

The farmer works to develop the highest profit combination of crop and livestock enterprises. While the typical Iowa farm has conformed to a fairly definite pattern of operation, this pattern has shifted as one enterprise and then another drew more emphasis from time to time.

27. The Pattern of Farm Management

JOHN HOPKINS, *Agricultural Economics*

FARMING HISTORY IS THE STORY OF WHAT FARMERS HAVE done. What they have done is largely influenced by prices and costs. And prices and costs depend upon wars, depressions, improved technology.

From an economic point of view the first hundred years of Iowa as a state can be divided into two periods of about equal length. The first fifty years saw the settlement of the state and the process of settling down into a more or less stable and systematic farming system like that which already prevailed in the older, eastern parts of the country. This required the years from the first settlements in the 1830's until sometime in the 1890's.

The second fifty years saw three great economic upheavals that forced Iowa farmers to revise their farm organization and many of their practices during World Wars I and II, and during the great depression of the thirties. It witnessed also two other powerful influences of a longer lasting type. One of these was the more general application of scientific methods, under the leadership of Iowa State College. The other was the development of government intervention, with the growth of such institutions as the Agricultural Adjustment Administration, Farm Credit Administration, Soil Conservation Service, Farm Security Administration, and the Rural Electrification Administration.

These influences have made the Iowa farmer much less self-dependent and the farm less self-contained decade by decade. To make the largest possible income a farmer now has to think about many things outside his own line fences. His seed corn comes from a

specialized hybrid seed corn farm. His sources of power are manufactured in a tractor factory and oil refinery rather than being raised from colts in his own pasture. If he wants to obtain funds for some farm improvement he may find the cheapest source of credit in a government credit agency. When he decides on his crop rotation, he has to think about government subsidies or penalties that are intended to keep all farmers in line with a planned and balanced economy. There is no question but that the farmer gets more out of life and lives more comfortably than his great grandfather did in 1846. But he does a job that takes greater skill than his great grandfather needed, too. Managing a farm has certainly become a lot more complicated than it was when Iowa became a state.

THE PERIOD OF SETTLEMENT

Settlement of Iowa began in the thirties and continued until about 1890. For about fifty years the frontier advanced across the state from its southeastern to its northwestern corner. The dominant economic characteristics in this period were the great areas of excellent land that were virtually free, the scarcity of labor, scarcity of capital, and a lack of transportation facilities to connect the settlements with the consuming regions of the East. These determined the nature of the farm organization and methods of management. Since there was abundant pasture on and beyond the frontier, the dominant enterprise was, naturally, the raising of cattle. Throughout the half-century we are discussing an extensive cattle enterprise drifted across the state ahead of the plow. In fact, the grazing enterprise had been characteristic of the frontier ever since the settlement of the eastern seaboard. It was reported from each new area taken up by the earlier settlers, from Massachusetts, from Pennsylvania, Virginia, and the Carolinas before the Revolutionary War, and from Ohio, Indiana, and Illinois. After the Civil War the same enterprise of grazing the unfenced prairies advanced rapidly westward until there was no longer free range in Iowa after 1890.

The grazing of cattle provided a solution to the special conditions of the frontier. The cattle could utilize a relatively large area of land without any necessity of preparing or cultivating it. They required but little labor or capital per acre of land or per dollar of product. And finally, when ready for sale they could walk to market. In the earlier years, therefore, the story of Iowa farm management is largely a history of beef cattle production. But by 1890 there was only an occasional section or quarter-section available for extensive pasturing

in the extreme northwestern corner of the state. Iowa had become a settled agricultural area.

The rapid development of Iowa as a land of prosperous and well-organized farms cannot be attributed either to any peculiar characteristics of the people who settled the area, nor to capital and equipment that they brought with them. They were of the same racial stocks as the settlers of the older states. The early settler was ordinarily a poor man, who had to improvise both his methods and his equipment until he could accumulate a little capital. Usually the settler brought with him only one or two pairs of horses, or yokes of oxen, a couple of cows (chiefly to produce milk for the family), a wagon, a plow, and enough capital to see him through until he could raise a crop. The first few years were hard ones. Yet these people were lucky. Railroads were following not far behind them and the markets of the East were prepared, during most of the years of Iowa's settlement, to take their crops and livestock at prices that would enable them to get ahead. The land, the climate, and the location relative to markets were all favorable, and the general attitude of early Iowa farmers, as shown by the newspapers and periodicals of the time, was generally optimistic. In spite of the intermittent hard times, these farmers and their children were among the most fortunate of all settlers in all the favored areas of the United States.

Nevertheless, there were good and bad years. Some of the variation came from fluctuations in the seasons and some from shifts in prices. The Civil War upset the existing price relationships and caused a great wartime inflation followed by the usual collapse. During the war the process of settlement was largely stopped. At the beginning of the war the prices of cattle and hogs dropped because of the loss of the markets for salted beef and pork that had developed in the South. Prices of wool, on the other hand, rose sharply because of the loss of the cotton supply. By the end of the war, wool was a dollar a pound. For a while the interest of Iowa farmers shifted from cattle to sheep. The number of sheep which was 259,000 in 1860, was estimated at 900,000 at shearing time in 1864 and nearly 2,000,000 in 1867. But with the end of the war wool dropped to between 20 and 30 cents per pound and farmers got out of this enterprise and turned again to cattle and hogs.

The war over, settlement made up with a rush for the time lost. Post-war prosperity was supported by a great wave of railroad building, which not only kept business operating full blast in the eastern parts of the country, but also opened new regions and made it cheaper for farmers in settled areas to get their produce to market.

After 1870 there was a period of depression. Newly-built railroads failed to yield the expected profits and there were financial scandals to shake business confidence. Fat cattle in Chicago dropped from \$7 to about \$4.50 per hundred pounds in 1873, and \$4 in 1876. After this there was a recovery and cattle rose steadily until 1884. Hogs, however, recovered more rapidly than cattle and since they offered an outlet for the increasing production of corn, farmers began turning more and more toward the corn and hog combination that was to characterize Iowa agriculture up to the present time.

FARM PRACTICES

The organization and management of Iowa farms in this early period was relatively simple in some ways, and yet was complicated by the fact that farm families needed to be much more self-sufficient than now. Methods of farming and management were brought by the settlers from their old homes farther east. There were no leguminous forages, except that clover began to be planted in a small way a few years after settlement. Buildings were mostly small and cheap. "Straw sheds" were the common shelter for cattle. There were no county agents to whom a farmer could go for aid or advice and Iowa State College was just getting well started, under its old name.

Since most of the settlers had only a few head of cattle, they often were forced to forego the opportunity to utilize the full acreage of prairie pasture on their land for a few years until they could accumulate a herd. In the meantime they turned to raising a small acreage of crops, though this was more laborious and less profitable. The raw prairie soil did not produce a good crop of corn for two or three years after it was first plowed. Consequently, wheat and flax were often the first crops. Many of the first waves of settlers located in rough, timbered land rather than on good prairie nearby. This was at least partly in order to have access to springs of good water and to timber for buildings and fences. Also, many settlers came from similar rough land farther east in Ohio or Pennsylvania, and were suspicious of the level land where there was no natural stand of trees. With only small teams of horses or oxen and no large mechanical equipment, hilly land did not possess the disadvantages that it does today.

Even in the earliest settlements, however, the farm operator seems to have responded about as readily to the price system and to price changes as he does today. The rapid shift into sheep during the Civil War is an illustration of this. So is the shift to hogs a few years later when the ratio of corn to hog prices became favorable. So is the change from selling cattle directly off grass to fattening them on corn. This

latter method improved the market grade of the steers and saved corn by converting it to a smaller volume of beef.

In the southeastern part of the state, where feeding began in Iowa, cattle were commonly fed on corn in the fodder after it had been cut and shocked. These settlers had come from eastern regions where cutting and shocking had long been common practice. Later on it was found that labor could be saved by snapping the corn and feeding it in this form or as husked and broken ears.

A letter in the *Prairie Farmer* in 1866 gives the approved practice for handling feeding steers:

There should be 60 bushels or more of corn put up in the shock for one steer, or one acre and a half of common corn. The cattle should be smooth, thrifty, 3 or 4 years old, to be taken up before they begin to fall off and furnished with good lots to change in, running water, timber or broken ground to the west or north. If possible salt once a week, and after the first week give them as much corn and fodder as they can eat. In case of ailment split the tail and give them soot and salt.

The recommended cure for ailments may seem a bit heroic, not to say bizarre. It is not so strange, after all, in a prescientific era when some farmers discussed, seriously, such diseases of cattle as "hollow-horn" and "wolf in the tail." The rest of the procedure, however, makes sense. Even the advanced age of the feeders was based on good reasoning. In the first place the cattle were not well bred and they matured slowly. Second, with relatively more pasture than cattle, it did not cost much to let the steer grow for another year. And third, since there was no alfalfa and very little clover, corn fodder was about as good a roughage as any available.

Superstitious beliefs in animal diseases and in planting crops according to the phases of the moon, soon began to give way to more scientific methods. A large proportion of the farmers even in early Iowa were hungry for learning and for scientific methods. After the first agricultural society was organized in Dubuque in 1842, the number grew rapidly in the fifties and sixties until virtually every county had one, in addition to various other farmers' clubs organized for the purpose of discussing improved methods. Sixty county fairs were held by county agricultural societies in 1859. Agitation by farmers led to the passage in 1858 of the law which provided for the establishment of Iowa State College. In 1870 President Welch held the first farmers' institute and these educational meetings continued for many years thereafter. In 1868 the first Iowa Grange was organized in Newton partly for educational purposes. In five or six years there was a grange in nearly every village of the state. The number of Granges declined

in the late seventies but these were followed by the Farmers' Alliance in the eighties. Throughout the entire history of the state, Iowa farmers have actively sought for more knowledge and better methods both of technology and of management.

In the latter part of the century, Iowa agriculture was settling down into the pattern which it was to keep to the present day (Table 15). From 1870 to 1890 the corn acreage grew from twenty-two to forty-four acres per farm, replacing wheat. Wheat which had reached an acreage of over three million in 1875, declined to less than one million in 1890, while oats increased from six to twenty acres per farm and tame hay acreage rose from eight hundred thousand to three and one-half million. The tame hay was largely timothy. In fact, President Welch in discussing the improvement of Iowa cattle at the first farmers' institute in Cedar Falls, in December, 1870, maintained that the improved Durham stock could not be raised profitably on prairie hay, but required timothy.

CORN-HOG PATTERN APPEARS

Livestock, as well as crops, were falling into something like the present pattern (Table 16). From 1870 to 1890 cattle increased from ten to twenty-two per farm. The number of these that were reported as milk cows trebled. Hogs increased from twenty-four to thirty head per farm while sheep declined. Horses increased as the growing crop acreage required more and more power.

In 1880 there were still many farms that utilized chiefly a grass economy. Both the gross and the net value of the corn crop, however, was well above that of pasture and prairie or timothy hay. Likewise the opportunity to convert grain and hay into hogs or fat cattle was too obvious to be passed by for long. Each census year up to 1930 found larger acreages of corn and oats, and a larger number of hogs.

In the late eighties and early nineties Iowa farm management was complicated by relatively wide price fluctuations and by intermittent years of drouth. Drouths and short corn crops occurred in 1886, 1887, 1890, and 1894. Fluctuating prices of corn, cattle, and hogs, kept the farmer in uncertainty when he wanted to plan for maximum returns. In addition, the boom in cattle came to an end in 1885. Up to this time the ranges had been stocking up and had not reached their full output of slaughter cattle. In 1885 cattle receipts at Chicago numbered one million nine hundred thousand. During the next four years receipts climbed above three million. Average monthly prices of heavy

steers in Chicago declined from over seven dollars in 1882 to less than four dollars in 1887. There was not much recovery until 1892 and 1893. In the fall of 1893, however, a severe depression hit the country, and in 1894 there was a wide-spread drouth. The decade from 1885 to 1895 was one of long, drawn-out and grinding depression. Thus, Iowa's first half century ended with a general air of discouragement.

TWENTY YEARS OF PROSPERITY

Recovery began in 1896, and except for a brief but sharp panic in 1907, orderly expansion continued until the outbreak of World War I in 1914. The period of settlement was over and there were no more large areas of good land to open up. On the other hand, population and the demand for farm products continued to grow. Prices were slowly rising. Improved farming methods were gradually being adopted. Interest rates were declining. Farm loans had cost 15 per cent in the seventies and early eighties. In the nineties there was some decline, but the cost of capital fell more rapidly around the turn of the century, reaching 8 per cent in 1902 and 1903. Under these circumstances farmers could afford to obtain equipment and make improvements that had been denied in earlier years. Many of the makeshift houses and barns were replaced between 1900 and 1914 with new ones that were better built and more comfortable.

The cattle-feeding enterprise expanded and feeding was practiced by more farmers in this period than before. By 1907 or 1908 it was said that the common cattle of the state were as heavy and as well finished at slightly over two years of age as they had been at three years or over in the early nineties. Replacement of the older, scrub types of cattle with the better-bred Shorthorns, some Herefords, and Angus played an important part in this improvement. So did the growing of more clover hay and the planting of some alfalfa, particularly in the western part of the state.

From 1890 to 1915 the acreage of corn and oats in Iowa increased. Hog numbers fluctuated from year to year but were generally rising while cattle numbers had not changed greatly during the twenty-five years, though they were undoubtedly better animals at the end of the period.

During the first years of the Twentieth Century, Iowa State College began its Extension program and made great strides in carrying the college to the people of the state. A two-weeks' short course was organized at Ames in 1901 by Dean C. F. Curtiss. In 1903, P. G. Holden held the first Iowa farm demonstration work near Orange City, and in

1905 the first local short course at Red Oak. A boys' club was organized in Keokuk County in 1904. The Iowa Legislature in 1906 passed a bill which provided an appropriation for Extension work. In 1912 the employment of county agricultural agents was started, and by 1918 there was an agent in every county.

Agriculture was maturing in Iowa in this period. An organization was being developed to convert scientific discoveries into farm practices and carry these to farmers as rapidly as economic and other conditions justified. The same process was going on in other states at the same time. No longer was the farmer condemned to struggle alone and depend on the erratic rules of thumb that he had been forced to use through all preceding decades.

THE PERIOD OF WORLD WAR I

During World War I, Iowa farm organization and practice was affected chiefly by two sets of influences. The first was the wide and relatively free fluctuation of prices. The second was the wartime shortage of labor, as manpower was drafted for the army or else attracted to munitions factories by high wages.

When the war broke out in 1914 many people expected that prices of farm products would surge upwards at once. They were disappointed for nearly eighteen months. The first reaction was a decline caused by the breaking off of normal trade relationships with Europe. This lasted until March, 1916, when food shortages started the upward spiral to the highest levels yet reached in this state. From 1914 to 1919 hog prices in Iowa rose from \$7.66 per hundred pounds to \$16.87. Cattle rose from \$7.33 to \$12.45, and corn from 61 cents per bushel to \$1.41. Farming costs and the valuation of farm property rose along with prices of products. Land values per acre, which averaged \$124 in 1914, rose to \$255 in 1920 and the total mortgage debt nearly trebled.

As soon as the United States entered the war in 1917, a concerted governmental drive was made to produce food to the maximum. Additional support was given to the Extension Service which undertook an intensive educational campaign through county agents. These years marked the beginning of Extension Service leadership in rural adult education.

Intensive propaganda for greater wheat production to relieve the shortage of bread grains caused a shift of about a million acres in Iowa from corn to wheat in 1918 and 1919. In 1920, however, wheat dropped back to 600,000 acres and corn recovered to ten million two

hundred thousand acres, or a half million above 1914. The number of hogs, which had been running around 9 million head on January 1, in the years before the war, increased to 10.8 in 1919 and then dropped back to 8.3 million in 1920. Cattle increased from 4 to 4.5 million.

The principal new crop appearing in this period was alfalfa. For this crop 23,000 acres was reported for 1909, but by 1920 the figure was up to 180,000.

These figures indicate that, even during the war, the proportionate shifts away from the basic pattern of Iowa agriculture were not very great. Changes in farm practices also were rather gradual, if we view the state as a whole, although some individual farmers were making long strides towards new methods. More important than the net changes accomplished during the war was the beginning of the use of mechanical power in Iowa farm operations.

The end of war saw Iowa farms operating at full capacity. But the reconversion to peacetime conditions required a couple of years, and the demand for food for Europe was filled sooner than many people expected. Decline of prices set in sharply in late 1919 and lasted through 1920. Iowa's gross farm income was nearly eight hundred million dollars in 1920. In 1921 it was less than five hundred million. *Wallaces' Farmer* of November 5, 1920, stated:

The farmers of the nation are thoroughly stirred up over the tremendous drop in the prices of their crops. Meetings are being held; conferences are called; committees are sent here and there; protests are being made in the papers; farmers are urged to hold their crops off the market. Everybody who has a real interest in Agriculture is casting about to find some way to stop the ruinous decline in prices, but no one seems to know just how to do it.

READJUSTMENT IN THE NINETEEN-TWENTIES

Recovery of prices started in 1922. Nevertheless, farmers were at a disadvantage, especially until 1925. Prices of the things they had to buy stayed more than 50 per cent above the 1910-14 level, while prices of Iowa farm products varied from 7 per cent above prewar in 1921 to 19 per cent above in 1924.

Tenant farmers were able to get along and to make moderately satisfactory incomes by 1925. Owners who had no heavy indebtedness against their farms were not doing too badly. But owners who had bought their land during the wartime land boom, and had heavy mortgages against it, fought a losing battle. Many of them were forced to give up their land while others, despite their hardest efforts, were merely able to meet interest charges and taxes. The heavy Iowa

farm mortgage debt declined only from \$100 per acre mortgaged in 1921, to \$80 in 1929, while average land values fell from \$235 per acre to \$139. Changes in farm management and organization were limited largely to those improvements that did not require new investments.

In spite of the discouraging financial situation there was progress and improvement in farming methods. This is largely attributable to the growing influence of the experiment stations and extension services. These agencies, under guidance from the United States Department of Agriculture, were educating farmers on improved methods in Iowa as well as in other states. Improved crop varieties, better-bred cattle and hogs, more efficient and economical feeding methods, and labor-saving machinery were being adopted by more farmers every year. In addition, increasing stress was placed on farm accounting and on other means of controlling the business side of the farm unit.

In 1920 the Iowa Agricultural Experiment Station and the Iowa Farm Bureau Federation started a farm accounting route in Marshall County. A second was started in Shelby County the following year. These continued through 1924. Then the work was moved to Iowa County, and later to Webster County. The first results from these studies were published in the *Iowa Farm Bureau Messenger* in November, 1921.

It had been hoped by some of the supporters of the cost studies that the results could be used to obtain government price control favorable to farmers. But after recovery from the depression of 1920-21, interest in price control diminished. Consequently the accounting routes were modified to yield other types of detailed information on Iowa farm organization and management. Instead of a figure representing cost per bushel of corn or per hundred pounds of hogs, the studies shifted to the influences that determine net income of the farm as a whole.

Aside from the loss of interest, it soon became apparent that the so-called "cost of production" figures would be of little use in governmental price control. Even if full information on costs were available, they alone would furnish no basis for such control, because prices are governed as much by demand conditions as they are by costs. Second, there are several crops in the typical Iowa rotation, and labor, power, and other resources applied on one crop or livestock enterprise are of benefit to others. Consequently, the distribution of these costs between enterprises is largely a matter of arbitrary choice. One method of computation might make corn appear costly and oats

cheap. Another method could reverse the relative costs so that oats would appear expensive and the corn cheap. Unfortunately, there is no sure and unimpeachable method for allocation of costs under these conditions.

A further reason for loss of interest in "cost of production" figures was that prices soon turned upward again, in 1922. With rising prices it would be disadvantageous to producers to have prices held back at "cost of production" levels.

In 1929 a different type of farm accounting work was begun. A co-operative accounting route was started for the benefit of farmers in the region around Cedar Rapids. Since that year four other co-operative farm management associations have been organized, each with about 150 members. Each association employs a trained farm management worker who visits each farm three or four times a year. During this visit he checks over the farmer's accounts and other records, discusses his management problems, and points out opportunities for strengthening the farm business and increasing his income. Part of the expense connected with these associations is borne by Iowa State College. In exchange for this support the college obtains the use of summary data from the records for use in the Experiment Station, the Extension Service, and the classroom.

The most outstanding change in Iowa farm pattern of operation after 1920 was the rapid advance in mechanization. Continuous mechanical improvement was made in the tractor, and it was adapted better to farm conditions. Ignition equipment, fuel, lubrication, and cooling systems were all improved, making the tractor more economical and more dependable. Tractors were developed with less weight and greater power, and operating speed was materially increased.

The most important improvement, from the viewpoint of farm adaptability, came with the development of the row-crop type of chassis. This type began to appear in 1924 and within few years Iowa farmers were demanding the row-crop rather than the older four-wheel type. With this change in design it became possible to use tractor power in cultivating as well as for such operations as plowing and discing.

As tractors increased, the number of horses in Iowa declined. Large amounts of pasturage and feed, formerly consumed by horses, were shifted to hogs and cattle. The greater power of the tractors, and its increased speed over that of horses reduced the amount of labor required to produce crops. It was estimated by the National Research Project that an average of 20.6 hours per acre was spent in the Corn

Belt in raising corn in the years 1917-21. This declined to 17.9 hours in 1927-31, and to 16.9 hours in 1932-36. In production of oats, average labor requirements per acre in the same periods were 8.7, 7.3, and 6.7 hours, respectively. A large part of the change is to be attributed to application of the tractor, though there were some changes in practices, and the use of larger horse-drawn equipment also played a part.

DEPRESSION AND GOVERNMENT INTERVENTION

The decade 1930-40 was a hard one for the Iowa farmer, and yet it saw some important farm management changes. Iowa gross farm income dropped from \$830,000,000 in 1929 to \$317,000,000 in 1932.

Iowa farm land prices dropped from \$139 per acre in 1929 to \$65 by 1933. More than three thousand Iowa farms were sold under foreclosure each year from 1931 through 1934. In 1932, the number was 6,400. In addition many thousands of other farmers saw their equities shrink to the vanishing point. Under these conditions low prices had a perverse effect, and instead of restricting production, farmers tried to produce to the maximum in order to stave off ruin.

In 1933 various new governmental agencies, including the Agricultural Adjustment Administration, were set up for farm relief. These were designed to reduce output until it was more nearly in line with demand. But the farmers' troubles were not over. In 1934 and again in 1936 there were disastrous drouths, especially in the southern and western parts of the state.

Pushed both by the government programs and by the drouths, prices recovered by 1935 to levels which were not far below those of the twenties. By 1939, however, corn had declined again to 39 cents per bushel, hogs to \$6.17, and cattle \$8.43 per hundred pounds.

Under the guidance of the A.A.A., acreages of row crops were held down and efforts were made to expand the use of soil-conserving crops, especially of hay and pasture (Table 15). It was apparent that much Iowa land had been cropped too intensively. Damage by erosion was becoming serious in southern Iowa and in parts of northeastern Iowa. This fact was emphasized repeatedly in educational campaigns under the Soil Conservation Service and the Extension Service. In a period of five or six years after the initiation of the soil conservation, such practices as contour cropping, strip cropping, and terracing were spreading rapidly. Application of lime to permit the production of legume crops was becoming more widespread and many farmers were using commercial fertilizers, especially phosphates.

The organization of such governmental agencies as the Agricultural Adjustment Administration, Soil Conservation Service, Farm Security Administration, and Rural Electrification Service, marked a turning point in farm operation. Business fluctuations had become increasingly

TABLE 15
AVERAGE PRINCIPAL CROPS AND LAND USE PER FARM

Year	Acres				
	Corn	Small Grain	Tame Hay	Other Land	Total Land
1870.....	22.0 (16%)*	24.8 (19%)*	6.9 (5%)*	79.9 (60%)*	133.6 (100%)*
1880.....	37.6	25.1	12.4	58.4	133.5
1890.....	43.5	27.6	17.1	62.8	151.0
1900.....	39.7	29.1	14.2	68.2	151.2
1910.....	43.9	28.3	17.8	66.3	156.3
1920.....	48.4	31.9	15.5	61.3	156.8
1930.....	52.7	33.8	14.5	57.3	158.3
1940.....	42.4 (26%)*	27.8 (18%)*	19.4 (12%)*	70.5 (44%)*	160.1 (100%)*

* Percentage of the total farm land.

destructive and social unrest and economic fear were widespread by 1933. Not only farmers but also laborers and business men were becoming more concerned about economic security than about traditional freedom to carry on unrestricted economic activity.

The organization of these action agencies changed farm management in a fundamental sense. The individual farmer was still following the economic objective of maximum net income. But from this time on his income was to be modified in various ways by action programs intended to co-ordinate agricultural activity in the various regions of the country, and to keep agriculture in balance with other industries. The prices received for farm products became only a part of his income. To make the maximum net income the farmer now has to take into account benefit payments for compliance with such programs as that of the A.A.A., as well as payments for soil conservation, forward price assurances, nonrecourse government loans, and so on.

Under the guidance of the government programs corn and oats

acreage declined. Soybeans were increasing in popularity. Their price per bushel during 1933-40 ran nearly twice as high as corn, or just about enough to offset the lower yield of the soybeans; and since peak labor requirements of the beans occur at slightly different dates from those of corn, it was found convenient to include small acreages of this crop on many Iowa farms.

Numbers of livestock did not change greatly during the decade, with three exceptions. There was a temporary liquidation, especially of hogs, during the drouth years 1934 and 1936. Second, with the increase of soil-conserving forage crops and pasture, there was an increase in total number of cattle. Third, as more and more tractors were adopted, the number of horses continued to decline.

As soon as farmers had sufficient money to buy more equipment, following the worst years of the depression, the process of mechanization proceeded with redoubled speed. Further improvements were made in the tractor, and by January, 1940, the number in Iowa had reached 118,000.

Other large capacity, labor-saving machines also were being adopted. A small number of two-row corn pickers were in use by 1929. In fact during World War I a few had been used by Iowa farmers. They were not highly satisfactory, however, and were used only while labor was scarce and high priced. By January, 1940, there were 20,000 corn pickers and 6,500 combines reported on Iowa farms.

Other technological improvements also were under way. Probably the most outstanding of these was the adoption of hybrid seed corn. This development has made the farm manager dependent on commercial producers for his seed corn. More important is the effect on volume of production. With an added 15 to 20 per cent of grain from the same acreage, the farmer has either had more corn to sell, or has been able to increase the number of such corn-consuming livestock as hogs and fattening cattle.

WORLD WAR II

We are still too close to the events of the war to be able to appraise the effects of World War II on Iowa farm operation and management. During the war the pattern previously established continued without very many changes. In general the wartime shifts were similar to those that occurred during World War I. The demand for food increased rather quickly. Prices rose sharply. Labor became scarce as men were drafted for the armed forces or attracted to munitions plants. The demand for farm implements expanded as farmers tried to accomplish

CAUSES OF FARM PROFITS...

HIGH PROFIT 160 ACRE FARMS

LOW PROFITS 160 ACRE FARMS

LIVESTOCK
PRODUCED PER
\$1.00 FEED FED



PIGS WEANED
PER LITTER



DAIRY INCOME
PER COW *



* ONE UNIT EQUALS TEN DOLLARS



GROSS VALUE OF
CROPS PER C.A.*



* ONE UNIT EQUALS TEN DOLLARS



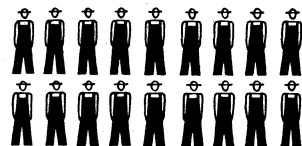
BUSHEL OF
CORN PER ACRE



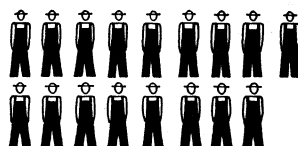
* ONE UNIT EQUALS TEN BUSHEL



MONTHS
OF LABOR

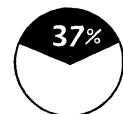


18 MAN MONTHS



17 MAN MONTHS

TURNOVER
OF CAPITAL



GROSS PROFITS
PER MAN *



* ONE UNIT EQUALS ONE HUNDRED DOLLARS



MANAGEMENT
RETURN *



* ONE UNIT EQUALS ONE HUNDRED DOLLARS

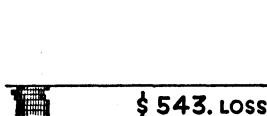


FIG. 10.—Records for 1944 of typical operators of 160-acre farms in Iowa were analyzed to see why some farmers made more money than others. The factors that entered in showed up in this fashion.

more work with fewer men. Government programs were organized to stimulate fullest possible farm production.

Farm prices doubled between 1939 and 1945, and gross farm income in Iowa climbed from \$684 million in 1939 to \$1.6 billion in 1943.

The labor surplus that had developed on many Iowa farms during the depression years quickly melted away, and labor shortage became a universal topic of conversation. To offset the lack of hired men, farmers attempted to turn as rapidly as they could to more tractors and larger implements. These, however, were limited by shortages of materials and labor in implement factories, particularly after the United States entered the war. Nevertheless, farm implements were given a relatively high priority.

In spite of a pronounced shrinkage in the number of farm workers, Iowa farmers were able to handle materially larger crop acreages and livestock numbers, by use of the added equipment and by cutting corners in maintenance of buildings and equipment.

There was an interesting development in small grain production. This was the dissemination of improved and higher-yielding varieties of oats. Iowa barley had been running around a half million acres per year. But with availability of oats which definitely outyielded barley, the latter crop dropped almost to nothing within a period of three years. In 1945 only three thousand acres of barley were reported for the whole state.

It was obvious almost from the beginning of the war in 1939 that the United States would have to provide supplies, and particularly food, for the support of the allied nations. By early 1941 the keynote of our agricultural programs had changed from conservation and output restriction, to greater production for national defense and for aid to Britain. After the attack on Pearl Harbor efforts were redoubled to increase production. Secretary of Agriculture Wickard announced in December, 1940, the intention of the Government to support prices of hogs at a level around \$9 per hundred pounds, and similar support prices were soon announced for other products. The administrative machinery of the United States Department of Agriculture, including the Extension Service and the A.A.A., was quickly turned to wartime objectives of stimulating production. "Goals" higher than previous production levels were set to stimulate farmers to greater effort, and these were raised from time to time during the war.

The feed surpluses that had accumulated in the "ever normal" granary during the depression years were converted into livestock

products, especially into hogs (Table 16). By early 1943 these surpluses had largely been consumed. It was anticipated that large shipments of foodstuffs would be necessary at the end of war to avoid famine and to aid in reconstruction of war-devastated areas, especially in Europe. The demand on the United States, however, was greatly increased by short crops in other regions. In 1944 and 1945 there were widespread drouths in the southern hemisphere which cut exportable supplies of grains and livestock products in Argentina and Australia,

TABLE 16
AVERAGE NUMBER OF HORSES, COWS, AND HOGS PER IOWA FARM

Year	Horses, Mules	All Cattle	Dairy Cattle	Hogs
1870.....	4.6	10.4	3.7	23.7
1880.....	4.9	13.0	4.4	23.8
1890.....	6.7	22.1	6.1	29.5
1900.....	6.1	21.2	6.0	30.1
1910.....	7.2	20.5	5.8	28.9
1920.....	6.9	21.4	5.3	38.1
1930.....	5.3	18.5	6.5	47.4
1940.....	3.7	22.2	6.8	48.8

and reduced the Cuban sugar crop. In 1945 the shortages caused by war were further increased by drouth in large areas of Europe. Consequently, at the end of 1945 and the early months of 1946, farmers were being urged to furnish all possible supplies and to liquidate stocks of grains and numbers of excess livestock in order to minimize the suffering in other parts of the world. It was again being demonstrated to them that their productive activity was of vital importance not only to the rest of the country but to other parts of the world.

TODAY'S VIEW

From 1900 to the present time the typical Iowa farm has conformed to a fairly definite crop and livestock pattern. The pattern, however, was not a static one but was being modified continually in detail. The shift toward mechanization brought a continuous reduction in the number of horses per farm, and a corresponding increase in cash expenses for purchase of equipment and of tractor fuel after 1910. The trend toward soil conservation and greater acreages of legumes increased the feed supply for forage-consuming livestock, especially for dairy and beef cattle after 1935. The development of hybrid seed

corn increased feed available for hogs and for fattening steers. The development of higher-yielding varieties of oats increased the feed supply, particularly for dairy cows after 1940, and the increase in soybean acreages during the thirties and early forties provided a greater supply of protein supplements. Consequently, internal organization of the Iowa farm has shifted so that first one enterprise and then another has been enlarged in comparison to others. Nevertheless, the general pattern has remained very much the same since 1900.

In 1846 the Iowa farmer was an isolated settler on the frontier. In 1946 he was, in a very real sense, a citizen of the world, and a member of a society that was becoming more closely integrated each decade. As a farm manager he was still striving for highest net income as an immediate objective. Such an income, however, is now obtained by keeping in touch with both technological and economic developments through the facilities of the Department of Agriculture, the Extension Service, and other governmental agencies. This was never demonstrated more forcibly than during the years from 1939 to 1946, when the correct managerial decision might turn on news of a war in Europe or Asia, a food shortage in Europe, or a drouth in Argentina or Australia.

