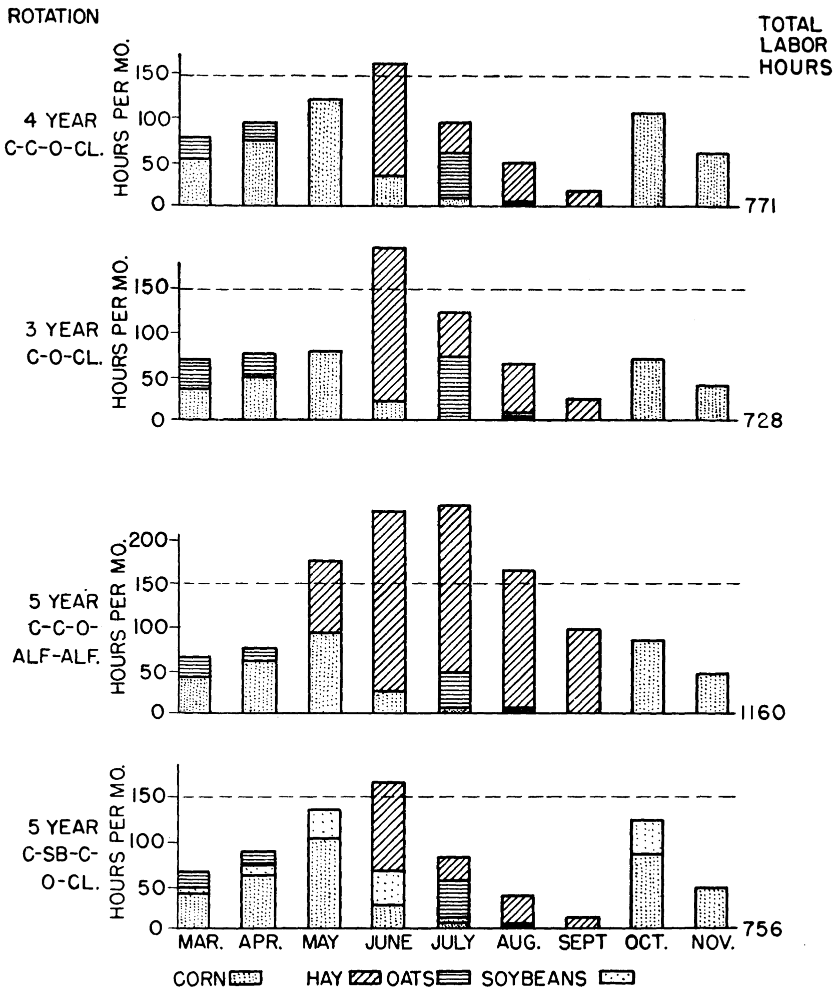


FIG. 58—Hours of labor needed for 100 acres of crops. Hours needed on a medium sized farm using a hay loader, combine, and cornpicker for harvest. Season as in central Indiana or northern Missouri. The rotation selected as well as the size and kind of machinery used greatly affects the hours of man labor required by the cropping program.

Rotation C is at a disadvantage as to labor on two counts. First, less feed is produced per hour of labor. Second, the summer months include an awkward labor peak. Very likely, the farmer will have to hire quite a little day labor during this period or hire custom work to put up the hay. Either is expensive. Rotation B also has something of a labor peak during one month. Rotation A has the best balanced labor load throughout the crop season although rotation D needs fewer total hours. The good balance of rotation A may help explain its popularity with Corn Belt farmers. With other harvesting methods, the results will be somewhat different.

But the third problem must still be faced. How does the feed supply fit different livestock programs?

Two kinds of cattle-hog plans are shown as examples. There are many other combinations that some farmers would consider. In either example, all of the feed crop is fed on the farm. Protein feeds are bought as needed. Hay will be fed as the only roughage during the winter and spring.

Hog-Dairy Farm Plans

With the dairy herd plan, no grain is bought in ordinary crop years. All the hay is fed to the dairy herd along with a reasonable amount of grain. A medium-sized poultry flock is kept. The main adjustment in grain use is to raise enough hogs to use up whatever grain the dairy herd and chickens do not use; in other words, most of the grain crop. When figured out, the results may look like those in Table 59.

The four livestock plans vary a great deal. Rotations A and D fit the man with a moderate labor supply. Livestock and crops together need 2,800 to 3,000 hours of labor per year. Odd job labor would be in addition, maybe another 500 to 800 hours. An ambitious man with the help of his wife could handle this with a month or two of extra help or the help of a 'teen age boy. If the farmer had good land and equipment and was an efficient worker, he would likely find one of these plans very good.

Plan C takes a lot of work. It comes close to being a two-man job yet isn't large enough to make their work efficient either. It should either be somewhat larger or smaller to fit the usual labor situation. A man who had a couple of good boys to help might find it about right. But they would not be around very long at that age so the plan would not be permanent. The farmer would

TABLE 59
LIVESTOCK THAT 100 CROP ACRES WILL FEED
(Dairy Herd, Hogs and Poultry) *

No.	Rotation	Feed Supply	Milk Cows †	Pigs To Raise ‡	Livestock Labor
					(hrs.)
A...	Corn-Corn-Oats-Clover	Corn 2,500 bu. Oats 1,000 bu. Hay 45 T.	11	108	2,330
B...	Corn-Oats-Clover	Corn 1,830 bu. Oats 1,500 bu. Hay 60 T.	15	72	2,670
C...	Corn-Corn-Oats-Alfalfa-Alfalfa	Corn 2,160 bu. Oats 840 bu. Hay 100 T.	25	51	3,680
D...	Corn-Soybeans-Corn-Oats Clover	Corn 2,080 bu. Soybeans 440 bu.§ Oats 860 bu. Hay 36 T.	9	92	2,000

* Extra protein in feed needed by livestock will be purchased.
† Milk cows in a dairy herd that will eat up all the hay; cows at 275 lbs. butterfat.
‡ Pigs needed to eat the rest of the grain after the dairy herd and a flock of 150 hens with replacement chickens are fed.
§ 440 bushels of soybeans will be sold or exchanged for soybean meal.

also need a good milk market with rotation C as much of his income is from the dairy herd, less from hogs. Plan B is a sort of "in between" plan as far as being of a desirable size for most farmers. It would fit some families.

Other adjustments are possible, of course. If some of the rotation grass could be used for pasture, this would help with rotations B and C. Or other adjustments could be made.

The Hog-Cattle Feeder Type

Getting rid of roughage at a profit is often a problem for the man who feeds cattle. Suppose the farmer considers the four rotation plans above. But he does not like too much risk. He prefers to produce more pork than beef; thinks 150 pounds of hogs raised for each 100 pounds of gain on steers is a good combination. He likes steer calves for a longer feed, runs them on his bluegrass for a while in the spring and summer. He keeps 3 milk cows, a flock of 150 hens and raises replacement chickens. Here are the figures he gets together if all of the hay is fed, hogs and steers kept in the proportions suggested, and enough corn and protein bought to balance out the plan.

TABLE 60

LIVESTOCK SYSTEM TO CONSUME HAY RAISED*

(Feeder Calves, Hogs, 3 Milk Cows, Poultry)

	Rotation	Feed to Dairy Cattle and Poultry			Steers and Feed				Hogs and Feed			Corn to Buy
		Corn	Oats	Hay	No.	Corn	Oats	Hay	No.	Corn	Oats	
		(Bu.)	*(Bu.)*	*(T.)*		*(Bu.)*	*(Bu.)*	*(T.)*		*(Bu.)*	*(Bu.)*	*(Bu.)*
A...	Corn-Corn-Oats-Clover	220	340	12	33	1,750	200	33	95	1,660	460	1,130
B...	Corn-Oats-Clover	220	340	12	48	2,544	288	48	137	2,300	872	3,230
C...	Corn-Corn-Oats-Alfalfa-Alfalfa	220	340	12	88	4,800	250	88	253	4,930	250	7,790
D...	Corn-Soybeans-Corn-Oats-Clover†	220	340	12	24	1,272	144	24	69	1,173	376	585

* Extra protein feed for livestock will be purchased as needed.

† The soybeans will be sold or traded for sovbean meal.

Rotation C with lots of alfalfa hay turns out to be the risky one as it is set up now. "Makes a man take too many chances," most farmers are likely to say. Rotation D looks like a good one for a farmer with suitable land who operates a one-man unit. Rotation A is about as good but the farmer would no doubt have to hire some extra help for the peak seasons. Rotation B has some of the same faults as does C.

If some of the rotation grass could be pastured by the cattle, rotations B and C would fit much better. But the man who has bluegrass pasture or who feeds a plainer grade of cattle that does not fit a pasture program would not like these rotations as to the feed supply they furnish. It is true that both rotations A and D might cause some erosion difficulty on sloping soil. Perhaps the farmer could handle this by contouring or terracing, or both, perhaps not. At any rate, the cattle feeder who is not in position to use a good deal of rotation pasture finds the higher roughage programs less desirable. Those who can use such pasture often like them.

Feed Needs Depend on Livestock Efficiency

Feeding efficiency on individual farms may vary a great deal just as crop yields do. An important point to remember is that efficiency in the use of feed is more nearly under the control of the farmer than are crop yields. The choice of kind of crop raised for feed is also the farmer's own choice.

Suppose farmers are discussing the hog raising part of the farm plan. One question is how many hogs to raise. Another is when to have the sows farrow. A third is how to raise hogs. And a fourth is at what weight to sell them.

They look at questions three and four. Maybe one man expects to have 1,500 bushels of corn available for hogs out of his crop. How many hogs should he raise if he does not plan to buy additional corn? A farm record study shows the following results.

An average farmer would have thirteen more hogs of the 220-pound size to sell or eleven more 260-pound hogs from the same 1,500 bushels of corn by using the clean ground system. Surely this would bring in a nice additional profit. But having such a plan means looking ahead so the right kind of pasture will be ready and in a location where it can be used. It also

TABLE 61

NUMBER OF HOGS THAT 1,500 BUSHELS OF CORN WILL FEED OUT*†

If raised in the old lots:	
Hogs sold at 220 pounds each	92 head
Hogs sold at 260 pounds each	78 head
If raised on clean ground:	
Hogs sold at 220 pounds each	105 head
Hogs sold at 260 pounds each	89 head

* Based on Iowa Farm Record Studies.

† Small grain is included as corn, pound for pound. The hogs were fed a ration that was balanced or nearly so from the protein standpoint. They had good care. Feed for breeding stock is included.

means having a feeding and watering system arranged to save labor. Otherwise the extra work of raising hogs in the pasture may be too great.

As indicated in Chapter 8, choosing the weight at which to sell hogs depends on prices at that time as well as on the feed supply.

The problem of adjusting the plan to allow for the level of feeding efficiency applies to other kinds of livestock as well. Wide variations show up from one farm to another in the feed needed per head of livestock or per unit of product produced. This was discussed more fully in the livestock chapters. Each farmer may well estimate about how much feed he uses under his own conditions. This is necessary before careful farm plans can be made. Those who do not have detailed information about their own farms can use some of the average figures available.

Use a Feed Budget

Farmers find that a yearly feed budget is a simple but useful guide in helping them plan the livestock program for the year ahead. Late August or September is the best time to make it out. By that time most of the crops have been harvested except corn. The corn crop can be estimated quite closely. So the feed supply is pretty well known.

The price outlook for the year ahead will not be quite so clear. But the farmer can make a reasonable estimate of possible prices and leave the plan flexible enough to allow for changes to be made later.

A sample of one farmer's feed and livestock budget is shown in Table 62. He estimated the feed needed per head for each kind of livestock and the total feed needed for the number in the plan. He then totaled up the feed needed during the following year for his livestock plan. He balanced this against the feed supply on hand after harvest.

In his case the feed plan is not far out of balance. It is a little short on grain and a bit long on roughage. So the adjustment will be simple to make. It may be wisest for him to feed a little less grain per head or buy enough to balance out. Feed prices will be his guide. Corn can be substituted for part of the oats or the other way around depending on which feeds are more plentiful and cheaper. Or he may want to change the livestock

TABLE 62
FEED AND LIVESTOCK BUDGET
(For Year Sept. 1 to Aug. 31)

Livestock—Present and Planned	Feed Per Head				Total Feed Needed			
	Corn	Oats	Silage	Hay	Corn	Oats	Silage	Hay
	(bu.)	*(bu.)*	*(T.)*	*(T.)*	*(bu.)*	*(bu.)*	*(T.)*	*(T.)*
60 spring pigs on hand, will make them gain 100 pounds more	8	.....	.....	.....	480	.....	.....	.....
Raise 30 fall pigs to 240 pounds each	16	6	.....	(some)	480	180	.....	0.5
Keep 7 sows for March pigs; pigs at 150 pounds by August—50 head	9	6	.....	(some)	450	300	.....	0.7
Seven milk cows at 280 pounds butterfat per cow	20	33	2½	2	140	230	17½	14.0
Six calves and heifers to keep	5	9	1	1	30	45	6	6.0
Team of horses	15	25	.....	2½	30	50	.....	5.0
10 medium grade steers to sell in spring	35	.....	2	1	350	.....	20	10.0
150 pullets to keep	0.4	0.6	.....	.....	60	90	.....	.....
400 baby chicks, early April	.....	.....	.....	.....	40	40	.....	.....
Total Feed Needed					2,060	935	43½	35.2
Feed Supply								
On hand and in field								
Corn for silage, 5 acres at 9 T.					.....	.....	45	.....
Corn for grain, 35 acres at 50 bu. plus 50 bu. of old corn					1,800	.....	.....	.....
Oats in bin, 900 bu. less 50 for seed					.....	850	.....	.....
Hay in mow 32 tons, last cutting in field, 8 tons					.....	.....	.....	40
Short or long					260 bu. short	85 bu. short	2½ T. long	4.8 T. long

plan itself, either upward or downward, buy more feed or sell some of his crops.

Fortunately, the roughage supply is ample. It is always better to have a little extra roughage than to run short. Sometimes hay is scarce and hard to buy if more is needed. Many farmers do not like to buy hay because of the danger of getting noxious weed seed. Also, the winter may be longer and colder than usual and extra roughage will come in handy. A surplus allows for flexibility in the livestock program.

Protein feed needs could be added to the feed budget. But except for larger operators, this is not so important. Few farmers care to buy and store any large quantity of protein feed. Sometimes quantity buying at the right time makes a saving possible.

A pasture budget can also be made up for the summer. This is a little more difficult since the supply of grass depends as much or more on spring and summer rainfall as it does on the kind of grass being used. But with a well-planned pasture program, a reasonable estimate can be made.

Problems on the Smaller Farm

The smaller operator often has some special planning problems. One of these is to use his own and family labor so as to produce a larger income. As an example, assume an Indiana farm with sixty acres of cropland using a moderate amount of mechanization. The farmer might get the following answers in making out his farm plan.

	Gross Income	*Labor Needed*
Crops raised: 20 acres corn, 10 acres oats, 10 acres wheat, 20 acres hay	$2,000	800 hours
By feeding the crops to livestock, he can expect these additional results	1,000	1,200 hours
Total obtained by feeding his own crops to livestock	$3,000	2,000 hours
Suppose he buys $1,000 of additional feed, handles more livestock; results (over cost of feed)	$ 500	400 hours
Total by increasing the size of business	$3,500	2,400 hours

Buying additional feed looks like a good idea. Of course, there would be some other costs in addition to the cost of feed. But he would have more manure to put on his cropland and would need somewhat less commercial fertilizer. If he had to hire additional labor in case extra feed were bought, the idea would not look so good. But if more livestock meant a more effective and profitable use of labor already available, the farmer would gain a good deal from the new plan. However, as shown in Chapter 11, past records show results of all the way from a loss of $130 to a gain of $870 from $1,000 of feed fed.

Many possibilities are open to farmers along this line, especially farmers on a smaller acreage who can increase the number of livestock without having to hire extra help. The decision usually depends upon how large the margin will be over the cost of feed. In the example above, the farmer bought $1,000 of additional feed and added $1,500 to the cash sales, a $500 gain. This is a 50 per cent feeding margin. If the margin were only 25 per cent, buying the extra feed would be of doubtful merit. Many men are able to get a feeding margin of 60 to 80 per cent because of their skill with livestock.

Larger Business Can Mean More Labor Efficiency

In the above example, the extra hours of labor needed did not increase as much as the amount of feed used. This will often be true. A man can raise sixty head of pigs in only a little more time than thirty will require. An extra 100 chickens do not add a lot of labor if they can be handled in a single house. With milk cows, however, the increase in labor needs is very nearly in proportion to the increase in the number of cows.

TABLE 63

REVISING A SMALL FARM PLAN BY ADDING AN INTENSIVE CROP TO THE ROTATION

	Crop Plan	
	Old Plan	New Plan
	(acres)	*(acres)*
Corn for grain	10	10
Corn for fodder	10	10
Wheat	10	6
Oats	10	10
Hay	20	20
Tomatoes for canning	....	4
Total	60	60

TABLE 64
Labor Required — Hours

	Old Plan				New Plan				
	Corn	Small Grain	Hay	Total	Corn	Small Grain	Hay	Tomatoes	Total
Mar...	12	12	....	24	12	12	....	....	24
Apr...	40	10	....	50	40	10	....	13	63
May..	50	....	....	50	50	......	....	30	80
June..	30	....	114	144	30	......	114	20	164
July...	10	54	30	94	10	44	30	17	99
Aug...	......	....	40	40	....	......	40	54	94
Sept...	60	15	16	91	60	9	16	112	197
Oct...	30	19	....	49	30	11	....	36	77
Nov...	104	....	....	104	104	......	....	....	104
Dec...	44	....	....	44	44	......	....	....	44
Total.	380	110	200	690	380	86	200	280	946

Crops Can Be Adjusted, Too

Many smaller operators adjust their cropping plan to increase income and employ labor more efficiently. The example in Table 63 is of this kind.

Next, the labor requirements of the new rotation are examined to see how they fit the labor supply. Labor requirements are those of a smaller farm.

TABLE 65
Income Results of Two Plans

Crop	Old Plan			New Plan		
	Gross Value	Cash Costs *	Remainder	Gross Value	Cash Costs *	Remainder
Corn......	$ 660	$200	$460	$ 660	$200	$460
Small grain.	280	150	130	216	118	98
Hay.......	240	140	100	240	140	100
Tomatoes..	....	....	....	292	90	202
Total..	$1,180	$490	$690	$1,408	$548	$860
Rent for land..................			$360	....		$360
Extra labor hired..............			....	....(50 hours)....		20
To family for own labor.........			$330	....		$480
Return per hour................			47.8c	....		53.5c

* Does not include labor used.

The farmer finds that a good deal more labor is needed where tomatoes are grown. September is the heavy labor month, but if family labor is available, this may be no great problem. Livestock work at that time of year is often fairly light and longer days in the field are possible. Most other farmers are not so busy then and a neighbor boy might be hired.

Next, look at the income side. That will be the final factor in the decision. The figures below show how this can be estimated. (This is an example, not an actual case.)

This case is one where the farmer shifts from a cash crop with a small labor requirement (wheat) to a cash crop that requires a large amount of labor. Not only that but the labor on wheat is well mechanized while tomatoes require much hand labor.

By shifting to tomatoes, the farmer and his family sell more of their labor during the year in crop production, 896 hours instead of 690. They get nearly 6 cents per hour more for their labor. If they figure just the labor over 690 hours, they get nearly 73 cents per hour for the extra work. But the work is harder and there are two months with a rather high labor peak.

Risk would also have to be taken into account. In canning factory areas, tomatoes are often sold on contract which protects the price. But the yield will be uncertain. A seasonal crop like tomatoes also ties the family down more, especially at the time of year when farm families feel they can more easily take a vacation.

Other choices are to shifting from a feed crop to a cash crop or vice versa. These are more involved problems because they may call for changes in the livestock as well as the crop plan.

Replan the Chore System

On livestock farms, the daily chores take up a lot of the farmer's time. Often, choring is tedious work. And chores must be done every day of the year.

Few farmers realize that they are likely to be inefficient in this part of their work. Recent studies have shown this to be the case. Likely, most farmers picked up certain habits about doing chores on their father's farm. Chore plans are largely a matter of habit. Few have ever checked themselves to see whether their system is a good one or not.

Two illustrations are used here. Farmer A is a younger, quite successful, hog-dairy farmer on a 220-acre farm. Like most

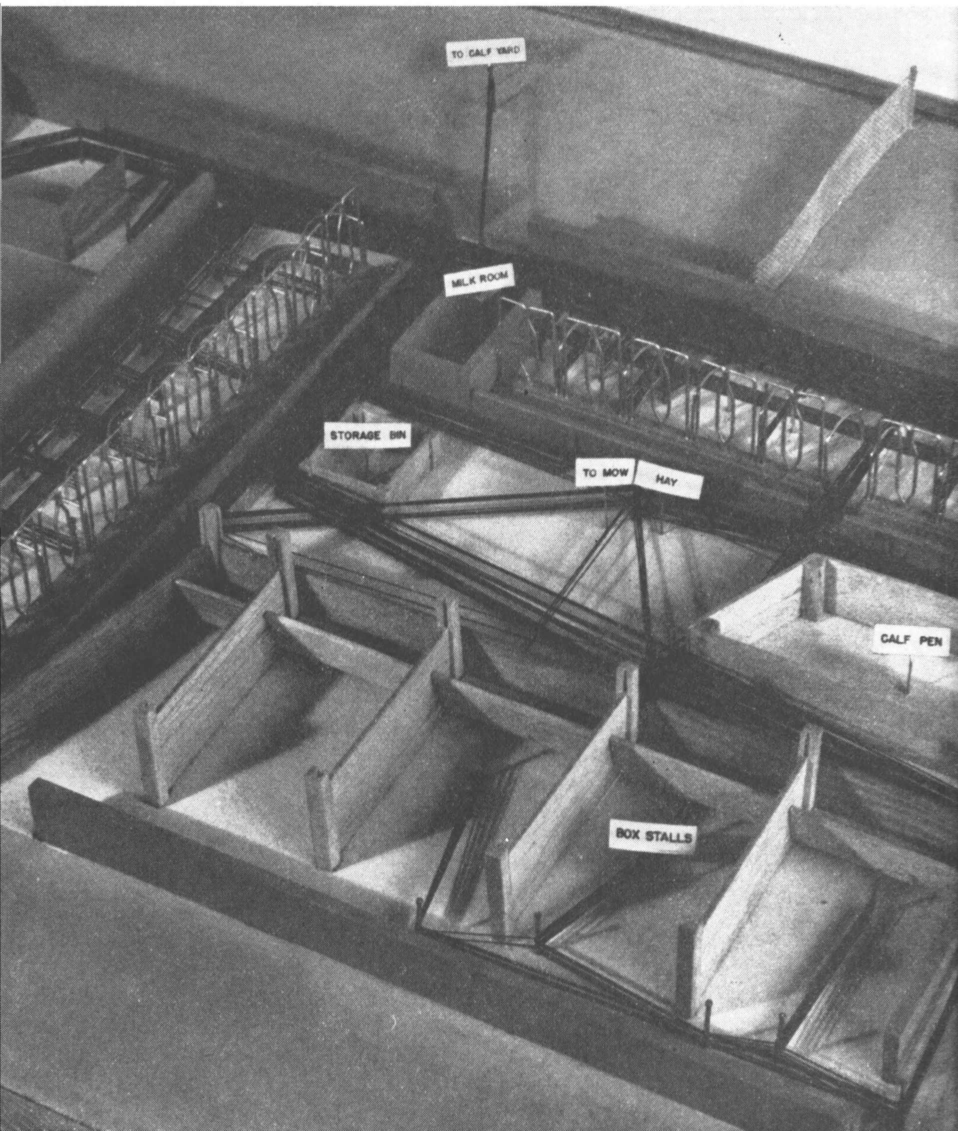


FIG. 59—The black string follows the steps made in doing chores in this dairy barn before a new plan was adopted. Note how many of the jobs were done in a back-and-forth fashion. Photo USDA Extension Service.

other farmers, he had never questioned his chore habits. Chores had to be done. He knew that the faster and harder he worked at them, the sooner they would be finished. But that was about all.

The farm management department at the college made a chore study. Farmer A cooperated along with several others. He wasn't particularly different from other farmers in his chore plans. None of them were very efficient. Figure 59 is a sketch of how he did his barn chores. The specialist from the college followed him around with a model of the barn, unrolling a string to show where the farmer went. This specialist used a stop-watch to see how much time was required. Another model (not shown) was made of the other choring jobs; taking care of the hogs, chickens, and so on.

When the farmer and specialist sat down and figured up his chore time, the farmer and his wife were amazed. Between them, they had walked 1,093 miles per year doing the chores. Chores required about 1,600 hours of their time per year.

Next they did some planning. The farmer didn't want to move any buildings or re-build them. But he was willing to make changes that he could afford. As it turned out, the changes didn't cost much. Here are some of the changes he made:

Old Way	*New Way*
1. Silage carried to cows in a basket.	1. Silage cart used; filled directly from silo.
2. Grain carried in basket to cows from an outside granary.	2. Overhead feed bin built in barn. Hammer mill has a long pipe, blows ground grain from granary to barn. Bin has down spout; cart is used for feeding.
3. Milk separated and utensils washed at the house.	3. Milk house built in corner of barn, water piped in. All separating, washing, and storage of utensils here.
4. Hand stripped cows.	4. Use machine stripping.
5. Carried water to calves.	5. Changed calf pen location, piped water into barn.
6. Carried feed and water to hens in the hen house.	6. Built two storage bins in hen house, one for mash, another for grain. Piped water in with automatic waterer.

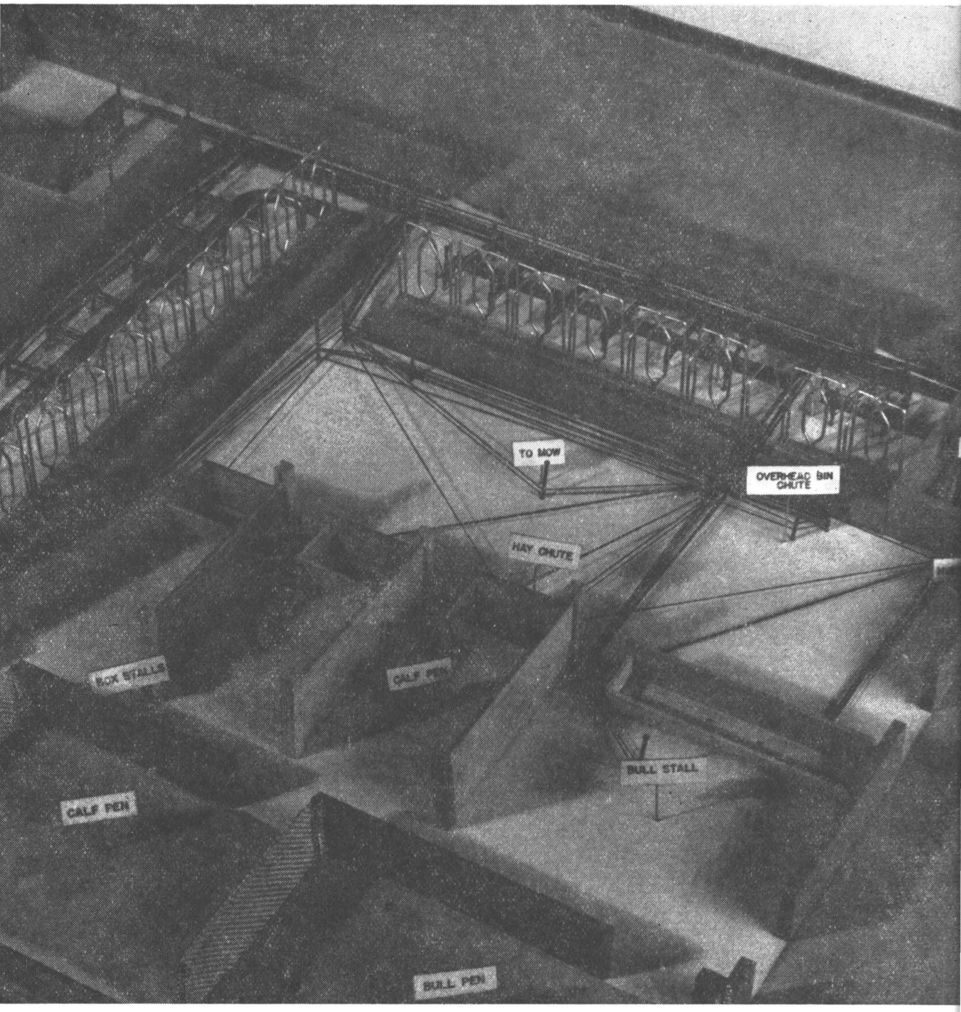


FIG. 60—Note the change from Figure 59 in the number of back-and-forth steps. By changing the barn plan, adding labor saving conveniences, and working in a circular fashion, the number of steps was greatly reduced as well as time saved. No longer do the farmer and his wife feel that doing milking chores is a drudgery. Photo USDA Extension Service.

TABLE 66
MILES WALKED PER YEAR DOING CHORES

	Old Plan	New Plan
	(*miles*)	(*miles*)
Feeding the cows	169	34
Milking the cows	229	225
Cleaning and bedding barn	22	16
Separating, washing, storage	233	46
Feeding and watering calves	17	3
Total dairy chores	670	324
Caring for hogs	305	87
Caring for hens	118	27
Total chores	1,093	438
Chore hours per day, average	5 hours	3 hours

7. Feed hogs by hand, carried water.	7. Bought a large self feeder; self-feed practically all hogs raised, use automatic waterer.

The cost of making all these changes was about $600. A good deal of the labor used in making the changes was that of the farmer, and he used a good many odds and ends of lumber about the place.

Figure 60 was made after Farmer A had changed his chore system. Again the specialist came out and followed him about, checking the distance covered and time spent. Here are the results.

Another Chore Plan

Farmer B is also a hog-dairy farmer, a good one. He was another of the farmers whose chore time was checked. He had studied farm planning a good deal and put together an excellent crop and livestock plan—a highly profitable one. But it never occured to him to check his chore routine.

Farmer B sells cream to the local creamery from a herd of twenty-four cows. The skimmilk, other than what the calves need, goes to the pigs.

The separator room was at the end of the barn, a good location. But from there, he carried the skimmilk down the hill to the hog house, two pails at a time. It wasn't easy to carry the milk down, especially in rainy or snowy weather. Nor climb back to the barn again.

He or his hired man carried seventy-three tons of milk a year, a distance of 200 feet. That's equal to moving two tank cars of milk with a bucket, enough to make a man old—fast.

The farmer and the specialist looked the problem over to see what could be done. They decided to pipe the milk down the hill. Since the barn was above the hoghouse, it would run down by gravity. Otherwise they could have used a small rotary pump. Taking the milk to the hogs requires very little time or labor now. By rinsing the pipe out promptly after each milking, it is kept sanitary.

Farmer B took extra good care of his cows. In fact, he had a high-producing herd. But when he was timed, he spent more time than necessary at the milking. Although he used a milking machine, he was carefully hand stripping each cow.

A revised milking procedure based on careful time and production studies made by experiment stations with dairy herds was worked out for his herd. The time saved was amazing.

Time per day needed to milk 22 cows: { Old method: 5 hours and 8 minutes. New method: 3 hours and 5 minutes.

Here was a clear saving of 760 hours per year on the milking job alone. This was impressive, especially when the farmer thought how tired he often was at the end of a busy day. He looked around his chore routine for other possible labor-saving ideas. Among those used were: an overhead feed bin was built in the barn for cow feed; a feed cart was used instead of carrying the feed to each cow by hand; a small elevator was used to move feed and avoid hand scooping; the hog program was rearranged; and others.

In total, Farmer B reduced his chore travel from 2,250 to 1,590 miles per year, a saving of 660 miles annually or nearly 2 miles per day.

Any farmer can check up on his chore plan if he is interested. Probably he will need the help of his wife as errors in routine habits are hard to see. He should ask himself such questions as:

1. What jobs can be done by working in a circular fashion rather than back and forth? The two farmers described changed from

a back-and-forth method of feeding the cows to a one-trip-around-the-barn system.

2. What jobs can be done by using gravity, wheels, or the like? On farms above: feed now drops by gravity from overhead bins into the feed cart; grain and silage roll on wheels to the cows instead of being carried by the worker.

3. Is feed stored where it is to be used rather than in a distant bin or granary? These two farmers built storage bins in the cow barn and hen house; built large self feeders for hogs that would hold a load or two at a time.

4. Can power and machines be substituted for hand labor? The farmers above now strip the milk cows by machine; blow or elevate feed into bins; pipe water where it is needed by a pressure system and the like.

5. Is the chore system and that of doing field work the result of habit or the one chosen by planning? Both of the above farmers had to have a desire to change their old habits before they could adopt new labor-saving methods.

Summary of Steps in Planning

1. Start the plan by reviewing family goals as to what family members are trying to accomplish. Only then will it be possible to plan with real purpose.

2. Look over the amount of resources available to the family and the outlook for the period ahead. Remember that the two most fixed factors are the farmer himself as the operator and manager, and the farm to be operated. But both can be adjusted, the farm more than the farmer in the short run. Capital and labor to be used are more flexible.

3. The next step is to study the results of the family's past performance. Build the new plan around the strong points, correct or drop the weak ones.

4. Study and readjust each part of the plan—crop system, livestock plan, etc.—with the whole farm and family plan in mind. In operation, the whole plan must work smoothly as a unit if it is to be a good one. One poor part will weaken the whole. One strong part in an otherwise weak plan is not enough.

Anyone can find many plans that are built around the one main interest of the operator. They are not often very successful.

5. Ask the advice of others. Both neighbors and professional people can give the family useful ideas. But the family must decide which of the ideas to use.

6. Make a final check before putting the plan into operation. Does it undertake too little or too much; too risky or not enough; well-fitted to the family and the outlook; one that the family will have pride in and enjoy operating?

Remember, too, that there is no "best" plan for a group of farms and farmers. Even the finest one that the family can devise must be adjusted as times change and the family changes.

A planning handbook will be useful in drawing up the plan. Many state colleges have devised such handbooks and made them available through the county extension office.

CHAPTER 10 When You Go To Market

WHEN A FARMER FIRST GOES TO a large market, he is impressed by the fact that no one seller of farm products has much influence on the price he receives. He often feels that the buyer has full power to determine the price that is set.

There is some truth in this, but it is far short of being the whole truth or even being the most important point about prices. A farmer is aware that the amount of product he sells is only a tiny fraction of the total that is produced. On the other hand, the buyer may represent a firm doing a nationwide business which has a good deal of influence in the market. So it may be true that the buyer, especially if he represents a large firm, has more influence on prices than does a single farmer. But his influence is greatly over-rated.

How Prices Are Made

One can understand the price-making process better if attention is turned to consumers, those who are the final users of the farmer's products. Consumers seldom buy farm products in the same form in which the farmer sells them. Perhaps the farmer's product is hogs. Few consumers want a whole hog. They want pork chops, ham, bacon, sausage, luncheon meat, lard, or other pork products. Or a farmer may sell cream. The consumer wants butter, ice cream, and such. Moreover, many consumers live hundreds of miles from where the farmer delivers his produce. Weeks or months may elapse between the time the farmer sells his produce and the time that the particular product is wanted by consumers.

To take care of the many services required between the producer and consumer, a great many marketing agencies are needed. Various services are performed by dealers, processors, storage firms, transport agencies, retailers, and others. These agencies are operated as business firms, either private firms or co-operatives. Capital, labor, and management are used by them and must be paid. Many of these businesses operate with a good deal of risk; risk of price changes, spoilage of the product, and others. Risk, too, is a cost. Like farmers, some marketing firms are efficient in their operations and others are inefficient. Some make big profits and some have losses. Most have their ups and downs as do other business men.

But middle-men do not set the general level of farm prices even though they may have some influence on prices for a short period of time. Neither they nor farmers set the general level of retail food prices although either may have an influence on them for a while.

Consumer Income a Major Price-Making Factor

Consumers in the United States seem to plan to spend about one-fourth of their income for food one year with another. When their income is lower, they spend less money for food. But they spend a slightly larger share of their income for it. The reverse is true when consumer income is higher. The record of family income and spending for food for certain years is shown in Table 67.

TABLE 67
FAMILIES SPEND MORE FOR FOOD AS INCOME INCREASES

	1929	1932	1938	1942
Income, family of four*	$2,692	$1,524	$2,004	$3,432
Amount spent for food	644	364	480	748
Per cent spent for food	24	24	24	22

* U. S. income per person after taxes multiplied by four.

TABLE 68
CONSUMER INCOME, AMOUNT OF FOOD SOLD AND FARM PRICES*

	1929	1932	1938	1942
Amount of food products sold by farmers, per person	100	97	100	117
Income per family	100	57	74	127
Price of farm food products, at farm	100	50	70	107
Prices paid farmers for:				
Hogs, cwt.	$9.42	$3.84	$7.72	$13.08
Milk, cwt.	2.54	1.27	1.72	2.57
Wheat, bu.	1.04	.38	.66	1.02

* Compared to 1929 as 100 per cent.

The farmer gains in two ways in good times: consumers spend more dollars for food, farmers get a larger share of these dollars. Farmers lose in the same two ways when unemployment and similar causes reduce the total consumer income. But keep in mind that changes in income or prices are not under the control of certain firms or individuals. This is the way the distribution system works at the present time. As a system, it is far from perfect. But it is not a system run by a small group of people.

These general facts can be presented in another way. They may be set up to show changes in: consumer income, quantity of food raised by farmers, prices received by farmers, prices of certain farm products. The same four years are used in Table 68 as those above.

Obviously, it is not the meat packer, milk dealer, wheat processor, or other buyers who set the general level of prices for farm products. They do not decide whether hogs should be 4 or 13 cents per pound or wheat 40 cents or $1.00 per bushel. Rather, it is the income of consumers in total that is by far the more important factor for farmers to watch to find a clue to the likely changes in the prices of farm products.

What the Farmer Can Do for Himself

Perhaps the possibility of the farmer being able to help himself on his marketing problems seems hopeless to some people. This is by no means true. Six kinds of marketing decisions on the selling side are largely in the hands of the farmer. The wisdom with which he makes these decisions may have a good deal to do with his successs or failure in farming. These six are:

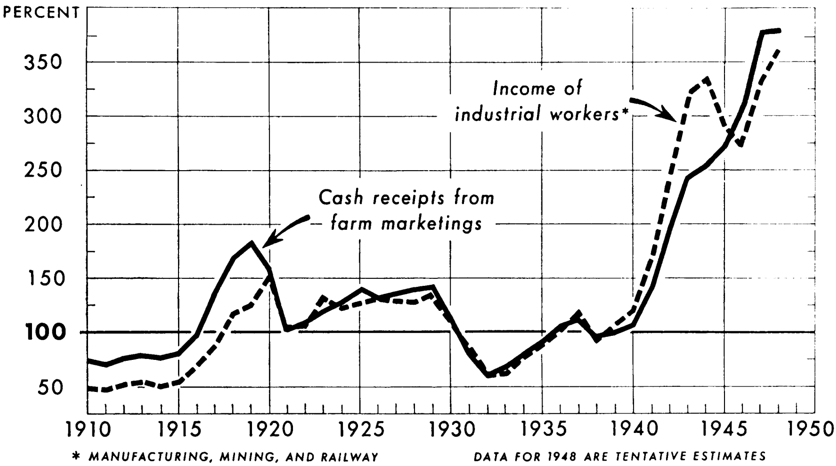


FIG. 61—Cash receipts from farm marketings, and income of industrial workers, United States, 1910–48. (Index numbers—1935–39 = 100). The income of farmers in total is closely related to that of one of their largest group of customers—industrial workers. Thus the farmer has a good market if his customers have jobs and he is producing the things his customers want to buy. *Bureau of Agricultural Economics.*

1. He decides the kind of product that he will market. He does this when he sets up his production plan.

2. He has a good deal of control over the quality of the product he sells.

3. He chooses the form of the product, whole milk or cream, for example; or the kind of container, boxed apples or apples in baskets.

4. He decides when to put his products on the market. That is, he decides this to a certain extent.

5. He decides where to sell—within limits.

6. He decides to whom he shall sell. Again this has limits.

The farmer has somewhat similar marketing opportunities on the buying side of his business. To a considerable degree, these same points apply to the buying side as well.

The farmer's goal in marketing the products he sells is to get the best return he can for them, all things considered. On the buying side, he also wants to make the best buy he can, taking the whole situation into account.

Selling problems vary a great deal depending on the product being sold and the location of the farm. If the farmer sells whole milk to a city buyer, very likely he will be a member of a milk-marketing cooperative. In this case, his personal marketing problems with milk are quite simple.

The cooperative manager and directors represent all the members in reaching a price agreement with the buying firm. Since milk is delivered every day, there is no problem of choosing the time of sale. Certain quality standards are set up in milk-marketing agreements. Keeping the milk up to these standards is more often a production than it is a marketing problem.

Look for a Dependable Buyer

It may be that the man or firm who is the direct buyer of the farmer's products is able to set the day-to-day price that he pays. If he is unfair (and some buyers are) he may take advantage of a farmer who is not well informed. But this is not likely to happen to the farmer who studies his marketing problem, watches market reports, and looks for a dependable buyer.

Marketing Is Affected by the Farm Plan

Many marketing problems are much different from those discussed above. Take the case of two neighboring farmers. Each raises 100 head of March pigs to sell in the fall.

Farmer A produces market hogs. What are his problems? Shall he sell on an early market or hold until later? Many things guide his decision: the likely price trend for hogs during the weeks ahead, his feed supply and feed prices, whether he needs the room for fall pigs or not, how badly he needs the money, and so on. He may make up a daily or weekly hog price chart from radio or newspaper reports to serve as a guide to market trends.

Shall he sell the hogs all at once or in two or three bunches? If he sells at three different times, what is the chance of getting a higher average price? A lower one? If he divides the hogs up to sell them, he must make a final decision about each group. But perhaps these hogs represent nearly half of his whole year's income. Doing a good job of selling will justify the time spent if it will increase his profits.

Where shall he sell them? Take them to the local buyer, to a nearby packing house—sell at a market auction, or take them to a large, central market? Maybe he feels that his hogs are above average in quality of carcass. Is there any place where the buyer will pay a premium for high grade hogs?

If he sells at home, he will know the price that is agreed on before the hogs leave the farm. If they are sold at an auction or a central market, he will not know the price until the sale is made. If the price is not satisfactory, there is little he can do about it. It will not pay him to bring the hogs home again. But he may decide that the greater buyer competition is worth the risk.

The farmer turns all of these things over in his mind before he decides on the place and time of sale. Based on his knowledge, past experience, and perhaps the experience of others, he makes his decision.

Actually, making the decision and carrying it out can be done while the farmer is going ahead with other parts of his farm work. No great amount of travel or out-of-pocket costs are necessary.

Selling Breeding Stock

Farmer B raises hogs for breeding purposes. He, too, has 100 head to sell. But his marketing problem is more complicated.

An early marketing decision had to be made before the pigs were grown. Probably about half of the pigs were boars, half gilts. He had to decide on the number of boars to cull out for market hogs. Some hogs in any herd are hardly suitable for breeding stock. If he expected the market for boars to be unusually good in the fall, the farmer would likely cull out only a few. But if boars would be more difficult to sell he might just as well cull out a few more at that time. The farmer had to make a decision before he knew how the selling season would turn out in the fall.

Should he exhibit his hogs at the fairs? If so, how many hogs and how many fairs? Taking hogs to a fair costs money and requires a good deal of his time. But it is cheap advertising—if the hogs place well in the show. If the hog's chances of placing aren't good, it might be better to stay away.

Later on, a sale method must be chosen. Shall an auction sale be held or will it be better to sell at private treaty?

An auction will get the whole selling job done at one time. If breeding hogs are in strong demand, they usually sell well at an auction. But auctions cost a lot of money: advertising, auctioneers' fees, perhaps a tent for sale day, extra workers, and all the rest. Suppose the price of market hogs should have a bad break just before the sale is to be held. Very likely that would sharply lower the price of breeding hogs at a sale. If the general hog market recovered from the price break a little later, the average price received for the hogs would not suffer so much if they were being sold at private treaty.

If the hogs are sold privately, that process takes a lot of time. The farmer must stay close to home. Prospective buyers who stop when he is not there may not come back later. The hogs must be kept well groomed and the premises clean and attractive. The question of how the hogs should be priced is a difficult one. If, at the start of the selling season, the price is set too high, some of the best customers may go elsewhere. If too low, the farmer gets less than the buyers would be willing to pay. If he gets the reputation of cutting prices to make a sale, word will likely get around that he usually deals in this fashion.

The best hogs usually are bought first. What about the others? How much should the price be reduced on these, to keep them moving? Well along in the selling season, a lull may come in the buying. Perhaps it finds the farmer with a fourth of his hogs left to sell. Shall he figure that the season is over or is the lull only a temporary one? If the season is about over, shall the remaining hogs be taken to a general auction or will that hurt his reputation as a breeder? Or is it better to make them into market hogs and mark off the selling season as a poor one?

The purebred man must have a policy to handle the ones returned as non-breeders. Maybe the buyer is only using this to renege on the deal. Is it worth the cost and trouble of checking up on the breeding ability of such animals? The seller must not have too hard a policy or word will get around that he doesn't make good on non-breeders. If his policy is too lenient, word to that effect may also get around.

The paper work must also be cared for promptly. Some buyers will want the animals registered, some not. Breed associations are strict about careful work being done. Such paper work is tedious to many farmers.

Marketing Returns Must Match Resources Used

Here are two rather extreme cases of marketing problems that certain farmers may have to face. Two men each sold 100 head of hogs. The feed and labor needed in raising the two groups of hogs were not much different, although they may be a little higher for the purebred breeder.

The man with market hogs had a fairly simple marketing problem that didn't interfere with his other farm work. The purebred breeder found that his marketing required additional management skill, labor, and capital. The resources he puts into 100 hogs by the time they are finally marketed are far greater than the case of the market hog man. Does he get well paid for the resources used? Is the rest of the farmer's business neglected during the peak of the marketing season? Each man must decide such questions for himself.

These cases show the differences in the marketing problems that farmers must solve. Each man had to look at the various opportunities open to him. He had to choose the course of action that seemed wisest—the one that appeared to be the most profitable. Just as is true for these two hog raisers, a farmer must analyze his own marketing problems for products he has to sell. It may be well to refer again to the six marketing choices listed earlier in the chapter and study them as to how many resources are likely to be used in marketing the products from his own farm. A similar analysis can be made in the case of items bought.

The farmer's goal is to get the most he can for his product, all things considered. The phrase "all things considered" may include many items, as the hog marketing example shows: extra work, risk, a longer waiting period, more knowledge, more capital, and so on. These, too, are among the problems a farmer must face as he tries to get the most from the resources used in his farming business.

Use Price Outlook

The farmer must use his best judgment about the outlook for prices at many stages in the farm operation both in making production plans and in deciding on the time to sell and to buy.

The first step is to estimate the general trend of prices. Usually the general level of prices does not change rapidly from year to year. But sometimes it does. In 1920 and 1929, for example, the need for adjustments in the farm business to protect against the price decline that followed was far more important in affecting profits than any change that could be made in practices. Caution should be exercised when prices rise to great heights, as in post-war years.

Caution may be needed at other times as well. Witness the price drop following 1929 and 1937. Prices then were not especially high, but dropped when business suffered a sharp set-back. On the other hand, a "full production" plan should generally be used. Profits must come from production and little profit can be expected if the farm output is small. A smaller profit, however, may seem better than the possibility of a larger loss.

The price outlook should also be used in making shorter-run production plans. Will corn or soybeans be the more profitable crop this year? Should more land on a Plains farm be put to wheat or to feed grains? Shall plans include feeder cattle for a four month's feeding period or a ten- to twelve-month period. Should an extra cow or two be milked or should they be culled out? These are short-run problems that are solved partly on the basis of the price outlook. Of course, other factors such as feed supply, available labor, and similar points must be taken into account.

Watch Current Supply and Demand Conditions

When marketing time draws near for seasonal products—hogs, steers, wheat, fruit, etc.—the farmer should give special attention to current conditions. The wheat farmer will watch crop reports in the major producing areas, the trend in business conditions, and the wheat futures market. These are guides in deciding whether to sell at harvest time or to hold until a later period. The same is true for cash crop farmers with any crop that can be stored. Those with perishable crops have much less choice, but should use price outlook as well as they can.

The livestock farmer watches current reports of the likely supply of market livestock in the period when he may be selling. Are many cattle on feed or a more limited number? When will they likely be marketed? Was the pig crop large or small? Are hogs going to market faster or slower than usual? What about storage stocks of meats of different kinds? Is business activity picking up, running even, or slowing down? These are all questions that need watching as the time to sell grows closer.

Radio market reports will help along with those from a market paper. Such reports also can help on the question of where to sell. Sometimes one market has an advantage, sometimes another. The price difference between markets is seldom very large. But a 2 to 5 per cent price difference (after allowing for transportation and other costs) may mean a considerable difference in profits.

How much one should shop around for a better market depends on the product to be sold and the amount. A farmer can scarcely take much time or go very far for all the difference it would mean with one case of eggs. But with a truck load of hogs, cattle, or potatoes, he can afford to spend some time in trying to find a better market.

Know Seasonal Market Trends

Every farmer should have a knowledge of the normal seasonal price trends for the major products that he sells and buys. Some of these have been reported in other chapters. Others are shown on several charts included with this chapter.

Keep in mind that when general economic conditions are changing rapidly, the usual seasonal price trends will be greatly modified by these conditions.

Some key points to remember are summarized below.

Commodity	**Key Points to Remember**
Grains and Feeds	
Wheat	Wheat prices are sensitive to world conditions. In recent years, the government loan price has generally set the usual price of wheat. If export demand is unusually good, the price may be above the loan rate. Often, the cash price is below the loan rate at harvest time. In most years, it has paid farmers to store the grain where storage costs were not excessive.
Corn	Since the corn loan program has been in operation, the loan level usually sets the corn price in years of good crops. The cash price is often below the loan level at harvest, usually reaches it by late spring. After that, new crop prospects influence the price. In short crop years, prices may be highest about harvest time.

Oats In the Midwest as a whole, the price of oats is usually about 60 per cent of the price of corn per bushel. When oats are plentiful, the price is somewhat lower; when scarcer, somewhat higher. Some variation in the relationship between oats and corn prices is usual in different Midwest areas.

Grain Sorghum The price per pound is about 90 per cent that of shelled corn. Variations from this are influenced by the size of the crop and livestock prices.

Protein Feeds The price of linseed and soybean meal per 100 lbs. is usually the price of from 200 to 250 lbs. of shelled corn. Tankage sells for about the price of 300 lbs. of corn, on the average. Commercially mixed feeds sell for the cost of the ingredients plus ten to twenty dollars or more per ton for mixing and selling.

Hay Legume hay usually sells for the price of twelve to sixteen bushels of corn depending on the hay supply. Other hays are usually cheaper. If hay is needed, it is usually best to buy it at harvest time. After a short crop, hay prices may be quite high in late winter. As soon as grass comes, the

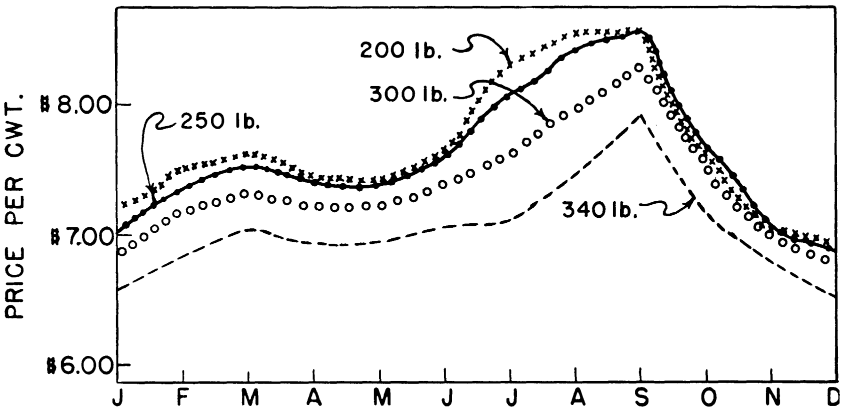


FIG. 62—Typical seasonal price pattern of four weights of butcher hogs. Hog prices are usually highest in the late summer, lowest in the early winter. A drop of about 20 per cent between the summer high and winter low is usual. There is quite a little discount for heavy hogs especially during the summer months. The hog raising plan should take seasonal prices into account. But if national business conditions or the number of hogs being raised changes a good deal, the price pattern will be modified somewhat.

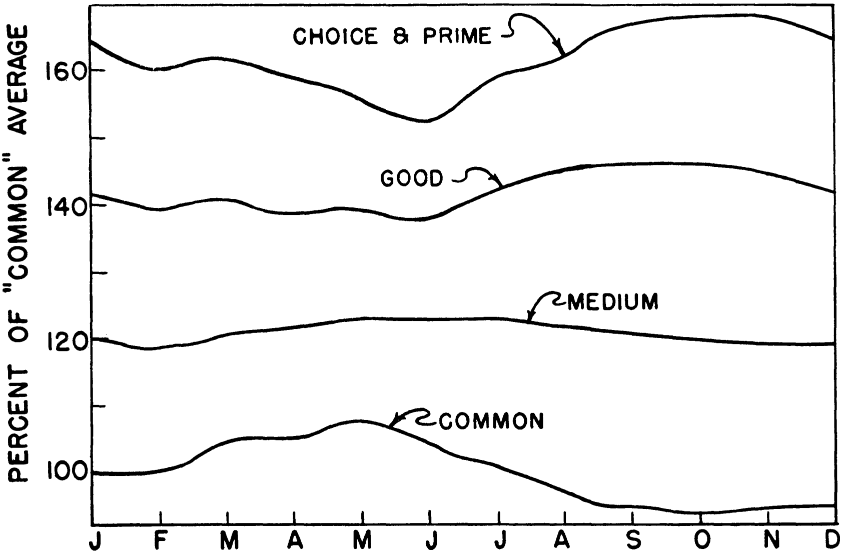


Fig. 63—Four grades of fed cattle and their seasonal price pattern. Grain fed cattle have a typical seasonal price pattern. Note the advantage of selling common and medium grades during the first half of the year, the better grades during the last half. As compared to common steers, mediums sell about 20 per cent higher, good grades near 40 per cent and choice and prime grades some 60 per cent higher. Fat cattle prices also are sensitive to changes in the income of city consumers.

price breaks sharply. Hay products, such as alfalfa meal, sell for a considerably higher price per ton. They may be worth somewhat more. But remember that hay meals are usually made up only of hay and are very little changed in their nutritional value.

Livestock and Products

Hogs — Peak prices are nearly always reached in late summer after the fall pig crop is marketed and before spring pigs move in volume. Another mild peak may occur in March or April between the two pig crop marketing periods. By getting hogs on the market either before or after the big runs, a better than average price can be secured.

Beef cattle — Seasonal trends vary by grades. Fed cattle prices are sensitive to changes in business conditions and in the week-to-week supply of fat cattle. Short feeding of cattle in the fall usually works out badly after a big corn crop. Cattle feeders are said to have a "one year memory" as to the best time to sell cattle. The highest monthly price is seldom the same for two consecutive years.

Feeder cattle prices are usually highest in the spring when farmers are buying them to put on grass, lowest during the heavy runs in the fall.

Lambs

Native fat lambs bring the best price early in the summer. Farmers equipped to produce them should sell before hot weather, usually the earlier the better, provided the lamb is fat enough. Fat lamb prices are sensitive to business conditions, especially conditions in the large eastern cities where most of the lambs are eaten. The best selling month for fed westerns is seldom the same for two consecutive winters. The price averages higher in the late winter. But winter feeding may be more costly than feeding during the late fall.

Chickens

For spring chickens, the price is closely related to the number raised and to business conditions. Prices usually decline from the spring months through the fall. Hen prices follow a different pattern.

Turkeys

The industry has been growing so rapidly that turkeys do not have a well-established price pattern. In recent years, prices have been considerably lower for the heavier birds.

Eggs

The seasonal price pattern is well established with a high price during the fall and low one in the spring months. Some farmers get a premium in the spring by producing hatching eggs. In many areas, buyers pay more for the better quality eggs. In other areas, this is not yet the case.

Milk

In city milkshed areas, a good rate of milk production in the fall and early winter months is often necessary to secure a better than average price. Many markets have a two price system, one for the "base" and another for "surplus" milk. The base price is much the best except when the supply is short.

When milk goes to manufacturers (condenseries, driers, cheese, factories, etc.) the price is likely to have a typical seasonal pattern. Fall freshening of cows has the advantage of a somewhat higher average milk price, larger yearly production per

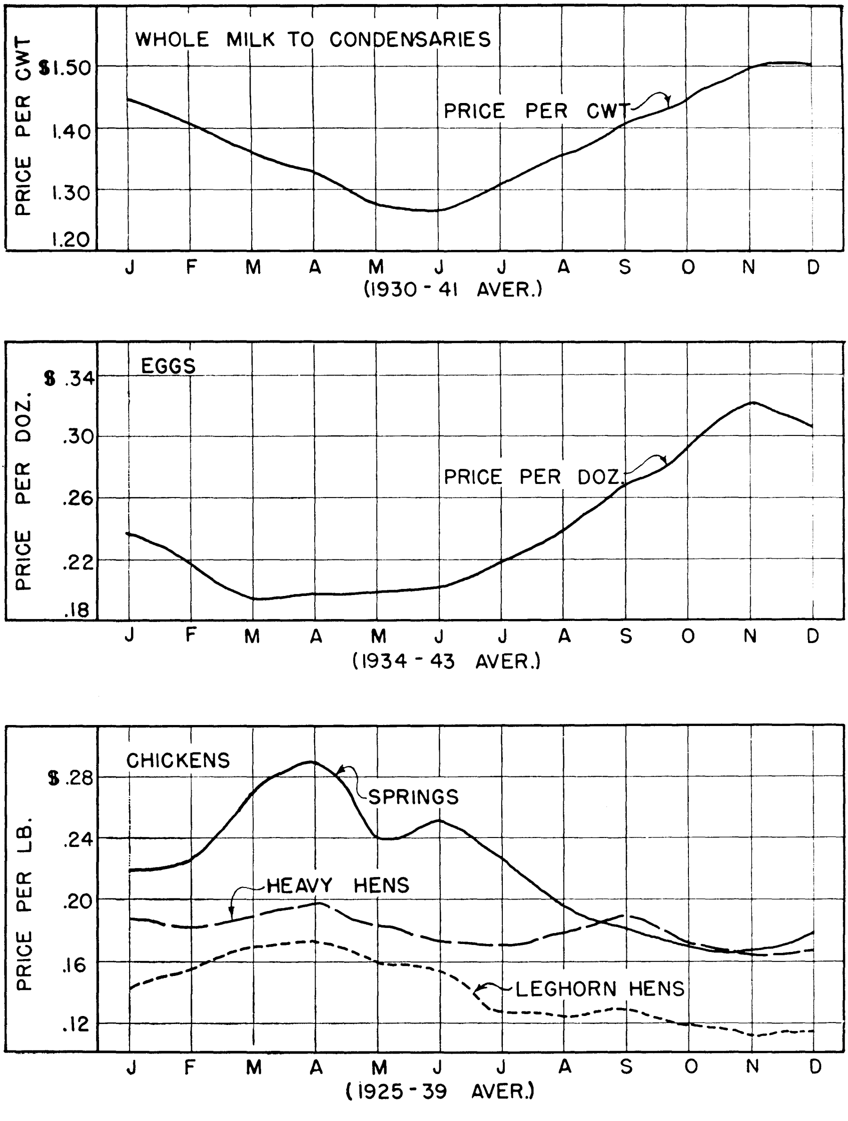


FIG. 64—Seasonal prices. Prices ordinarily go up when the seasonal supply is shortest, down when farmers sell a larger total supply. This seasonal change in supply and price can readily be seen for milk, eggs, and chickens on the charts above.

	cow, and more of the dairy work occurring during the late fall and winter season.
Butterfat	In butter producing areas, the usual seasonal price pattern is that of a higher winter price and a lower spring one, about the same as for milk outside the city milk sheds. Prices in any area are usually dominated by the major use for milk. All dairy product prices are sensitive to changes in consumer income.
Fruits and Vegetables	The size of the crop, and that for competing crops, as well as consumer income, are the major price factors. Where the crop cannot readily be stored, production plans that look ahead to the selling period are important since little choice exists on the marketing end. Cooperatives are especially useful in evening out the seasonal supply, in finding the best outlets, and in sorting and packaging to meet market demands. Cooperatives are more often found in fruit than in vegetable areas. Canning crops are often grown at a contract price. Details of the contract should be carefully studied.

Working Together

A single individual is limited in what he can do by himself in the marketing field. This emphasizes the need for farmers to work together on their marketing problems.

Many improvements can be made to help all producers become better informed. This calls for timely outlook information on probable demand and supply. It also means that the producer should know the kinds or qualities of products that are in greatest demand, which ones bring the highest price, what agencies provide the most efficient marketing services, and similar matters. In other words, a well-informed producer can sell his products to better advantage than one who has little information about market conditions.

Some Points on Cooperatives

Setting up and operating cooperative marketing associations either for selling, buying, or both is another way for farmers to work together. Sometimes this means the organizing of a new cooperative; at other times it means joining a cooperative that is already in operation. Operating cooperatives may need to be improved so they will furnish more efficient and satisfactory marketing service.

In some cases, forming a new cooperative is necessary if cooperative marketing services are to be available. Farmers must move carefully here. To be successful, a cooperative must be an efficient, well-managed business organization. Their problems are far different from the problems of the average farmer. Careful study and expert counsel will be needed to avoid the many pitfalls that exist. Cooperatives face many problems that are different from the problems of operating a farm. Usually the farmer members of the board of directors must add a great deal to their knowledge before they can serve effectively in that capacity. In any case, a highly competent manager is absolutely essential if the cooperative is to be successful.

The Government Plays a Part

The government is playing an important role in the marketing of farm products. Already it is an important factor in determining the price level for numerous farm products.

An important question that cannot be discussed here is how large a part the government should take. Should it support farm prices? If so, which ones and on what basis? From past experience with corn, wheat, cotton, and tobacco, storage stocks of these products have been inclined to increase from year to year as a result of price supports.

Milk-marketing agreements are in operation in many fluid milk markets. The federal government takes part in the price decisions reached.

While this being written, support prices are offered for a large number of Midwest products. Support prices seem certain to have an important influence on the level of prices for these products and on seasonal prices. Very likely, the seasonal price pattern shown in the several charts and discussed here will be modified while support prices are in operation. It is too early to know in just what way.

What About Buying

Although problems of selling farm products are one of the first considerations of farmers, they also have important buying problems of a somewhat similar nature.

Where the products to be bought require urban labor in their production and distribution, the price will be fairly stable. This is because of the stability of industrial wages and the large share of the cost of most manufactured products that is made up either directly or indirectly of wages.

Products that farmers buy that come directly or almost directly from other farms are more sensitive in price. For example, livestock for feeding and breeding are sold mostly from one farmer to another with comparatively little marketing machinery in between. So the price the buyer pays is very nearly or exactly the same as the price the seller receives.

Learn To Be a Good Buyer

Being a good buyer is partly a matter of judgment and partly that of knowledge. The wise farmer develops both. Some men have shrewd judgment, but have little knowledge of the demand and supply outlook for the products which they need. For example, a man may be a good judge of feeding cattle as to whether they are "good doers" but have no knowledge at all of future price prospects. Other men have the opposite advantage. They are good market students but are forever being "taken in" by someone shrewd at selling. Being a wise buyer includes both kinds of ability.

Strive for a Good Average

The best managers try for a good average in their buying and selling rather than plan to be an expert in one or two fields. For example, some farmers are experts on machinery. They know all the virtues and weaknesses of the different makes of tractors, how well they perform in tractor tests, and all the rest. They can buy a tractor intelligently. But when it comes to hogs or milk or eggs or grain, they know little about marketing them. Obviously, it is more important to be able to make wise decisions in marketing the products that are regularly bought or sold by the farmer than it is to know all the details about something that is bought once in ten years.

The wise manager makes an effort to train himself to do a good job in buying and selling those things that are important in his business. Of products that he deals with only occasionally, he seeks the counsel of people who are in position to know and depends largely on their judgment. No one has the time or ability to be an expert in all fields.

CHAPTER 11 Checking Up on Yourself

You are young, my son, and, as the years go by, time will change and even reverse many of your present opinions.

Plato

THIS BOOK HAS EMPHASIZED THAT farming is a business. Family farming is not a large scale business, but, in some ways, it is a rather complicated one. Most farmers have several sources of income depending on their choice of crop and livestock enterprises. The total sales on family farms may easily run from $4,000 to $10,000 per year or more. Probably the cash expenses are nearly half as much. Often the investment in operating capital is more than the amount of sales. In addition, the farmer may own, or at least have a considerable investment in the farm he operates.

Don't Depend on Your Memory

No farmer, however good his memory, can keep all of the details of his business in mind. In fact, if he tries to do so, it is good evidence that he is not a first class manager. Successful farmers say that one of the secrets of good management is to have a record-keeping system so there is no need to remember details. But they note the importance of having the facts at hand when they are needed.

In older days, many farmers frowned on "keeping books." Farmers were expected to learn by observation what they needed to know and to remember the necessary details. In the day when farming did not require many money transactions, they had a point. But today's farmer who fails to make use of modern business methods in his farming is still "going it walking plow style."

Keep Your Records Simple

The farmer wants his facts reasonably simple. He seldom has a business large enough to afford a bookkeeper. Since he must do the book work himself—usually with the help of his wife—he doesn't have a lot of time to give to it.

Farmers do not always agree on what makes up the essentials. But every farmer needs enough records to make up a net income statement at the end of the year. The federal goverment and some state governments insist on an income tax statement each year.

There are several kinds of facts that a farmer can use in his business. From this list, a farmer can choose the ones that fit his own case.

1. *A Record of Farm Income and Expenses.* A system that keeps the different kinds of items separated during the year saves a lot of work in making up the net income statement later on.

2. *An Inventory Account.* This is a list of production items such as livestock and feed on hand at some particular time. It may be a physical inventory listing only numbers and quantity. Or it may be a value inventory setting down what the items are worth. Most farmers who keep an inventory set down both the number and the value of the products on hand.

3. *A Capital Account.* This is another kind of inventory. It is a record of power, machinery, equipment, buildings, and similar items. In other words, it is a list of the main "tools" of production on which depreciation should be figured. On some farms mature breeding stock are included in this inventory. If the farm is owned, the value of the farm land (less buildings, fences, tile, and the like) may be included here. But depreciation is not charged on land.

4. *A Net Worth Statement.* This is set up to tell the family what it is worth financially. If made out at the end of each year, family members will know whether they are getting ahead or going behind and how much.

5. *Production and Operation Records.* These may be anything from very simple records to very elaborate ones. They may be kept largely for historical purposes as a diary is kept. Most farmers keep these records so they will know more about the business. Crop production records, livestock records, feed records, labor records, power records, or others can be included here.

6. *A Business Analysis.* This is a study of the records the farmer has kept. An analysis should show why the farm made the income it did and the strong and weak points about the business. It does for a farm what a medical examination does for an individual. It tells him both what is right and what is wrong. From there he can start to figure out what needs to be done to improve the business.

7. *A Family Living Record.* This is for the family what the farm record is for the farm. It tells the family what it costs for living and how much was spent or invested in non-business items. Very often it pays to know. Perhaps the family does not spend enough of its income for living. Or the family may spend too much. The way to know how much the family spends is to have the facts.

Keeping the Farm Record

The first decision is to choose the kind of a record book to use. There are many kinds. Some farmers simply take a notebook and make one column for sales and another for expenses. This kind of record book is better than none at all. Its weakness is that at the end of the year the farmer must go over it again to sort out the items. Nor does it tell him very much about the business.

Most state agricultural colleges have prepared farm record books. Many commercial ones are on the market. Those from the college can be secured from the county agent or possibly the banker.

When a farm family starts keeping records, the farmer usually insists that he wants a "simple" record book. Experience in working with hundreds of farmers suggests that a record book is simple if the farmer understands it; if he doesn't, it's not. So a better question is, will the record book furnish the facts needed

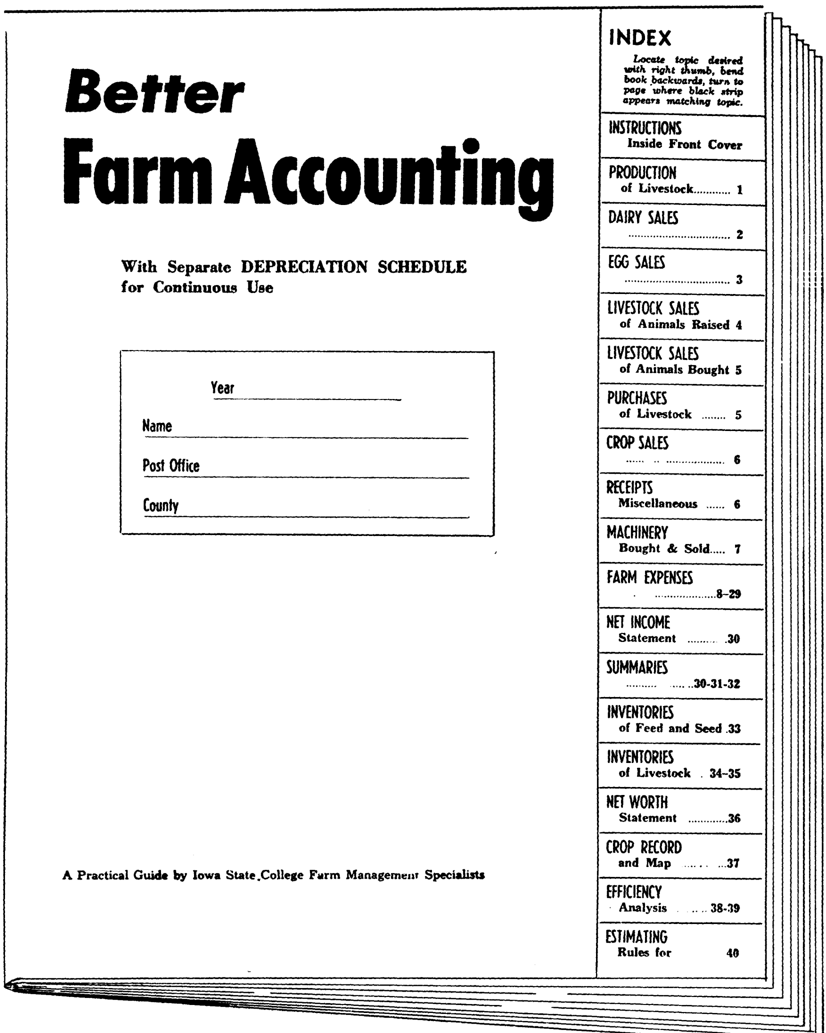


FIG. 65—A well-planned farm account book is a real aid to the farm family both in keeping the farm records during the year and in using them when the year's business is completed.

both during the year and at the end? If it does, then as soon as the farmer becomes familiar with the book, it will seem simple enough. It is true that some record books are more complicated than they need to be. Many are poorly designed. The real point is whether they tell the farmer what he wants to know.

The better record books have separate places for items that are alike. Space is provided so that the sales of eggs, hogs, cattle, and other items can be separated as the year goes along. The farmer can then get a total of each kind of item at the end of the year. Usually, expenses are handled the same way. Probably he will want to know how much feed was bought during the year and what was paid out for hired help. Likewise for the other major kinds of farm expenses. So he will want the record book to have a separate place for the different kinds of expense items.

Another question will be whether to keep the record book on a cash or an inventory basis. Most farmers use the cash method. But there are many advantages in using inventories. It takes a bit more record keeping but after the farmer has learned how, it's a simple job. Until he has, of course, it isn't. So the question is whether he wants to take the time to learn or not.

Cash Income Basis

The following example explains why an inventory record is a big help to the farmer. Take a case of a young man starting

TABLE 69

A BEGINNING FAMILY'S FARM RECORD SUMMARY—CASH BASIS

Income		Expenses*		
Sale of: grain	$ 362	Machinery bought	$1,600	
hogs	610	Cows and sows bought	800	
milk	436	Farm operating expenses	1,248	
eggs, etc.	94	Cash rent	252	
Work for neighbor	98			
		Total farm expenses		$3,900
Total income	$1,600			
		Household expenses	712	
		Life insurance	88	
		Total for family		$ 800
		Total expenses for year		$4,700

* Many of these items do not go in an income tax report.

TABLE 70

SECOND YEAR FARM RECORD SUMMARY—CASH BASIS

Income		Expenses	
Sale of: grain	$ 390	Machinery bought	$ 640
hogs	1,516	Cow and boar	160
milk	642	Operating expenses	1,438
chickens and eggs	218	Cash rent	262
Misc. income	34		
		Total farm expenses	$2,500
Total cash income	$2,800		
		Household expenses	$742
		Doctor bill	70
		Life insurance	88
		Total for family	$ 900
		Total expenses for year	$3,400

farming. Let's say he is able to rent a good, medium-sized farm on a crop share basis with cash rent for pasture and hay land. He and his wife have their household goods and $2,000 to start with. Prices are fairly good; corn is 70 cents per bushel, hogs $9.00 per cwt. They decide on milk cows, hogs, and chickens for their main income with occasional extra crops to sell. Most of the feed will be raised. The facts from his farm and home record summary at the end of the first year on a cash basis, appear in Table 69.

The cash income for the year was $3,100 short of breaking even. This does not look like a very good start. But they were able to borrow money to keep things going. During the second year, they had more to sell. But their expenses were somewhat larger as well. The result is shown in Table 70.

Again the family lacked $600 of being able to pay all their bills out of the cash income. They didn't seem to be making much progress in farming. In fact, they may well have felt quite discouraged about it.

The cash record shows the amount of money paid out and taken in each year. By looking only at the cash summary, the young couple would feel that farming was a poor business indeed. During the first year, they not only had to borrow money to start farming but had to use borrowed money to live on as well. At least, this is the net effect of the year's experience. During the second year, they had only $300 left after paying farm expenses so they also seemed to go behind by $600 after paying for living costs. Finally, in the third year, they more than made ends meet.

Such is the over-all story from their cash records. To many a young couple, such a record would lead to discouragement rather than satisfaction with their farming venture. It is a common experience to have just such financial results during the beginning years of farming.

Record With Inventories Will Look Different

The above summary does not give a true picture. Suppose the family goes back over its accounts using the same figures as above but sets them up on an inventory basis. The results will look like those in Table 71.

TABLE 71
The Beginning Family's Record Summary—Inventory Basis

	First Year		Second Year	
Record summary				
Sales from farm	$1,600		$2,800	
End of year inventory (livestock and feed)	1,800		2,100	
Total credits		$3,400		$4,900
Inventory, first of year (livestock and feed)	0		1,800	
Farm expenses	1,500		1,700	
Livestock bought	800		160	
Depreciation on machinery and equipment	100		140	
Total debits		$2,400		$3,800
Net farm income		$1,000		$1,100

Here the first year shows quite a satisfactory income of $1,000 net for the year's operations. This, even though the family has not counted the value of products raised and used in the home such as milk, eggs, meat, etc. These should be included in the net income. The second year shows a small improvement in net income over the first one.

The family living expenses were not included in the figures immediately above since they would be the same as before. Of course, figuring up the record on an inventory basis will not give the family any more cash on which to live. But it tells them how successful they have been in their business, how much income they have really made from their farming.

How Much Income Was Saved

If this young couple studies its property account and net worth statement, they will see why the cash record summary tells the wrong story. Most of the income during the first two years went to purchase livestock and machinery. Further study should give the family even more encouragement. Even though their bank notes are larger at the end of two years than they would like. they see that they are making steady progress. Their modest capital of $2,000 has grown to $2,400. They have two valuable years of experience in managing and operating a farm. They have gained confidence in themselves that they can get ahead. If they show their full statement to the banker, he, too, can see that they are getting themselves organized to do a larger volume of business. Nor have they over-extended their credit in doing this.

It will still be true, of course, that this family will likely find, for quite some time, three or four places to put every dollar they take in. Their bank balance will remain distressingly small. And they seem to be and are, a long way from farm ownership. The important point is that they have a true picture of the income and financial progress they are making.

Income Tax Effects Vary

A further point has to do with the income taxes they must pay, if any. On the cash basis, if they have one child and paid on the high 1944 tax rates, they would owe nothing the first year and $9.00 the second year. The inventory method, since it shows the income that is made whether it comes in as cash or not, costs a little more. The first year's tax would be $12.00, the second $14.00. Income is being made and accumulated even though it is not being taken as cash. But the cash method or reporting costs a farmer much more when he sells out his farm business or if he greatly reduces the size of it. For then he may sell several years accumulation at one time and must pay in the higher tax brackets. The man on the accrual basis pays his tax as income is produced.

SALES OF LIVESTOCK RAISED

Enter Net Amount Received After Freight, Commission, etc., have been deducted

		Hogs				Cattle			
Date	What and to Whom Sold—Sale Price	No.	Weight	Amount		No.	Weight	Amount	
4/24	20 Butchers to Nelson Pack @14	20	4700	$ 658	00			$	
5/7	20 " " " " 13.80	20	4600	634	80				
5/28	7 " " " " 13.50	7	1610	217	35				
7/16	19 Packers " " " 12.00	19	6840	820	80				
9/4	2 Poor veals					2	220	17	00
10/22	20 Butchers to Nelson Pack 13	20	4010	521	30				
11/5	40 " " " " 12.80	40	8030	1027	84				
12/3	31 " " " " 11.40	31	6080	706	10				
	Totals	157	35870	4586	19	2	220	$ 17	00

		Poultry				Sheep and Horses			
Date	What and to Whom Sold—Sale Price	No.	Weight	Amount		No.	Weight	Amount	
3/28	Cull hens	30	160	$ 40	00			$	
5/19	" "	28	130	33	40				
6/28	Springs	100	398	127	30				
7/18	"	90	350	105	60				
8/24	Old Hens	140	536	134	10				
9/27	3yr Mare to Jones					1		50	00
	Totals	388	1374	$ 439	80	1		$ 50	00

FIG. 66—Keeping the farm record up to date is largely a matter of habit. Those who develop the habit at the beginning of their farming career will find that it serves them well during their farming years. Here is a page for reporting the sale of hogs, cattle, poultry, sheep and horses.

Some important points about each of the seven kinds of records mentioned earlier in the chapter may well be discussed further.

A Place for the Day-by-Day Business

Most people want a record book that has a separate place for each main kind of income and expense item. They want it to be easily summarized for income tax purposes. Basically, most farm record books are built around one of two plans or of a combination of them.

One plan is to have the items listed by the kind of item with enough space in one place for a year's business. There will be a page for egg sales, another for dairy products, a third for hogs, etc. Expenses may be separated the same way. One page may be for feed bought, another for hired labor, another for gas and oil, etc.

The other plan is to have several columns for sales of different kinds on one page, and columns for expenses on another. One page will have columns for eggs, dairy products, hogs, etc. The other for feed bought, labor hired, gas and oil, etc. Some record books are a combination of these two basic ideas.

Many farmers want the expense headings in the record book to be the same as the expense list on the federal income tax blank. This can be done but it is not important. Several blank lines for expenses appear on the tax form and these can be used for the list of items the farmer uses in his record book. The internal revenue people ask that the expense list be complete, easily understood, and be an accurate report of the various farm expenses. But expense items need not be listed in exactly the way the tax blank has them.

What Are Expenses?

This may seem like a schoolboy's question. Yet back of it lie some important problems in a farmer's record keeping. First is the problem of separating farm expenses from personal or family expenses. For example, the auto serves for both business and personal use on most farms. Perhaps on a particular trip it is used to take the eggs to town, a part of the farm business. Perhaps groceries were brought home and this was the real reason for the trip. Thus business and personal use of the car are combined. To handle this problem, the usual method is to divide the total

Date	Kind of Expense		Labor Hired	Feed Bought	Truck and Machine Hire	Fuel and Oil for Farm Use	Auto Expense
12/6	Soybean meal, Elev.	1 T.	$	$ 90.00	$	$	$
8	Telephone & Elect. bill						
10	Auto Insurance						12.50
14	Repairs on tractor						
14	Feed grinding, 2 loads				10.00		
14	Pd. Lumber Yard, repairs						
16	Int. on Mtg. 2nd half						
22	Jim for Dec. labor		100.00				
28	Final on gas bill					80.00	14.28
28	Renewal, 2 farm papers						
28	Vogt, trucking hogs & steers				17.50		
	Totals this page						
	Totals from pages 8 and 9						
	Totals from pages 10 and 11						
	Totals from pages 12 and 13						
	Totals from pages 14 and 15						
	Totals from pages 16 and 17						
	Totals from pages 18 and 19						
	Totals from pages 20 and 21						
	Totals from pages 22 and 23						
	Totals from pages 24 and 25						
	Totals from pages 26 and 27						
	Total for the year		$ 1200.00	$ 992.90	$ 350.17	$ 282.00	$ 242.5[illegible]
					Farm share	% 60	$ 146.00

Repairs: Machinery	Repairs: Improvement	Seeds, Inoc., Lime, Fert., Twine, etc.	Vacc., Vet., Breeding Fees, Medicine, etc.	Telephone and Electricity	Farm Org., Farm Journals, Bank Chg., etc.	Taxes, Ins., Int., Rent: Kind	Taxes, Ins., Int., Rent: Amount	Payments on Notes and Mortgages
$	$	$	$	$	$		$	$
				18 06				
36 20								
	110 16							
						Int	240 00	
					6 00			
						Total Taxes	326 10	
						Total Ins.	42 21	
						Total Int.	512 16	
						Total Rent	—	
$ 230 24	$ 219 76	$ 402 08	$ 183 82	$ 168 16	$ 32 00		$ 880 47	$ 3000 00
			Farm share 50%	$ 84 00				

FIG. 67—Farm expenses must be separated from personal and family ones. A record book with the proper headings saves a lot of time in putting similar items together so they can be added easily at the end of the year.

auto expense at the end of the year between farm and family expense—say 50–50 or 60–40 or some other proportion based on judgment of the proper division of expense between the farm and family. The same is true for electricity, part of which may be for farm use and part for the family. Telephone expense is a similar case.

Most items are clearly one or the other. Groceries, clothing, medical bills, recreation, and items for the house are personal expenses. However, food bought for hired farm workers is a farm expense. This is usually estimated as a lump sum at the end of the year. On the other hand, machinery repairs, crop expenses, feed bought, fuel for the tractor, and the like are plainly farm expense items.

Many farmers use their check stubs as a source of much of their farm expense information. When each check is written its purpose is noted on the stub. It makes a useful source of information later for filling out the record book.

Items With a Longer Life

A more difficult problem is to choose between farm expenses that should be charged off during a single year and those that should be spread over a period of years. This decision should be made at the end of the year. For example, in buying a tractor, whether a new or a used one, the cost can be seen as a proper charge over a period of years. The tractor will help raise several crops before it is worn out: how many will have to be estimated in each case. Machinery, most equipment, buildings, fences, tiling; all of these have a useful life of a few to many years. They should be charged off over the period of years of their expected useful life. These items are listed in the capital account at the end of the year.

The cost of such items as lime and fertilizer are more difficult to handle. Lime may benefit five to ten crops, fertilizer more than one. When the amount spent for these items is much the same from year to year, charge off all that is spent during the year. If a much larger than usual amount is spent in one year compared to the average, the cost may be spread over the number of years that the crops are improved.

How Much Capital Is Working for You?

The inventory account is a simple part of the record but an important one. It is made up of a list of all livestock and feed on hand at any one time. Usually, this list is made out on the last day of the year. Some who rent their farms prefer to make up the list for the last day of their lease year. However, since most farmers report their income tax on a calendar year basis, the last day of December is preferred.

A simple method of taking an inventory is to take a notebook, go around the farmstead on the day chosen, and make a complete list of what is on hand. Livestock are listed by age, sex, or other groups, and the number, estimated weight, and value are set down. Such a list might start out like the list in Table 72.

TABLE 72
INVENTORY LIST

No.	Kind	Weight	Price
50	fall pigs	110 pounds average	16c a pound
20	bred gilts	250 pounds each	$ 50.00 a head
1	boar	300 pounds	50.00
5	milk cows (younger)	1,100 pounds each	160.00 a head
3	milk cows (older)	1,100 pounds each	140.00 a head
2	heifers	900 pounds each	140.00 a head
1	yearling heifer	600 pounds	80.00
2	heifer calves	300 pounds each	50.00 a head
17	feeding steers	750 pounds each	10c a pound
Corn in west crib 1,000 bushels			1.00 a bushel
Corn in east crib (full) 1,400 bushels			1.00 a bushel
Corn, shelled 300 bushels			1.00 a bushel
Oats, 550 bushels			60c a bushel
Hay, back bent, (20′ x 22′ x 20′)		20 Tons	12.00 a ton
Hay, middle bent		10 Tons	9.00 a ton

And so on until the list is complete. It can later be transferred to the farm record book.

In taking an inventory, several points should be watched. First, be certain to have a correct count of the livestock. Every animal should be listed regardless of it condition. Many a man decides to leave out the runts "because they are going to die anyway." In the end, some may be sold and the livestock numbers will not be in balance at the end of the year. By that time, the farmer has forgotten that he failed to count them. So he does not know how to correct his mistake.

Second, be careful to see that the inventory record is complete and the amounts correct. In other words, make up the inventory in the barnyard where a correct count can be secured.

HOG INVENTORY

Use Farm Prices

Description	Beginning of Year: No.	Total Weight	Price	Total Value		End of Year: No.	Total Weight	Price	Total Value	
Old Sows			$	$				$	$	
Bred Gilts	20	5000	50.00	1000	-	20	6000	50.00	1000	-
Other Spring Pigs						10	2000	14¢	280	-
Fall Pigs	50	5000	16¢	800	-					
Feeder Pigs (Purchased)										
Boars	1	300		60	-	1	300		65	-
Total Hogs	71	10300		$1850	-	31	8300		$1345	-

CATTLE INVENTORY

Description	Beginning of Year: No.	Total Weight	Price	Total Value		End of Year: No.	Total Weight	Price	Total Value	
Milk Cows 3-5 yrs.	5	5500	$160.00	$800	-	5	5500	$155.00	$775	-
Older	3	3300	140.00	420	-	3	3300	135.00	405	-
1st Calf	2	1800	140.00	280	-	2	2000	140.00	280	-
Beef Cows										
Bull										
Total Breeding Stock	10	10,600		$1500	-	10	10800		$1460	-
Calves (under 1 year)	2	600	50.00	100	-	3	900	40.00	120	-
Heifers (1 to 2 years)	1	600	80.00	80	-	3	2100	100.00	300	-
Feeding Cattle Plain Yrlngs	17	12750	10¢	1275	-	10	5000	13¢	650	-
Total Young and Fat Cattle	20	13950		$1455	-	16	8000		$1070	-
Total Breeding plus Young and Fat Cattle	30	24550		$2955	-	26	18800		$2530	-

FIG. 68—Keeping the farm account on the inventory basis is a big help to the business-like farmer. Where the account book has the proper kind of pages, the inventory method is easy to use. Here we find the hog and cattle inventory for the beginning and end of the year.

Third, use reasonable prices. For those things that have a ready market, the local market price (farm basis) should be used. Price milk cows and other breeding stock on a conservative basis from year to year. Marking up the cows, say $20.00 or $25.00 per head, may make the income look good that year but it will not pay the bills nor make the cows produce more. For items that do not have a well-established price, the usual rule is to use a conservative value based on good judgment. It should be in line with the value of similar items on the previous inventory.

After the livestock and feed are checked over, the inventory pages of the farm record book are filled out. Similar items may be lumped together. However, enough detail should be used so that the record will tell you what you want to know when you later refer to it.

The capital account is another sort of inventory. It is used for handling items that are not all charged off during a single year. Farm record books provide separate pages for this purpose. The idea is to charge depreciation for their use. Depreciation is the value that is worn out or used up by a year's use.

A corn planter costing $120.00 may plant twenty crops before it is worn out. A depreciation or use charge of $6.00 a year should be made. Similarly, a barn costing $2,400 may have an estimated life of fifty years. One year's depreciation would amount to $48.00. Farmers who buy their milk cows and work stock may place them in the capital account and charge depreciation for their use each year.

In the case of orchards, appreciation or an increase in value may take place from year to year when the trees are young and depreciation occurs as they get older. This is a special case and may require help from a specialist.

What Are You Worth Financially?

The net worth statement serves two purposes. First, if kept from year to year, the family will know how much it is getting ahead or going behind. The values used should be conservative or the results may be misleading. It is easy, for example, to have the net worth statement indicate good progress to family members if they raise the value of their property. The net worth statement also shows the relation of what they own to the amount they owe others.

Machinery	Year Bought	Cost	Est. Years Life	Accumulated Depreciation	1944 Deprecia-tion	1944 Value End of Year	1945 Deprecia-tion	1945 Value End of Year	1946 Deprecia-tion	1946 Value End of Year	19__ Deprecia-tion	19__ End
2 Wagons		$ 200 00		$ 160 00	$ 5	$ 50 –	$ 5	$ 45 –	$	$	$	$
Hay rack + wagon		120 00		60 00	6	60 –	6	54 –				
Manure Spreader	1939	150 00	15	60 00	10	90 –	10	80 –				
Plow, horse					–	5 –	–	5 –				
Disc		90 00	10	60 –	10	30 00	(Traded - see below)					
Grain Binder	1941	450 00	15	120 –	30	330 00	30	300 –				
Corn Binder & int.		150 00	15	70 –	10	80 –	10	70 –				
Plow	1938	112 00	16	42 –	7	70 –	7	63 –				
Cultivator	1938	140 00	20	42 –	7	98 –	7	91 –				
Planter	1940	128 00	16	32 –	8	96 –	8	88 –				
Mower	1936	100 00	20	45 –	5	55 –	5	50 –				
		List	cash paid	115.00								
New disc	1945	160 00	Inv. value	30.00								
			12 Total	145.00			12	133 –				

FIG. 69—Machinery, tools and other items used in production that last for several years are carried on the depreciation schedule. In some record books, such as this one, the same depreciation pages can be used for five or more years.

This brings out the second use of the net worth statement. The bank or other creditor usually wants to know how much property the family owns, what kind of property it is, whether the values used are conservative or not, and the individual's past financial record. Few lenders care to loan more than 40 to 50 per cent of the total value of personal farm property. Real estate loans occasionally run to 75 per cent of the appraised value of land and buildings. But this is sometimes risky for both borrower and lender. Household items are seldom counted as assets in making a loan. The cash or loan value of life insurance is used for security only in case of extreme need.

In other words, a net worth statement is a useful and easily kept record. It should be used by every business-like farm family.

How Much Did the Farm Produce?

The most useful production records are those kept on enterprises having the largest effect on profits. These include the major crops and livestock handled by the farmer.

One kind of crop records is to set down how much is raised in bushels, tons, etc. Or record the value of crops raised showing the value of each crop and the total dollars worth of crops that are produced. Many record books make provision for both kinds of records.

Another convenient record is an outline map of the farm made each year to show the crops raised in each field. Some farmers use the map to show the crop yields from each field, the manure, fertilizer, or lime used, and the location of wet spots or other places that need special attention. These points may be needed in planning future cropping programs.

Livestock records show either how much is produced, the value, or both. This can easily be kept by setting down the details at the time of sales, purchases, births or deaths. Some keep a daily egg record or a daily milk record. A breeding record is often used. This is necessary where purebred livestock are to be registered.

Records of the amount of feed fed to various kinds of livestock are of value to the livestock farmer. A once-a-month estimate will do quite well. Labor records may be kept but have limited usefulness for the diversified farmer. They are more important in specialized farming.

NET WORTH STATEMENT

John A. Farmer – 1945

What We Own	Beginning of Year		End of Year		What We Owe	Beginning of Year		End of Year	
Current Assets	$		$		Notes Payable—List	$		$	
Cash—Checking and Savings Account	160	00	653	00	Bank, Cattle note	1000	00		
Life Ins.—Cash Value Plus Accum. Dividends	400	00	452	00	" , 2 other notes.	1000	00		
Bonds—Present Value	150	00	225	00	" Cattle note			600	00
Stocks—Present Value In coop.	100	00	100	00	Loans on Life Insurance				
Good Notes and Accounts Due Us					Accounts Payable—List				
					Doctor Brown			200	00
Feeds (Page 33)	3143	00	2800	00					
Seeds and Supplies (Page 33)									
Hogs (Page 34)	1850	00	1345	00					
Cattle—Breeding Stock (Page 34)	1500	00	1460	00	Income Tax—Due				
Young and Fat (Page 34)	1455	00	1070	00	Taxes—Past Due				
Poultry (Page 35)	332	00	330	00	Interest—Due or Soon Due				
Sheep (Page 35)					Rent—Due or Soon Due				
Semi-Current Assets									
Horses (Page 35)	200	00	150	00					
Mach. & Equip. (pp. 2a, 3a, & 4a Depr. Sch.)	3500	00	3225	00					
					Mortgage on Farm Peoples Life Ins Co	12,000	00	11,000	00
Fixed Assets									
Farm Operated 150 A. $200.00 per A.	30,000	00	30,000	00	Mortgage on Other Real Estate				
Other Real Estate Owned									
Total We Own	$42,790	00	$41,810	00	Total We Owe	$14,000	00	$11,800	00

Total We Own $42,790 minus Total We Owe $14,000 at Beginning of Year = $28,790 Our Net Worth at Beginning of Year.

Total We Own $41,810 minus Total We Owe $11,800 at End of Year = $30,010 Our Net Worth at End of Year.

Our Net Worth at End of Year $30,010 minus Our Net Worth at Beginning of Year $28,790 = $1,220 Our Increase ~~or Decrease~~ in Net Worth for the Year.

FIG. 70—The net worth statement, if kept up to date year by year, is one of the most valuable records for the farm family. It is very useful when discussing credit needs with the banker or other credit agency.

Put the Farm Business Under a Magnifying Glass

The most valuable part of the farm record for the family is the business analysis. Yet, this is the part that many farmers fail to use.

A good analysis should really "talk" to the farmer about the year's results. Perhaps it will say, "Nice going, you did a good job there." Or perhaps, "Careful, mister, you slipped on that part of the business." Or maybe, "Here looks to be the place to step out and expand next year."

Some facts needed in the analysis include:

1. Facts to indicate if the size of business fits the farmer. A business that is too small for the operator is like a man cutting a wheat field with an old fashioned cradle. He may be doing a first-class job but he would not get much accomplished. A man trying to run too large a business for his ability as a manager may be equally bad off from the net income standpoint.

2. An analysis should show if the combination of enterprises is a good one for the individual's situation. That is, is the farmer producing the right things and in the best proportions?

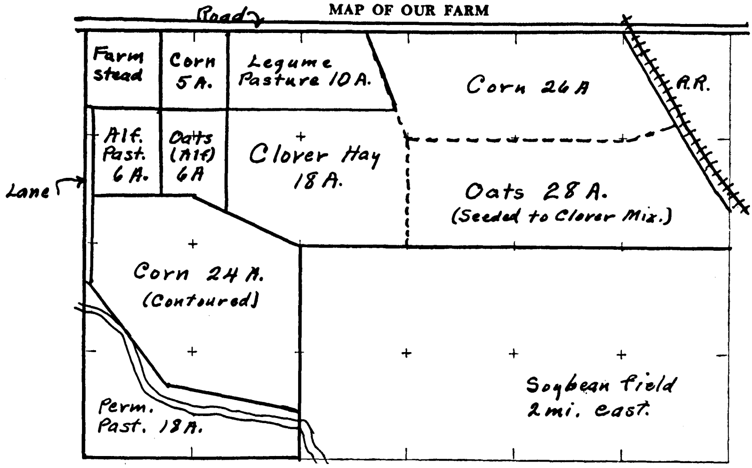
3. It should show how efficient the farmer is as a producer. Does he put a lot into the business in proportion to the returns secured, or does he get a lot of production in proportion to what goes into the business? He will want to know if he is efficient with livestock, machinery, equipment, and in labor use and crop production.

4. Finally, the record should tell the farmer and his wife if they are able to keep the costs of farming in line. They are concerned with costs per unit of production rather than the total cost in dollars. They also want to know if a large share of the costs are the kind that are hard to lower during a period of falling prices.

How Well Do the Parts of the Business Fit Together?

No single or simple measure tells a farmer if he has the best combination of crops and livestock, of capital and labor. If the farm income is low for the size and type of business, prices

MAP OF OUR FARM



CROP RECORD

Kind of Crop	Production: Acres (1)	Yield per A. (2)	Total Yield (3)	Value: Cl. Inv. Price (4)	Total Value (5)	Value of Landlord's Share (6)	Variety of Seed, Fertilizer Used, Manure Applications, etc.	Line No.
Corn	26 A.	61	1600	$ 1.00	$ 1600	$	Some manure	1
	5	60	300	1.00	300		Manured	2
	24	40	960	1.00	960		2nd year corn. Poor stand Some manure	3
Silage								4
Small Grain—Kind Oats	28	43	1200	60¢	720		Some spots need more lime	5
	6	50	300	60¢	180		200# 0-20-0 per Acre	6
Soybeans Rented	20	10	200	2.00	400	160	Poor land – seed was poor. Didn't pay.	7
Hay—Kind Cl. Mix	18	1st 1 1/3	24	12.00	288			8
		2nd 3/4	14	12.00	168			9
								10
Total A. in Harvested Crops	127 A.	Value of Harvested Crops			$ 4616	$ 160		11
Rotation Pasture—Kind Alf.	6			*15.00	90	Seed and Non-feed Crops: Kind	Value	12
Clover Mix.	10			*12.00	120	Timothy	$	13
Total Acres in Rotation	143 A.					Red Clover		14
Permanent Pasture	18			*7.00	126	Other		15
								16
Farmstead, Waste, etc.	7					Total	$	17
Roads	2					Value of Harv. Crops	$ (Col. 5, L. 11)	18
Total Farm	170 A.	Total Value of Feed Raised			$ 4952	Total Val. Crops Prod.	$ (L. 17 plus 18)	19

* Use cash rental rate.

FIG. 71—A crop production record will help the farm family in studying its business as well as in planning future operations.

considered, a man should examine the combination he is using. If the income is satisfactory, the combination is not a poor one but it may not be the best one.

If the total output from the farm per man-year of work used is average or above compared to similar farms in the area, this would indicate a reasonably good combination is being used but it may be improved.

One evidence of a good combination is that the farm business runs smoothly throughout the year. If a man is always at his wits end to keep his operations on schedule, he needs some changes in his business. Or, if he is intensely busy at one time and has idle time at another, he will want to re-check his combination. But he will have to keep the type of farming he follows in mind. A wheat farmer in the Plains or a cash grain farmer in the Corn Belt is almost sure to have peak labor loads at one time and slack time at others. But it is still possible to check to see if certain changes might not give better results.

There are many poor combinations, either in the choice of enterprises or the timing of them. Raising beef cattle or keeping a large flock of sheep on a small farm, or keeping a large dairy herd in a diversified farming area with no special market for dairy products are examples.

The family that plans to have milk cows freshen, sows farrow, and plans to start baby chicks during a single spring month has a lot to learn about improving its timing. The Plains Area livestock farmer who has not learned the value of keeping a few extra stacks of hay or a trench silo or two of sorghum silage as a reserve feed supply as protection against dry years can still use new ideas.

A common experience is to find a farmer with a "one plow" size farm using a set of equipment of two or three plow size. Operating large machinery adds to the farmer's pride, but it is likely to lower the income level of his family. Occasionally, it is the other way around. The larger operator is skimping along with too-small equipment. He is always so far behind with his work that his crop yields are low or his labor bill too high. A good farm analysis will indicate weak points such as these.

Production Measuring Sticks for the Farm Business

Using production yardsticks is a fairly simple matter for ordinary levels of efficiency. Nearly all farm record books include an analysis page with some easily used measuring sticks.

SUMMARY OF INVENTORIES AND INCOME—Accrual Basis

{Farm Income Schedule

Description	Beginning Inventory (Col. 1) No.	Beginning Inventory (Col. 1) Value	(From page 6) Livestock Purchased (Col. 2) No.	(From page 6) Livestock Purchased (Col. 2) Value	(From page 1) Raised	(From page 1) Died or Used	Income (Col. 3) No.	Income (Col. 3) Value	Closing Inventory (Col. 4) No.	Closing Inventory (Col. 4) Value
Hogs	71	$ 1850 00	1	$ 65 00	130	13	*158	$ 4628 00	31	$ 1345 00
All Cattle	30	2955 00	10	520 00	10	5	{2	17 00	26	2530 00
							17	2250 00		
Poultry	220	332 00	400	64 00			*	440 00	220	330 00
Sheep							*			
Horses	4	200 00					*1	50 00	3	150 00
Feeds		3149 00		‡				†		2800 00
Seeds				‡				†		
Total Inv. & L. S. Purchased		$ 8480 00		$ 649 00						$ 7155 00

* Enter total livestock sold, (raised and bought)—Pages 4 & 5.

† See directly below where detailed sales are recorded.

‡ Entered as expense item on page 31.

In any class of livestock the sum of No. in column 1 plus column 2 plus raised should equal the sum of No. in column 3 plus column 4 plus died and used.

			Value
Dairy Products	(Page 2)		1653 00
Eggs	(Page 3)		833 00
Corn Sales	(Page 6)		200 00
Small Grain Sales	(Page 6)		
Soybean Sales	(Page 6)		252 00
Other Crop Sales	(Page 6)		
Government Payments	(P. 7)		96 00
Labor Off Farm	(Page 7)		8 00
Machine Work	(Page 7)		86 00
Refunds	(Page 7)		25 00
Other Income	(Page 7)		13 00
Total Income			$10551 00

SUMMARY OF INCOME AND EXPENSES—Accrual Basis

Closing Inventory	(Col. 4 above)	$ 7155 00	Beginning Inventory	(Col. 1 above)	$ 8480 00
Income	(Col. 3 above)	10551 00	Purchases	(Col. 2 above)	649 00
			Expenses	(Page 31—Col. 1)	4123 00
				(Page 31—Col. 2)	890 00
			Depreciation	(Page 31—Col. 3)	688 00
Total Income		$17706 00	Total Expense		$14830 00
Net Farm Income (Total Income minus Total Expense)					$ 2876 00

Description (From pages 28 and 29)	Amount (Col. 1)		Description (From page 29)	Amount (Col. 2)	
Labor Hired	$ 1200	–	Taxes Farm and pers. property	$ 326	–
Feed Bought	993	–	Insurance, Bldgs, livestock, feed	42	–
Truck and Machine Hire	350	–	Interest, notes and mortgage	512	–
Fuel and Oil for Farm Use	282	–	Rent (no cash)	—	
Auto Expense (farm share)	146	–			
Machinery Repairs	230	–			
Building Repairs	220	–			
Seeds, Inoculation, Lime, Fertilizer, Twine, etc.	402	–			
Veterinary, Vaccination, Breeding Fees, Medicine, etc.	184	–			
Telephone and Electricity (farm share)	84	–			
Farm Organizations, Farm Journals, Bank Charges, etc.	32	–			
Total	$ 4123	–	Total	$ 890	00

SUMMARY OF DEPRECIATION—Use for Either Cash or Accrual Basis

From Depreciation Supplement

Items		Year Bought	Cost		Est. Years Life	Depreciation This Year* (Col. 3)	Value End of Year	
Machinery	(Page 2a or 3a)	1935 to 1941	$ 3100	00		186	1840	00
New Added This Year Disc		1945	145	00	12	$ 12	$ 133	00
Machinery	(Page 4a or 5a)							
New Added This Year								
Truck	(Page 4a or 5a)							
New Added This Year								
Tractors	(Page 4a or 5a)	1942	1430	00	13	110	990	00
New Added This Year								
Auto (farm share) 1/2	(Page 4a or 5a)	1942	450	00	9	50	250	00
New Added This Year								
Farm Buildings (Bought farm, 1943)	(Page 6a or 7a)	1943	7000	00	33	210	6370	00
New Added This Year								
Fences	(Page 6a or 7a)	1943	930	00	14	65	735	00
New Added This Year								
Tile	(Page 6a or 7a)	Varies	2200	00	40	55	2050	00
New Added This Year								
Total Depreciation						$ 688		

* Enter Totals from depreciation column for current year, Depreciation Supplement.

FIG. 72—The net income page shows the financial results of the year's work and planning. Here we see the results figured on the accrual basis.

EFFICIENCY FACTORS		Our Farm		More Profitable Farms in Area*	
Where to find or how to determine	1				
Net Farm Income (page 30 or 32)	2	$ 2876		$ 5302	
	3				
Total Acres (page 37, line 19, column 1)	4	170 A.		164 A.	
Crop Acres (page 37, line 11, column 1)	5	127 A.		118 A.	
Per Cent Land in Crops (line 5 ÷ line 4)	6	75 %		72 %	
Months of Man Labor (operator and family 14 + hired 10)	7	24 Mos.		18 Mos.	
CROP ACRES AND YIELDS	8	Acres	Yield	Acres	Yield
Corn (page 37—Total Yield ÷ No. of Acres)	9	55 A.	52 Bu.	66 A.	62 Bu.
Oats (page 37—Total Yield ÷ No. of Acres)	10	34 A.	44 Bu.	28 A.	55 Bu.
Soybeans (page 37—Total Yield ÷ No. of Acres)	11	20 A.	10 Bu.	9 A.	28 Bu.
Hay (page 37—Total Yield ÷ No. of Acres)	12	18 A.	2.1 T.	19 A.	2.6 T.
Gross Value of Crops per Crop Acre (page 34—I)	13	$ 36		$ 50	
LIVESTOCK RETURNS	14				
†Livestock Returns per $100 Feed Fed (page 38—III)	15	$ 155		$ 148	
	16	No.	Amt.	No.	Amt.
Hog Sales per Litter (Hog Sales, Page 4 $4628 ÷ No. Litters—Page 1)	17	20	$ 231	26	$ 221
Pigs Weaned per Litter (Pigs Weaned ÷ No. Litters—Page 1)	18	6.5 Pigs		6.5 Pigs	
Dairy Income per Cow (Page 2)	19	10	$ 165	10	$ 178
Lbs. Butterfat per Cow (Page 2)	20	305 Lbs.		266 Lbs.	
Egg Income per Hen (Page 3)	21	200	$ 4.35	140	$ 3.88
Eggs Produced per Hen (Page 3)	22	175 Eggs		186 Eggs	
LABOR AND EQUIPMENT USE	23				
Crop Acres per Man (Line 5 ÷ No. Men [Line 7 above ÷ 12])	24	63 A.		90 A.	
†Gross Profits per Acre (Page 38—IV—Gross Profits ÷ Line 4 above)	25	$ 45		$ 58	
Operating expenses per Acre (Page 31—Total Col. 1 ÷ Line 4 above)	26	$ 24		$ 17	
Net Income per Acre (Page 30 or Page 32—Net Income ÷ Line 4 above)	27	$ 17		$ 32	
†Gross Profits per Man (Page 38—IV Gross Profits ÷ No. Men [Line 7 above ÷ 12])	28	$ 3790		$ 6660	
Power and Equipment Cost per Acre (Page 38—II)	29	$ 10.10		$ 12.05	

* Get reports from County Extension Director or write Extension Service, Iowa State College, Ames, Iowa.
† Can only be determined if records are kept on accrual basis.

Must improve this

Too much labor

Crop plans needs improving

Good

O.K.

FIG. 73—For the farmer who thinks of himself as a business man, the farm record analysis pages are the most important part of the farm account book. Here is where the farmer can study the results of the year's operation and find suggestions for making better plans for the year ahead.

Being efficient in production means getting good results in relation to the resources used. It is modified to a degree by the size of the business. That is, if labor is to be effective, the farm business must be large enough so the farmer and his hired help can be usefully employed.

A farmer can measure production results either in the quantity produced or in money returns. Usually it is best to use measures of both kinds. The man who tries to get the highest possible yield from an acre or the largest possible production from a milk cow, brood sow, or hen is striving for high production but not for the most efficient level of production. However, with ordinary levels of production per acre, per cow, etc., the farmer with the larger production per unit is likely to have the more efficient production.

The measures to use depend a good deal on the type of farming being used.

On a crop farm, the yield per acre of the important crops has a good deal of effect on farm income. Of course, yields should be measured in relation to productivity of the land being farmed and weather conditions for the year. Often, better management gives higher yields per acre with little if any increase in costs. Another crop measure is the value of all crops raised per acre of total crop land. This measures both the effects of the yield and the combination of crops being raised. For the crop farmer, being able to get a comparatively high value per acre of crop land may mean the difference between a mediocre and a very satisfactory farm income. The comparison must be made with similar type farms operating under like conditions.

Did the Livestock Really Pay?

For the livestock farmer, the livestock income in relation to the value of the feed fed to the livestock will be the best single measure of results. This can be easily figured. The following example shows the method to use. The facts about the farm business should include: crop and livestock inventory values, sales, cost of feed and livestock purchased, and crop production records.

The above example includes all of the livestock on the farm other than horses that furnish power. The same method can be used to check the feeding efficiency for each livestock enterprise if records are kept of the feed used. On many farms, this

TABLE 73

METHOD OF CHECKING LIVESTOCK FEEDING EFFICIENCY ON A FARM

First: List the Value of Feed			Second: List Value of Livestock and Products		
Value of all feed crops raised	$1,676		Sale of livestock and poultry	$2,437	
Value of pasture	330		Sale of cream and eggs	1,085	
Feed bought during year	662		Products used in the house	244	
Feed on hand, beginning of year	1,413		Livestock inventory, end of year	2,236	
(1) Total feed on farm during year		$4,081	(4) Total livestock credits		$6,002
Feed crops sold	$ 10		Livestock and chickens bought	$ 209	
Feed crops used for seed	40				
Feed fed to work horses	132		Livestock inventory, first of year	1,880	
Feed on hand at end of year	$1,322				
(2) Total feed not fed		$1,504	(5) Total livestock debits		$2,089
(3) Value of feed fed to livestock (Subtract [2] from [1])		$2,577	(6) Year's income from livestock (Subtract [5] from [4])		$3,913
Third: Compare feed cost to livestock income			**Fourth: Figure livestock income per $1.00 of feed used**		
(6) Income from livestock	$3,913		Income per $1.00 of feed fed	$ 1.52	
(3) Feed fed to livestock	$2,577				
Difference	$1,336		(Divide [6] by [3])		

additional information will be very valuable (See Chapter 7). But the over-all efficiency of all the livestock on the farm taken as a unit is a more important factor. Any farmer who keeps inventory, cash, and crop production records can use this method to check on his feeding efficiency.

Note that no costs other than feed have been considered. The margin over the value of feed must be high enough to cover all other costs and leave a profit. Usually this margin needs to be 20 to 30 per cent. The margin needed is higher on dairy farms than it is where beef cattle are the main roughage-using enterprise. It is higher for poultry farms than hog farms.

To determine how good a job he has done in making wise use of feed, he needs to compare his results with the results secured by other farmers during the same year. In Iowa, for example, the records kept by a large number of farmers show the following averages for sixteen years in over-all feeding results. The farmers had dairy, dual and beef cattle, hogs, sheep, chickens. and turkeys among them. The feed return figure measures the margin of the income from the livestock over the value of feed fed to all the livestock.

The gross income from livestock per $1.00 of feed and pasture fed to the livestock is as follows:

16-year average	$1.43
High year (1941)	1.87
Low year (1931)	0.85
Years less than $1.00	1
$1.00 to 1.20	2
1.21 to 1.40	3
1.41 to 1.60	7
1.60 and up	3

Other measures also may be used to check on the results from the different kinds of livestock. Useful measures for hogs are the number of pigs weaned per litter, average weight of pigs at 45 days and 180 days, income per litter of pigs raised, and similar information. With milk cows, the quantity of butterfat or milk produced per cow and the income from dairy products per cow are useful. The weight of calves at weaning time and the percentage calf crop are important with beef cows. Daily gains and feeding margins on feeding cattle are useful to have. With chickens, per cent of baby chicks raised, days to reach market weight, egg production per hen, and income per hen will be useful.

Yardsticks for Checking on Workers and Use of Capital

In Midwest farming, labor is the most expensive single resource used. It is important to check on labor use. Some measures are adapted for making comparisons among farms of similar sizes and type. A reasonable standard for a cash grain farm in central or western Kansas may be 350 acres of crops per man-year; on a medium size cash grain farm in Iowa or Illinois, 140 acres; while dairy farms and smaller farms may have only 50 acres of crops for each twelve months of farm labor used. Where a large acreage of crops is cared for per man, there will be little time for livestock.

On livestock farms the kind of livestock will govern the number which can be cared for per man-year of labor. Diversified dairy farms usually keep seven to ten cows per man—specialized dairy farms up to double this number or more. Men who like hogs and have farms adapted to them often raise 150 to 300 head per man along with taking care of the other farm work. Feeder cattle per man may also run to large numbers.

The income from livestock per man will be a good measure of the labor efficiency. Since prices change, it is best to compare with other farmers during the same year. A comparison with the figures from previous years on the same farm can be used if allowance is made for price changes.

The total income produced on the farm per worker is one of the best measures to use. The examples of two actual cases in Table 74 show the method.

TABLE 74

FIGURING THE TOTAL INCOME (VALUE OF PRODUCTION) PER FARM AND PER MAN-YEAR OF LABOR

	Farm A		Farm B	
Sale of livestock and products	$ 6,388		$ 1,484	
Cash income from crops and other sources	462		336	
Value of home used products	213		180	
Total	$	7,063	$	2,000
Change in livestock-feed inventory during year	$+ 462		$+ 712	
Cost of livestock and feed bought (Subtract)	−1,022		− 397	
(1) Gross for year from farm	$	6,503	$	2,315
Months of all labor used for farm work	24		13	
(2) Man-years of labor (Divide by 12)	2.00		1.08	
Total income per man (Divide [1] by [2])		$3,252		$2,144

This method gives the total value of farm production and the production per worker in a given year. In the example the two farms are similar in acreage, in soil, and in type of farming. Yet they show very different results in the value of production from a year's labor. Farmer A had 50 per cent more income per man and nearly three times as much from the whole farm out of which to pay his farm expenses than Farmer B. While his additional expenses might possibly more than use up the additional income, this is not likely on farms of high productivity and high labor efficiency.

Both of these farmers are interested in the reasons for the difference. One reason is that Farmer A received $2.13 for each $1.00 of feed fed to his livestock while Farmer B only received 81 cents for $1.00 of feed fed during this particular year.

Using capital wisely is important for all farmers and especially for the young man who is short of money. One measure of capital use is the amount of operating capital used for each $100 of total income. Also important is the investment in land and improvements per $100 of gross. Where capital is limited, the farmer wants to invest it in the part of the business that earns the highest rate of return.

Are Your Costs Too High?

Because operating costs often require 30 to 50 per cent of the gross income, determining if they are too high is important. However, costs are more uniform between farms of similar size and type than are the amounts and values of production. This does not mean that costs can be ignored. A dollar saved by reducing expenses is just as useful as an extra dollar secured by increasing farm production. The wise manager watches both ends of the business to keep production at a high level and expenses under control.

It is important to note the farms with the highest net income (in normal times) are those that carry on a high level of production for their size rather than farms with the smallest dollar expenses. In other words, too much effort given to lowering expenses may result in a smaller rather than a larger net income. The well-managed farm is the one whose gross income rises faster than expenses.

Common measures of costs are:

1. Operating cost per acre or per $100 gross income.
2. Fixed costs per acre or per $100 gross income.
3. Power and machinery cost per acre.
4. Cost per unit of product. This may be useful in specialized kinds of production where most costs can be kept separately. It is of little use on a diversified family farm.

The Final Test

As suggested before, the most important single measure of operating success is net farm income, the return for labor and management, or some similar over-all financial measure. This should be figured for the whole farm business—including the landlord's share where the farm is rented. Only in this way can both the operator and landlord see whether the rental division seems fair and reasonable. Also, it is the only way one farm can be compared with others regardless of the tenure arrangements.

If the net income is not satisfactory, the family should see what it can do to improve the situation. While an individual family has little control over prices, weather and some other factors, it does have control over many of the factors affecting farm income.

The farmer and his wife should look over their own farm some day as a skillful neighboring farmer might do if he were studying them and their business. With a critical but friendly eye, let them ask themselves, "Why do those folks operate the farm the way they do now? Is their business too small or too large? What new ideas and methods could they use to advantage?" And so on. Such a critical examination can do wonders to help a family improve their operations and management if they can learn to "see themselves as their neighbors see them."

This chapter has pointed out the need of getting and using the facts. Self improvement is not an easy task. But it can be both a pleasant and a profitable one if the family makes a determined effort to do it.

On many specific problems it will be wise to consult the farm management department of your state agricultural college.

CHAPTER 12 Helpers—Public and Private

NO OTHER GROUP IN OUR SOCIETY have as much public time and money spent in helping them with their problems as do farmers. This is due partly to the nature of farm problems. It is also due to the vital importance of agriculture to the welfare of all people.

For Facts About Farming and Homemaking

The County Farm and Home Agent

The county agricultural agent (some states use other titles) deals mostly with the problems of farming. He is the county educational representative of the state agricultural college and the United States Department of Agriculture. He is responsible for the educational program carried out in the county as directed jointly by local people and these two institutions.

His co-worker, the home demonstration agent or home economist is the home representative of the above two institutions. She works mainly on an educational program designed to improve the living of the farm family. Her special interest is to help farm families be well fed, well clothed, and well housed; and to help with their problems of raising a family and improving family living. She is interested in individual and public health education but from a general rather than a medical point of view.

Many counties provide other extension assistants, a youth worker being the most common. The 4-H club program gives emphasis to projects suited to boys or girls of all ages from ten to twenty years. Livestock, crop, and homemaking projects are featured. Fairs and demonstrations stimulate farm boys and girls to develop exact knowledge of better farming and homemaking methods. 4-H club work also stresses training in cooperation and citizenship as well as recreation for rural youth. Both the farm and home agent take part in developing and carrying out the youth program.

Farm families want many kinds of information which extension agents can furnish. These include: locally adapted new crop varieties; use of fertilizer; soil testing; improved feeding methods; properly feeding and clothing the family; methods of canning and freezing foods; planning a step-saving kitchen and other home conveniences; price outlook for the farm and home; keeping and using farm and home records; family planning of the farm and the home; improving education, health, and recreation in the rural community; good public policies for agriculture; and many others.

In other words, the extension office serves as the local information center for the state agricultural and home economics college and the U. S. Department of Agriculture which it represents.

Usually this office is in the court house or the post office building in the county seat. In older days, extension work was sometimes officially linked with a local farmers' organization. This is still true in a few states. But this plan has been on the decline. Extension workers are in the county as public workers to help all rural people without regard to whether or not they are members of a farm organization.

Vocational Teachers

Many rural high schools have a department of vocational education. It may be for either agriculture or home economics or both. The main purpose is to teach these subjects to high school youth.

Boys studying agriculture have production and other projects carried out at home. Usually the boys are organized into a club called the "Future Farmers of America." The girls may have a "Future Homemakers" club. Most vocational teachers hold "night schools," usually in the winter months for adult farm men and women. Here, in a series of ten lessons presented during that many weeks, are taught many of the newer methods in farming and homemaking. These schools are an excellent place to go to keep up with the newest knowledge in these fields. Such schools are also valuable as a place to exchange experiences as to strong and weak points of various ideas and methods. Many schools have special classes for young farmers.

Farm Radio Programs

Most radio stations in rural areas have programs geared to the educational needs of their farm audience. As a place to keep up on day-to-day markets and weather, they are unexcelled. Many have excellent programs on homemaking, production, and general economic problems. The family interested in improving themselves will make full use of this information.

Reading Material

Detailed information on production, homemaking, and similar problems is best secured through the use of bulletins and circulars published by the state college and the USDA. These can be obtained from the local extension office or by writing the state agricultural college. Rather than clutter up the house with a vast array of such reading matter, it is better to look it over first and select what is useful. Then arrange it in a file or other easily accessible place. A bulletin that can't be found when needed is little better than none at all. So a system of filing material on similar subjects in the same place is far better than having a larger number that cannot readily be used.

Some state colleges now furnish up-to-date information in a magazine which may be had without cost.

Most rural newspapers carry a great deal of useful information for farm people. They tell about new methods and practices. Many of them report on local and distant markets and crop conditions. They usually report information on governmental actions that may affect local farmers.

Farm magazines carry much of the newer information to be had about farming and homemaking. Magazines adapted to local conditions have an advantage in that more of the material will be usuable. It is well to be cautious in adopting new practices until there is reasonable assurance that they fit local conditions.

Other Educational Sources

Short courses offered by the agricultural college are a source that should not be overlooked. Many who did not have an opportunity for regular college training can, over a period of years, use this as a valuable substitute. Often these are supplemented by field days, demonstrations, and tours which are excellent places to get new ideas and see new methods in practice.

Forums and discussion groups are held in many communities, especially on the broader economic and social problems affecting

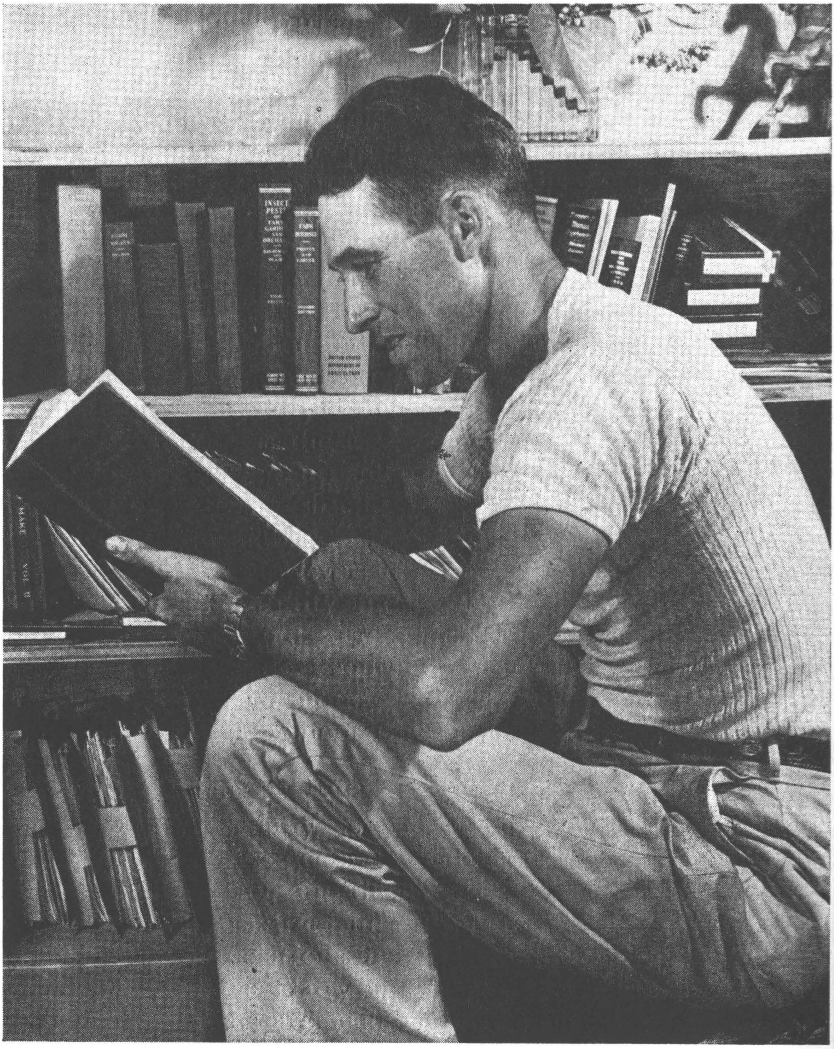


FIG. 74—The business-like farm family needs a great deal of information to keep it abreast of new production methods, changing economic conditions and the like. This Iowa farmer, who manages a large amount of capital, part his own and part rented, and the labor of two hired men, looks up information needed in his hog operation.

farm people. The county agricultural agent will know what is available.

Fairs, especially the larger ones, are a source of much useful information. This is especially true of new machinery and equipment that may be available for either the farm or the home. Here most of it can be seen in operation. The livestock shows are important to more specialized producers.

Government Farm Programs

Conservation, Storage, Crop Insurance and Subsidy Programs—(PMA)

In recent years, the federal government has provided a wide variety of programs designed to help farmers. One of these is to help with soil and water conservation or with drainage problems. Others deal with farm income or price support programs. They may or may not include acreage control features. A third kind provides a means for the farmer to protect his crop yields from the hazards of nature. A fourth provides for storing up crops and making loans on them. Others are straight subsidy programs (direct government payments) to improve the farmer's income.

Because of the wide variety and changing nature of these programs, we cannot describe them here. Some of them, though not all, are available to every Midwest farmer. It is in the interest of each farmer to keep up-to-date on programs available in his own community.

All of these are handled locally by the Production and Marketing Administration. Farmers in each township elect their own local committeemen. From this group are selected county committee members. Every county has a committee office, usually in the county seat.

As noted above, the PMA carries out the various federal agricultural programs listed. These programs are under the direct control of the federal government and are limited by congressional law and by the rules of the agency they represent. They do not deal directly with education nor with credit.

The local PMA committeeman can give information on how much of a payment a farmer can get for carrying out soil conservation or other practices on his farm, how to store crops for a crop loan, whether crop insurance is available in the county, and similar questions.

The Soil Conservation Service— (SCS)

This is a federal agency set up to help farmers with their soil erosion and water control problems. Locally, it is sponsored by a Soil Conservation District. Such a district usually is on a county wide basis. A committee made up of local farmers or others interested in soil conservation guides its program.

Most of the work of the SCS is in helping farmers work out a soil and water conservation plan for their own farm. SCS specialists also carry on demonstration work so that other farmers can see the methods that are used.

The SCS does not make payments to a farmer for carrying out the program. The government offers conservation and other practice payments but these are made by the PMA described above. The SCS shows the farmer how to use conservation practices and work out a crop plan that makes them possible.

In level areas, the SCS has a production type of program to help farmers with their drainage problems. Here the SCS worker advises on tile drainage, ditching, or other methods of getting and keeping water off the land so it will produce more. Here again, any payments for practices are handled by the PMA.

The county agricultural agent can describe the work of the SCS and advise on how it will apply to a particular farm.

For the Man Needing Credit

Several government agencies and private organizations are at hand to help with credit problems.

Local Banks

Very likely the local banker will be one of the first credit men a farmer will want to see. He is a permanent resident of the community and is interested in its welfare. Other farmers can give information about the general point of view held by local bankers. As a group, bankers tend to be conservative since one of their responsibilities is to protect the money of the depositor. Sometimes this makes them overly cautious. An increasing number of banks are using a specially trained man who understands the credit problems of farmers. Where this is true or where the banker himself has a good understanding of farm problems, the bank will be a good place to get advice and help.

Remember that a credit man must have the full details of the business before he is in a position to be of much help. The farmer should be ready to supply his banker or other credit source with the facts they need. Any business should be operated on a business-like basis. This means putting on the table all the pertinent facts that the creditor needs in arriving at a decision. No one can be slipshod in getting together the facts needed or secretive in supplying them if he hopes to have a good working relationship with his creditor.

The Production Credit Association— (PCA)

This is a government sponsored, cooperative credit agency for making short- and medium-term loans for production purposes. In other words, it provides much the same loaning function as a bank. It extends credit for longer periods than some banks and sometimes at a lower rate of interest. Usually one office serves a number of counties. The county agricultural agent can tell you where the nearest office is located and advise as to its services.

The Farmer's Home Administration— (FHA)

This is another government-sponsored credit agency. It furnishes credit to farmers whose income level or amount of property owned does not warrant a loan from a regular credit agency.

The FHA is authorized to make operating loans to those who have a farm to operate but do not have the capital or credit necessary to operate it. It makes operating loans to be repaid over a period of years on a definite re-payment plan. Being a government agency, it is limited in its operations by the restrictions set up in the law. But it is especially useful to young farmers who can secure a farm to operate but who do not have enough property to get credit elsewhere.

Another part of its program is the making of farm ownership loans. These are made to qualified tenants interested in buying a farm. A county committee of farmers pass on the eligibility of the individual to one of these loans.

Not every county has an FHA office. If there is no office in the county, the FHA worker usually visits the county on scheduled days. The county agricultural agent can advise as to where the FHA supervisor can be reached, and the services he can render.

National Farm Loan Association

The office of the farm loan association is the local representative of the Federal Land Bank. The land bank is a semi-governmental agency making first mortgage loans on farms. The secretary of the local association arranges for and handles the loan but does not make the appraisal of the farm. The value of the farm and the maximum amount of a loan are determined by a trained appraiser and the Federal Land Bank.

Not every county has a national farm loan association office. The county agricultural agent or the banker will know where it is located.

Other Lenders

Long-term loans secured by a farm mortgage are available from many banks and insurance companies. Many insurance companies have offices or local agents in the county seats and the larger towns. Long-term loans are usually available from many of these companies with desirable features as to length and repayment plan. Interest rates are usually quite uniform between lenders.

Buying and Selling Agencies

Many private and some cooperative buying and selling agencies are available in nearly every community. Experienced farmers in the community are good advisors on questions of which serve the purpose best. More than one farmer should be consulted, however, as individuals have their own point of view.

Beginning farmers and newcomers to a community should look around before they decide on permanent marketing outlets. Some feel that they do better by dealing almost wholly with one buyer or seller as the case may be. If they do enough business with one firm, the advantage of volume can be obtained. Others feel that they do better by "shopping around," thus getting various firms to compete for their business. No one rule will best fit all cases. As suggested above, this is a matter for individual study.

To help in making electricity available to more farmers, the federal government has sponsored local cooperatives to distribute electric current. The Rural Electrification Administration (REA) is the agency. However the individual farmer has little choice and can only use whatever electric current is available at his farm whether it be from a cooperative or a private utility.

Professional Farm Managers

The services of a professional farm manger are available in many parts of the Midwest. Usually, such a manager is employed by a landlord to perform the functions that a trained and experienced farm owner who does not operate the farm can contribute to a farm business.

In the usual case, he chooses the tenant for the farm and arranges the lease terms with him. He sees that these provisions are carried out. Together with the tenant, he plans the cropping program. He often does the buying of lime, fertilizers, seeds, building materials, and the like that are furnished by the landlord. If a livestock share lease is used, he helps plan the livestock program and takes part in the decisions about timing the program, and buying and selling.

Many farm managers are highly skilled individuals. Where this is the case, the manager can give the tenant much help in setting up and carrying out a money-making farm plan. The tenant should welcome this additional management resource available to him where the manager is well qualified.

However, it is good business for the tenant to check up on the ability and attitude of the farm manager just as he should find out a good deal about a landlord before a lease contract is made. People who work together must have a good many things in common, especially with regard to the farm business, if the arrangement is to be a satisfactory one.

Special Interest Groups

Many special interest groups are available to the farmer. Three general farm organizations, the Farm Bureau, the Farmer's Union and the Grange are best known. Many others are of more specialized interest. Thus there are crop and seed improvement associations, livestock breed associations, general livestock associations, dairy herd improvement associations and others. All of these are made up of people with special interests. The county agricultural agent or local farmers can describe the ones that are available and the purposes they serve.

Farm Labor

The county extension office is a good source of information about farm labor. Farmers generally turn to it for help on their labor problems. However, the regular listing agency for labor is the local government employment office. Since these are not located in all counties, the county agent can advise as to labor sources and wage rates.

Make Use of These Helpers

The individual family members must put forth some effort of their own if full use is made of the many helpers available to them. While some of the groups described above make their services known to the farm families in their area, active solicitation on their part is not the rule.

The beginning farmer or one who is a newcomer in a community should get acquainted with the people in charge of the various services in which the family is interested. Since most of the public agency representatives are located in the county seat town, this may mean an extra effort for families that are located at a considerable distance. But they will find the effort worth while. However, keep in mind the hundreds of farm families in nearly every county and the fact that no one individual has a right to impose on those who serve the public. On the other hand, the farm family should not hesitate to take its problems to those who are in a position to give counsel and help.

CHAPTER 13 Around the Family Table

This above all: to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man.
Shakespeare

THIS BOOK HAS DISCUSSED THE MONEY making problems of farming. Money making is important to the farm family; to accumulate capital and savings, have a satisfactory living, and share with others. "Money is the seed of money" as Rousseau said. For no one is this more true than for the commercial family farmer. Capital, and a good deal of it, is essential to the financial success of the family.

Money is also essential for a good level of living. If the farm family is to have a reasonable share of the comforts and conveniences of modern life, the business must be profitable. The amount of profit expected by the farm family is, in a general way, similar to the income the family might expect to earn in some other occupation.

Many things other than enough income are important in having a satisfactory family living. Good health, for example, and congenial and cooperative family members. "It is good to have money and the things that money can buy" said George Horace Lorimer, "but it's good, too, to check up once in a while and make sure you haven't lost the things that money can't buy."

The point frequently has been made of the need for careful and systematic planning and decision making in the farm business. The same is true in directing the affairs of the family. If the family is to satisfy the largest number of its desires and wants, it

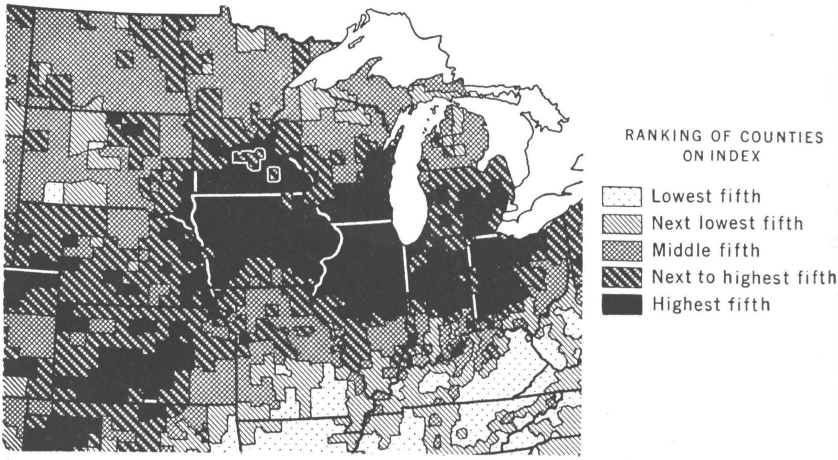


FIG. 75—Number of farm home conveniences. County averages compared to United States average, 1945. The number of farm families with modern conveniences is rapidly increasing. But there is a wide variation over the Midwest and a good deal of variation in nearly any farm community. *Bureau of Agricultural Economics.*

must apply good management to its family living problems the same as it does to the farm business.

You Must Look Ahead

Family members should talk over what it is they want to accomplish and why. They should set up common family goals, goals that fit in with the things in life they feel to be important. Setting up a good list of family goals is not a simple task. But it is worthwhile.

A farm family has a good opportunity to develop its common goals. The farm and the family are linked closely together. Family members work together in carrying out the farming plan. Since there are many common problems, family members are likely to discuss them as a group. Thus they have frequent experience in joint discussion and decision making. The same kind of analysis, planning, and decision making can be applied to the larger purposes and interests of the family as well as to its day-to-day problems.

Some conditions of life make the problem of arriving at family goals more difficult in the town or city. The work of the father and the activities of the home usually are not so closely associated. The wife often feels that she can contribute little to help her husband in his occupation. Children often know much less of the things that occupy the father's working hours than is the case on the farm. But family sharing and planning, and the development of common goals is altogether possible if the family really wants it that way.

Family Goals

All families have goals but often they are indistinct and uncertain ones. The wise family tries to make its goals as clear and definite as possible. The family with definite goals knows where it is going and has a common purpose in mind. It is likely, too, that family members have a greater zeal for attaining the things they want out of life.

In the main, goals are of two kinds. First are those that are basic to the ideals, hopes, and aspirations of the individual or family. Others are of the short-run kind—goals that are stepping stones to a larger goal beyond.

An immediate goal, for example, may be to save more out of a year's farm income to expand the size of the farm business. The longer-run goal may be the family's desire to have a farm of its own, free of mortgage. In another case, the short-run goal may be to be able to afford to have Junior's teeth straightened. But the larger goal is to give him greater poise and self confidence among his fellows, which, in turn, will affect his personality both now and in later life.

There are certain principles that help a family reach as many of its goals as possible. These will be discussed a little later. Such principles do not tell a family what its goals ought to be. That is for them to decide. But after the family has set up the various goals to be undertaken, the principles can help in attaining the largest possible number of them.

What Is Worthwhile

The things that give meaning, direction and satisfaction to living, both for the family and its individual members, come from certain values that they hold. Three points are important. First are the values themselves. Second is the ranking of these values—how important they are one to another. Third is the attitude toward the value itself—the vigor and enthusiasm with which it is held. For example, religion is, for some people, a vital, dynamic, driving force in life. Others feel that religion is of great importance, but for them, it is largely a quieting, restraining influence.

Nine values are named below. The rating that a number of Iowa farm families gave these values was studied by Miss Mattie Pattison of Iowa State College. The ranking from her study is the one used here. It does not suggest that it is a better ranking than another would be. It only points out that some values are held to be more important than others.

This is the order in which the nine values were ranked on the average by one group of families.

1. *Religion*—The satisfaction found in a relationship with God, usually through affiliation with a church.

2. *Education*—The satisfaction that comes from broad understanding; from developing the ability of one's self and of each member of the family. It is attained through formal schooling, and in reading, group study, travel, learning from others, and the like.

3. *Health*—The satisfaction that is found in good health; the buoyant, good feeling that comes with excellent physical health and the serenity and poise that result from good mental health.

4. *Economic Security*—The satisfaction and secure feeling that comes from owning property, securities, life insurance, and the like. For most farm families, it includes owning a farm.

5. *Workmanship*—The pleasure and satisfaction of being a skilled and efficient worker or of doing some task exceptionally well. Farmers commonly take pride in being skillful with crops, livestock, handling machinery, and the like. Women often find pleasure in being good housekeepers, excelling in cooking and similar things.

6. *Social Relationships*—The satisfaction that comes from having pleasant personal relationships with family, friends, or even strangers; the ability to make friends and keep them.

7. *Beauty*—The joy and satisfaction that comes to the individual from pleasing arrangements as in an interesting and pleasant home or farmstead; appreciation of natural beauty, music, art and the like.

8. *Recreation*—Leisure time satisfactions through recreational activities; games, dancing, and such.

9. *Status*—This is often called prestige. The satisfying feeling that one is "somebody," of holding a respected position in the community, and among friends and relatives.

This ranking of values is not suggested as being better than another. The list is not even complete. The importance one value has in relation to another is an individual and family matter. Each family must make its own decision about this. The emphasis here is on the need for being aware of the values held, finding a harmonious balance among them and of having important values held with enthusiasm and conviction because of their vital nature to the individual or family as the case may be.

It is interesting to see how these families differed in the things considered most important. Take economic security, for example. Some families ranked it very high. In such cases, owning a farm free of debt or accumulating wealth in some other form was a leading goal. Others thought economic security of a good deal less importance. Evidentally they had confidence in their own ability to get through life well enough from an income point of view.

Or consider the satisfaction that comes from being a good workman. Some people get a great deal of satisfaction from this. But ideas differ as to what constitutes being a good workman. Some men, for example, are very exacting in their work. Everything must be done "just so" or they are not satisfied. Other men get a lot of enjoyment from being efficient with their labor. Results are what count in their opinion. If they accomplish a lot of work during the day, they are tired but satisfied when evening comes.

Women, too, often find satisfaction in work well done. For some, this means being a meticulous housekeeper, for others, turning out a big washing and ironing in a single day or other similar achievements.

Other people find less satisfaction in their daily work. The values they rate highly lie elsewhere.

It is interesting to note that each of the three high ranking values in the list above requires a good deal of group activity to have them in good measure. Religion is a very personal matter but it is a group activity, too. And so it is with education and health. There must be a cooperative congregation to have a good church, mutual interest in good teachers and facilities to have good education; health facilities as well as good nutrition and the like to have good health.

The Problem of Harmony

One should not arrive too quickly at the conclusion that a discussion of the things that the family value most highly will solve the problem of "putting first things first" once and for all. It isn't that simple. Quite often, situations arise where things that seem important compete with each other. This competition may be within the individual, among family members or between the family and the community.

Take a case where family members feel that they should contribute more of their income to church and charity. But, for security reasons, they think they should pay off the mortgage as fast as possible. The two desires are in competition. To a degree, one or the other must give way.

In another case, education is high on the list of family values as well as economic security. Farm income may not be large enough to provide higher education for the children and make full principal payments on the mortgage at the same time. Perhaps, part of the present savings must be used if the children are to have the education deemed in their best interest. In such a situation, one decision may be to try to increase the farm income. But in doing so, some of the savings may need to go into the larger farm business. Now the competition is, for the time being, a three way one. Income is needed for the children's education, to expand the farm business, and for savings. The problem of harmonizing these as much as possible is not an easy one. A good deal of careful planning will be necessary.

Sometimes family values differ from those commonly held in the community. Suppose most families in a community rate economic security very high. Ownership of a farm and "thrifty living" will be very important yardsticks in determining the status or prestige that a family has in the community. But one or more families may rate other values equally high or higher. Perhaps they spend much more than their neighbors do for education, travel, attending the theater, and the like. These differences may show up noticably among families in the community even though the view points and family actions of both are entirely logical in terms of the values held by the different families. If the majority get a great deal of satisfaction from their thrifty ideas and their possessions, they are likely to be critical of their "free spending" neighbors. "Nothing but money grubbing" is likely to be the retort of those who hold different values.

Each family, then, must do its own thinking and reach its own conclusions about these matters. Most will feel that as much harmony as possible is worthwhile as long as it does not trespass on values deeply held. Even if it does, some choices and adjustments are better than others.

As the years go by, a family or individual may see things differently. Many a young couple give little thought to the importance of education until their own children are growing up. Or, if parents include a good deal of education of a broadening type in their list of important values, they often find that their knowledge has opened up new possibilities to them in satisfactions that had not occurred to them before. So longer run commitments should not too definitely be made since the family may modify its ideas later on.

Look at Family Resources

Before going very far in planning and setting up family goals, a careful survey should be made of both present and future resources that likely will be available.

Note that each of the four resources can be used either in farming activities or for family living interests. They seldom can be used for both at the same time. In a general way, the use of these resources is guided by the basic values held by the family—what they feel to be of greatest importance. The family that wants a lot of recreation, for example, may not try to make so much money. It would be the other way around for a family which places a high value on economic security. In either case, the family should study the resources at its command to get the most of what the family members want out of life.

Used in Farming	*Resource*	*Used in Family Living*
Capital and operating funds either owned or borrowed.	Money	Income or credit for family use.
Time and energy of family members used for farm work.	Work or physical effort	Time and energy spent in other than farm or business activities.

Land, farm buildings, and tools of production.	Property	House and grounds, equipment and other material goods used in living.
Ability and skill applied to managing the farm business.	Management ability or skill	Ability and skill applied to managing the affairs of the family.

It is easy to see that each of the four resources have many possible uses. Any family has only a limited amount of these resources, of money, time, property, and ability that it can use. More money can be had by earning it or borrowing it. Family members can work harder or for longer hours, or have more leisure time. They can add to their property or not. But property is really the result of time, skill, and capital changed to another form. They can develop their skills or not as they like. Yet the basic capacity that each one has is pretty much what he or she is endowed with in the beginning. Whether each one makes the best possible use of his native endowment is another question.

Here, then, is the central problem in setting family goals and in family planning. What are the things the family want? How should these various resources be used if the family is to satisfy the greatest possible number of its wants? What is the very best way that money, time, skill, and property can be combined to get the largest total of those things the family members want most of all? Can the supply of resources be expanded and is it worthwhile to try to do so? If some wants are more fully satisfied, how does this affect the future? All of these are pertinent questions.

Some of the alternate choices are simple to study and understand. It is easy to see that a given $100 used for the farm business cannot also be spent for family living or be put into the reserve fund. But it is not so clear whether a young couple that makes a lot of sacrifices to build up the business will always get it back in greater returns in later years. It is always their hope that they will and thus have a larger total of satisfactions than if they had spent more of their income for personal uses when they were younger. But there is no certain way to know in advance.

Where the wife helps a great deal with the farm work, it is obvious that she will have much less time for the care of the home and family than otherwise. But if the husband takes time to keep the place "spic and span," the lawn mowed and all the *other little jobs about the farmstead well done, other questions* will arise. The family is likely to get a good deal of satisfaction from the well-kept appearance. But the "cost" of this better appearance may be in accepting a smaller income than if the farmer used the same number of hours to carry on a larger farm business. Whether such costs are greater than the satisfaction received is a question only the individual family can decide.

In using the resource of management ability and skill, the effect of different choices is not the same as in the case of money. A man and wife who have developed effective teamwork as managers can apply this skill to the problems of the home as well as to those of the farm. Learning to become better farm managers may result in their being better home managers as well. Some of the skills are much the same.

1. A husband and wife who are good buyers for the farm business are likely to be good buyers for the home as well. So the same amount of money is likely to purchase a good deal more in total than if they had not developed this skill.

2. A family that is skillful in managing the use of time spent in farming is better able to get a lot of living out of the time it has available for non-business activities.

3. The family who develop patience and understanding in dealing with young animals can carry over some of this knowledge into the human field. So also, a family that learns how to get along well with hired workers, knows how to develop incentives and keep them contented, can use this knowledge within the family as well as in dealing with others.

4. The man who develops skill in caring for his farm machinery can use the same skill in repairing equipment about the home and even on the children's toys.

Four Types of Adjustments

In the end, the family will find four types of adjustments that it can apply to the use of its resources.

1. The family can change the amount of resources used in family living.

   a. Either more or less of the income can be spent for living expenses.

b. More of the family's time can be spent for family living interests or more in farming.

c. The investment in house and equipment can be increased or not; modernizing the kitchen, installing a bathroom, putting in central heating, etc.; more or less money used for furniture, musical instruments, books, and such, as alternates to putting more in the farm business or other investments.

d. By seeing that the family is kept properly fed and in good health (this may take some additional time, money, and skill) the total energy and mental alertness will likely be increased and family members become more congenial.

e. More ability and skill (especially the study needed to attain it) can be directed toward farming or more toward family living.

2. The family can adjust the proportion of one resource to another.

a. More time spent in raising a garden and in canning means less money required for the family groceries. This leaves more money but less time for other things.

b. Money spent for labor saving equipment in the house means less time needed for housework on the part of the homemaker. Many a farm women could devote more time to her family or to the poultry enterprise, for example, if she had running water, a convenient kitchen, and a bathroom in the house.

c. By improving planning and management, money used for family living will go farther; thus, more satisfactions can be bought with a given amount of money. Thus more time and energy spent in planning means less money needed.

3. The effectiveness of the use of a resource or its intensity in use can be changed.

a. Take the case of a family with older 'teen age children and one car. With good planning, the one automobile can effectively serve the needs of all family members where income is limited rather than putting money into a second one.

b. Where children (and husband) are trained to "pick up after themselves," the time of the mother is used much more effectively.

c. A radio may be used for "soap opera," educational programs, various types of music or other programs. The same radio is used, perhaps the same time spent in listening but different amounts or kinds of satisfaction realized by the various family members.

4. The family can do a more consistent job of balancing their choices against values.

   a. They can question whether the satisfaction of having a "big" car is greater than that of a more moderately priced one plus something else, a family vacation perhaps, something for the house, or a larger contribution to the church.

   b. They can size up the virtue of keeping the house "spic and span" as compared to letting the housekeeping go a bit and spend more time on developmental activities with the children.

   c. They can compare the advantages of adding to the life insurance (economic security) with that of an educational trip for the family.

   d. They can consider whether to give much emphasis to developing the full talents of the children, even if they may grow up to go away from the community in the end, to that of trying to develop only those abilities that encourage the children to settle in the neighborhood.

Any family can add many points of their own to this list. It is intended to suggest ideas rather than to set down all of the possibilities for a particular family.

The Guiding Principle

The principle to be used in satisfying the maximum number of the family's wants from the resource available to the family is essentially the same as that discussed in Chapter 3. At that point, the principle was applied to the problem of getting the maximum income from the farmer's resources. Now the maximum wanted is some group of satisfactions that the family desires, satisfactions that are in line with the values held to be important.

The family has four resources available for living: money, time and energy, physical equipment, and management skill. The family can change the amount of resources used, the combination, the intensity or effectiveness.

Suppose a family gets more satisfactions from time, money, or ability used for a certain purpose than for any other. Then let the family use more of its resources for this purpose. But it is likely that a point is soon reached where some other use for additional time, money, or skill brings greater satisfactions than expanding the first one further. The goal is to find exactly the right amount and combination in the use of money, time, facilities, and all that yields the largest possible total of satisfactions to the family.

The goal, however, must be a common denominator of maximum satisfactions for all family members. The family must be considered as a unit. It would be an unusual family where individual members felt exactly the same way about the use of time and money, for example. It is because of these differences in individuals that the idea of a common denominator of satisfying the largest number of family wants must be kept in mind.

Even so, a good deal of freedom of choice for each family member can be maintained. But not unlimited freedom of choice. The happy family is not the one where no differences of opinion are found. Rather, it is the one which has developed common purposes and goals, where the self respect of each member is carefully maintained while the joint interests of the whole family are mutually accepted whenever an agreement must be reached.

An example may help. Suppose a family has some extra income to use. Four immediate wants are high on the list; a bathroom, a grain combine, a new and more impressive car, and money for seventeen-year-old Junior's college education. How does the family get the maximum satisfaction out of an additional investment since the money available will not go around? One way would be to choose one of the four. A second way would be to go part way on two, three, or perhaps all four. The water might be piped into the house in the proper location but the bathroom not completed now. A combine might be bought

FIG. 76—Comfortable and attractive homes and good churches are high on the list of goals of most farm families. Photos by USDA Extension Service.

jointly with a neighbor or custom work hired and the purchase put off for a while. The car might be overhauled and used another year or two or the family be satisfied with a moderately priced new one. Something could be put aside for Junior's education. The combination wanted is the one that brings the most total satisfaction to the family. After the various family members have thought about all the possible choices, they are ready to decide on which choice seems the best from all angles.

Learn To Plan Together

Family planning is a good way of arriving at family goals. A good way to start is for the family members to look first at the values they hold. That gives some general guideposts to go by. Next they should make a list of their needs and wants. Some items will be for things on the home or on the farm. Others will be for such things as personal improvement or the development of family members. Still others may be for community interests. The third step is to size up the resources on hand or that may be available; the money on hand at present and as much more income as is expected for the period of the plan; present equipment and facilities; the way family members prefer to use their time, and such matters.

The fourth step in the family planning method is to look at all the various resources, the wants and needs of family members, and the family as a group, then to study and analyze them and make decisions. Some of the decisions will be put into effect in the near future. Others will be tentative ones, decisions that may be changed later on.

The fifth step, of course, is to put the plan into action.

It is an excellent idea to write down the main points in the family plan. It is easier to keep them clearly in mind if they are written down. Items that cost money can be set down to see how large the total is and how this compares with prospective income or savings that may be used. Choices in the use of time and energy can be more easily visualized. A plan written down can be used for reference as parts of it are carried out. It is easier to make additions and adjustments to a written plan.

The wise family sets aside a regular time for doing its planning. Some carry on most of the discussion at mealtime. This is not a good procedure as planning takes much longer than a mealtime period. But planning at mealtime is better than no planning at all.

Older children should be included in the planning—and they need not be very old before they are interested. The parents should take care to make clear to the children the idea of limited resources and alternate choices. Children can hardly be expected to know much about the various needs of the farm and the family. But children will soon see that planning is a good method of finding the best answer for all family members.

Keeping Home Accounts Will Help

A record of the money used for family living expenses will be a big help in future planning. No one can possibly keep in mind the total amount of money spent for the many kinds of things bought for family living. Yet, if the family is to study how to get the most from that part of its income that it devotes to living expenses, a home account record and net worth statement will be indispensable.

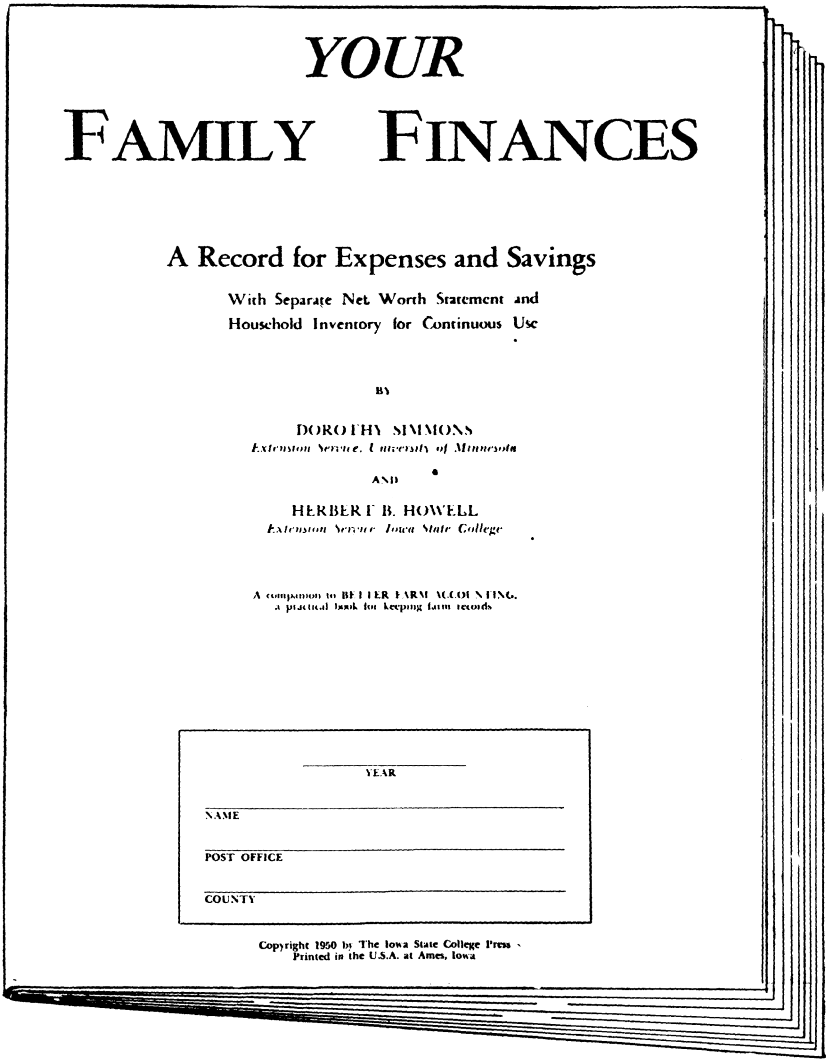
The use of a well-designed home account book makes this task much easier. Such an account book in useful not only in family planning but in filing income tax returns and other uses.

Living Costs Vary

There are several reasons why the money costs of living vary from year to year and from family to family. One is because of changes in the price of family living items. Another is because farm income changes from year to year as well as the need for short-term capital in the farm business. So there is a great deal of variation in the amount of cash available from month to month and year to year for farm family spending. A third is due to differences among families in goals and spending habits and in the family health situation. A fourth is due to the size of the family and its position in the life cycle.

The detailed family spending records of a group of Iowa farm families has been studied for a period of years. It shows something of the typical spending pattern for such families. It includes families at various places in the life cycle and the usual range in family size. Both owners and tenants are included. On the whole, these families have a good level of farm income.

The chart below shows how the family budget was divided among seven main groups of purchased items. Also shown is



YOUR
FAMILY FINANCES

A Record for Expenses and Savings

With Separate Net Worth Statement and
Household Inventory for Continuous Use

BY

DOROTHY SIMMONS
Extension Service, University of Minnesota

AND

HERBERT B. HOWELL
Extension Service, Iowa State College

A companion to BETTER FARM ACCOUNTING,
a practical book for keeping farm records

YEAR

NAME

POST OFFICE

COUNTY

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FIG. 77—A year-by-year record of the family living expenses and other needed information is a big help to the family in planning for the future.

the farm value of products produced and consumed on the farm. It indicates how the cost of living rises and declines during various parts of the life cycle and the variation for families of different size. It assumes the same price level for the period. It is better to think of the costs for the different items as an average for a three to five year period rather than for one year. In the case of the automobile, that part of its use that is for personal and family use is all that is charged here. When used for the farm business, the cost was charged against the farm.

Prices for items purchased are at about the 1946 level. Typical prices then were: bacon 51 cents per lb.; oranges, medium, 42 cents a dozen; overalls, \$2.70; house dress, \$3.00; Axminster rug, 9′ x 12′, \$58.00; gasoline, 21 cents a gallon.

Living costs for any individual family will seldom be in exactly the same proportion as shown in Figure 78. But the

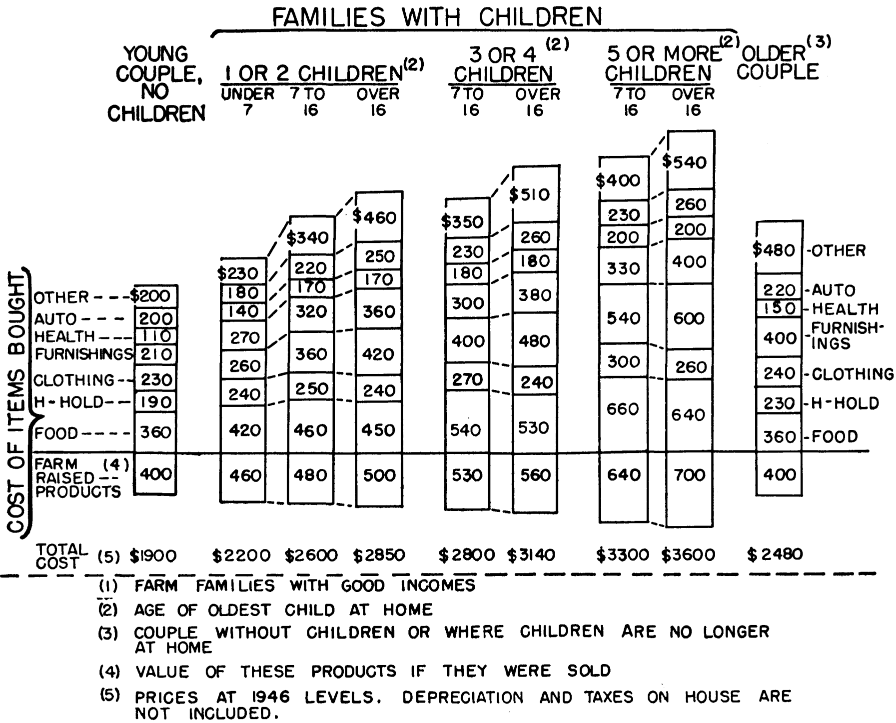

FIG. 78—Farm family living expenses. The change in the cost of living follows the life cycle of the family. Family goals, income, size of family, and consumer prices are also very important factors affecting family living expenses.

logic of the change in living costs through the life cycle will be much the same as that shown. Some of this logic is as follows:

Young Couple—The young couple starting to farm nearly always is badly in need of capital to add to the farm business. Many live on rented farms. Living expenses usually are kept at a moderate level so part of the farm income can go to expand the business. With no children to keep them at home, most couples are active socially and spend a good deal for auto and personal expenses.

Families with Small Children—The cost of living rises as the size of family increases but not for all items. More food and clothing are needed, and medical and dentist bills are larger. With small children, it is not so easy to get away from home so the auto expense is smaller. Most families need money to expand the farm business at this age so economy in living expenses is still the watchword.

Families with Oldest Child seven to sixteen—Food, clothing, medical costs, and similar items continue to rise. Education and recreation take a larger amount as both parents and children expand their activities. Children now help with housework so operating costs remain about the same. The larger the family, the greater the total cost but not the cost per person.

Families with Children over sixteen—This is the most expensive period for the family. Food, clothing, and educational expenses are the big items now. Where children leave home for additional education, this cost may be large. Auto expenses increase as children, too, use the car. Many families replace worn furniture about this time or make improvements in the house. Older children provide more help. Usually more gardening is done so the amount spent for purchased food declines.

Older Couples—Most older two-member families spend more than young couples. Income is usually larger. There is seldom a need for expanding the farm business now. Very often, the father and mother are helping their children get started or are buying for grandchildren. So gifts are larger and likely the contributions to church and charity as well.

The family that has clearly defined goals and does careful planning will find that home accounts and planning budgets are useful devices in helping to attain its ends. But such devices should always be used as tools and not as ends in themselves.

Farming Is Living as Well as Working

Commercial family farming is a complex business. It can be a challenge to ambitious men and their wives. It makes use of their best abilities. Farming is one of the few remaining kinds of independent business in a society growing more and more dependent upon the corporation. Like other people, farm families are highly inter-dependent with other people in the community, as well as with people in other parts of the nation and much of the world.

A farm can be a good place to raise a family, and for those who love the land, a pleasant place to live. But a farm does not become such a place automatically.

The chance of having a good level of living on the Midwest farm, if the farmer and his wife are competent, is probably better now than at any previous time in history, at least from the material point of view. Whether there is for other than material things depends much on the individual family, the community, and the ability of society to adjust and adapt itself to the needs of an ever-changing world.

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