ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

G. L. Jordan, Editor | February, 1952 | Number 201

Articles in This Issue

THE OUTLOOK FOR FARM MANPOWER AND MACHINERY[1]

The outlook for farm manpower and machinery in the near future will be strongly conditioned by the impacts of the Defense Program. Defense expenditures are expected to rise to a peak sometime around the end of 1953. And plans call for a high level of defense expenditure for some time after the peak is reached.

The forecast is that defense expenditures will represent more than 18 percent of gross national product in the last quarter of 1952; i.e., make up nearly one-fifth of our total output of goods and services by that time. For 1952 as a whole between 17 and 18 percent of total output may be devoted to security programs. This compares with estimates of nearly 14 percent of gross national product in the last quarter of 1951, 8 percent for the corresponding period in 1950, and 45 percent in 1944 at the peak of World War II.

The major components of the Defense Program include (a) the military functions of the Department of Defense, (b) foreign military and economic assistance, (c) atomic energy, (d) stockpiling of strategic materials, and (e) civilian defense. The Program can also be described in terms of its three major goals.

[1] A talk given at Farm and Home Week, University of Illinois, January 31, 1952.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

The first goal is an increase in the strength of the armed forces from about 1.5 million before the outbreak of hostilities in Korea to an authorized strength of 3.5 million by mid-1952. The long-range plans are to develop an organized reserve corps of men who have completed basic training and who could be called into service rapidly if necessary.

The second goal relates to defense production. This production goal calls for providing equipment and services needed by an armed force of 3.5 million; a reserve supply of key equipment sufficient for meeting the first year's needs of a full mobilization program; and assistance to other free nations in building up their military strength.

The third goal calls for building up a base of reserve industrial strength that could be utilized quickly in the event of all-out war. This means that at the same time we are producing relatively large quantities of military goods for immediate need we will be getting ready to produce much greater quantities if they are needed. This greater productive capacity will mean, among other things, an increase in steel ingot capacity from 100 million tons a year — the annual rate in June 1950 — to an annual rate of 120 million tons by 1954. Aluminum production was at an annual rate of 735,000 tons a year in June 1950 — the goal is for production at over twice this rate by 1954. During the next three years plans are to expand electric power capacity by 40 percent above what we had at the end of 1951.

This program of partial mobilization comes at a time when we already have a high level of employment in our economy. Consequently, achievement of the immediate goals of the Defense Program will necessarily have important impacts on the civilian economy.

Farm Manpower

In thinking of possible manpower losses from agriculture, two sources of drain usually come to mind — the armed forces and industry. Loss of workers to industry is likely to be much the more important in 1952.

We have now approximately reached the authorized strength of 3.5 million in the armed forces. In an over-all sense, then, there should be smaller *net* loss of farm workers to the armed forces this year. There will be movements into and out of the armed forces under the operation of a rotation system. Consequently, individual farmers face the problem of making provisions for replacing workers who may be drafted.

The present armed force of approximately 3.5 million seems small relative to the peak of 12.3 million in June 1945. But the job of providing replacements for a force of 3.5 million looms larger when differences in the situation now and in World War II are considered. The armed forces

are now coming from only the younger age groups, and more liberal exemptions and deferments further reduce the size of the pool of men available. Population changes since 1940 are also important in this regard. The total population of the United States rose by 23 million, or 17 percent, between April 1940 and July 1951. But the number of persons aged 19-25 years decreased slightly and the number of 18 year olds declined by 19 percent. We have gained in very young children and older people and have actually lost population in the present military age groups. This has occurred partly because of the low birth rates during the depression and high birth rates in the post-war years.

Agriculture expects to furnish its fair share of replacements to the armed services. This points up the importance of Selective Service regulations regarding agricultural deferments. Under present regulations, II-C deferments are to be given agricultural registrants who meet the following requirements:

(a) The registrant cannot be replaced because of a shortage of persons with his qualification or skill in agricultural activity,

(b) The removal of the registrant would cause a material loss of effectiveness in agricultural activity, and

(c) The registrant is employed in the production for market of a substantial quantity of agricultural commodities.

These regulations are intended to prevent induction of those farm workers whose loss would actually cause a material drop in over-all farm production.

To meet defense production goals it has been estimated that employment in defense activities must be increased by about 2.5 million in 1952, rising to 7.7 million or 14 percent of the employed work force by the last quarter of the year. As unemployment is at extremely low levels, additions to defense employment must come from two chief sources — transfers of workers from non-defense to defense activities, and enlargement of the total labor force through normal growth and the attraction of people who usually do not seek employment. The exact contribution that might be expected from each of these sources is not known. However, a transfer of some farm workers to non-farm employment is expected. A near-peak impact of the Defense Program on the farm labor supply is expected at the fall harvest season when farm labor requirements are seasonally high.

The supply of year-round workers will continue to be tight. A decline in the supply of seasonal workers is also expected. There may be an increased demand for foreign contract workers to supplement local supplies in some areas. Some workers will undoubtedly continue to be available from Puerto Rico, the Caribbean Islands, and Canada. The present inter-

national agreement with Mexico expires February 11, 1952 and will require renegotiation. About 200,000 foreign contract workers were used in agriculture in 1951.

Thus, the over-all outlook is for a smaller supply of farm labor in 1952 than in 1951. Greater difficulties will be encountered in getting an adequate number of workers in many local areas. In agriculture as a whole, technological progress and increasing productivity of farm labor would normally result in some decline in farm employment. The 1952 farm production goals mean a big job for farmers. But with effective recruitment campaigns and increased emphasis on efficient utilization of labor, there is every reason to believe that farmers can do the needed production job.

Farm Machinery

The farm labor situation in prospect gives added emphasis to the need for an adequate supply of labor-saving machinery on farms.

The volume of farm power and machinery on farms is now at a record high. Farmers added to their stock of machinery during most of the World War II period and have made record purchases of new machines since the end of the war.

There is still a need for additional new farm machinery. The size and nature of the need is illustrated by the results of a nation-wide survey of county PMA farmer-committees made last year by the United States Department of Agriculture. The survey indicated that farmers need 15 percent more new farm machinery than they received in 1949, and require 20 percent more repair and replacement parts than were available in the same period. Volume of purchases of new machinery by farmers in 1949 was one of the largest in history.

Perhaps more significant than the estimate of over-all requirements for new machinery were the indications of trends in kinds of machines needed. Increasing mechanization is reflected by the stated need for horse-drawn equipment of only 60-75 percent of 1949 shipments.

Needs for heavy wheel tractors were estimated at 123 percent of the 1949 level, whereas the demand for light wheel tractors was 86 percent. In general, the survey pointed up a growing need for larger, labor-saving machines, and types of machinery necessary for adoption of new farming techniques. The survey results showed a relatively strong trend toward such machines as self-propelled combines, manure spreaders, mechanical cotton pickers and strippers, beet harvesters, corn pickers, tractor-mounted mowers, and pick-up balers. In addition, large needed increases were shown for field crop sprayers and dusters and farm irrigation equipment.

These trends in demand for farm machinery underscore the rapid

technological progress which is taking place in agriculture and which must continue if we are to get further increases in farm output in the future. More labor-saving equipment is needed in the face of a smaller supply of farm labor. Gains in farm output in the years ahead will have to come chiefly through increased crop yields. Timeliness in farming operations afforded by modern mechanical equipment is an important means of adding to crop production per acre. New techniques such as chemical spraying of crops for weed control require new types of specialized machinery. Expansion of supplemental irrigation can add to crop production, but it will necessitate additional equipment.

Further changes in farm mechanization of the type indicated in the PMA survey are desirable in the long-run interests of an efficient and productive agriculture. Present indications, however, point to some slowing down in these trends in the immediate future. The Defense Program will have its impacts on production of farm machinery as well as on the supply of farm labor.

Allotments of the controlled materials — steel, copper, and aluminum — in the fourth calendar quarter of 1951 and for the first and second quarters of 1952 probably have forced a curtailment in the production of farm machinery and equipment to around 80 to 85 percent of the 1949 rate. Prospects for production in the third calendar quarter of this year are no brighter at this time.

The conclusion is that the demand for some items of farm machinery this year will exceed the supply in prospect. Insofar as availability of materials will permit, emphasis on the production of the kinds of machines most in demand should permit a continuation of the desirable trends in farm mechanization, although at a slower rate than would occur if larger supplies of machines were available. The USDA has recently initiated a program to encourage maintenance of machinery at a high level of operating efficiency. In carrying out this program, manufacturers have been urged to maintain a high level of production of repair parts. An adequate supply of repair parts will help farmers to maintain the operating efficiency of their present machinery. Although there may be local shortages of specialized items of machinery, the over-all outlook is that the supplies of new machines, repair parts and attachments are likely to be adequate to attain farm production goals this year.

Summary

In summary, the present guess is that the impacts of the Defense Program on the farm labor and farm machinery situations will likely be felt most heavily this year and next. Despite this prospect, with average

weather farmers should be able to come through with high level farm production in both years. Despite many difficulties, they set production records during World War II. Farmers in the United States have shown an amazing ability to produce at times of national emergency.

If the third major goal of the Defense Program — building up a base of reserve productive strength — is achieved about on schedule, the outlook may become brighter by 1954. The objective of this long-range goal is a level of total production in the United States that would not only meet current military needs, but also support a civilian economy at or above the levels prevailing just before the outbreak of hostilities in Korea.

Glen T. Barton
Bureau of Agricultural Economics
United States Department of Agriculture

TAX CONSIDERATIONS IN PROPERTY TRANSFERS[1]

Fifteen years ago income, gift and death taxes concerned only a few farmers when they sold their farm to a buyer or gave it to a member or members of their families. Today, with the inflational spiral bringing about increased values of farm lands and equipment there is a growing interest in taxes when farm property is sold, given away, or sold for less than fair market value. Farm owners must consider the tax consequences when about to enter into one of these transactions — not with the idea of evading taxes, but to avoid unnecessary taxes as provided under law or to minimize them. The courts have said that "a man should do everything in his power to avoid paying unnecessary taxes but should do nothing to evade taxes."

Benjamin Franklin once said, "The taxes are indeed very heavy, and if those laid by the government were the only ones we had to pay, we might more easily discharge them; but we have many others, and much more grievous to some of us. We are taxed twice as much by our idleness, three times as much by our pride, and four times as much by our folly; and from these taxes the commissioners cannot ease or deliver us, by allowing an abatement."

Franklin's statement has significance today. The good businessman is not idle or foolish. He considers taxes before he acts. He sidetracks his pride and obtains expert assistance. He makes gifts when his property holdings will allow them. In these ways he obtains the commissioner's abatement.

[1] A talk given at Farm and Home Week, University of Illinois, January 31, 1952.

Sale of farm. First, let us discuss the sale of a farm at fair market value. In the usual case today, the farm has substantially increased in value since it was obtained by purchase, gift or inheritance. The difference between the cost, or the market value at the time of inheritance, and the selling price, is profit. To use revenue terminology, it is "gain," and if the land has been held for six months or more, it is called "capital gain," which means that only fifty percent of the profit is used for income tax.

Spreading payment. If all of the sale price is paid in one year, all of it is reportable in that year for income tax. This places the farmer in a high tax bracket, thereby causing considerable shrinkage in the profit because of income tax which would be due. It is, therefore, wise to consider receiving the sale price over a period of years. This can be done in a number of ways: an installment contract, a series of notes, or amortized payments.

Receiving income over a number of years has several advantages. It spreads the gain over a period of years thereby keeping it in the lower income tax bracket. It assures available funds to meet tax payments each year. And losses in later years may offset some of the gain from the prior sale.

The installment method may be used in reporting sales of both real and mixed property. It may also be used for casual sales of personal property where the selling price exceeds $1000. Regardless of the type of property sold, the initial payments received during the year of sale may not exceed 30% of the sale price and still be considered as sold by installments.

The seller who elects the installment method, reports his gain ratably as received. The amount reported each year is the amount of profit which the installment represents of the whole contract price.

Sale of home. The Revenue Act of 1951 changed the law with respect to the sale of a residence and this applies to farmers as well as urban dwellers. The past rule has been that profit on the sale of one's home was taxable as capital gain. Because of increased values in the past five years, this rule has been severely criticized since it caused hardship on owners who were required to sell their old home because of changes in employment or expanding families.

The new law gives a break to the home owner by providing that the profit on the sale of one's home is not recognized or reported, if another home is purchased within one year, or if another home is constructed and used as a residence within 18 months, and if the cost of the new home is equal to or above the sale price of the old home. The new law is effective

as to all sales taking place after 1950, and a new residence may be acquired at any time within one year before or after the sale of the old home.

When a farmer sells his farm at a price per acre, he must allocate a portion of the cost and sale price to his home in order to compute the profit on the old home and to determine how much he must pay for a new home to avoid reporting a profit. Any profit on the old home reduces the income tax basis of the new home.

If you don't care for a conventional home, a residence can include a house boat, a house trailer, or a cooperative apartment.

Unharvested crops. Another change in the new Revenue Act has settled the question of whether unharvested crops which are sold with a farm should be taxed as ordinary income or as capital gain. In the past, the profit from unharvested crops has been considered as ordinary income even though some courts have taken a contrary view. The Congress has resolved this conflict in favor of capital gains treatment.

Sale of farm for less than value. Now, let us consider the sale of a farm for less than fair market value. If the sale is made to a person not a member of the family and there has been an arm's length transaction, the contract is usually acceptable for tax purposes. However, if a sale for less than fair market value is made to a member of the family, the difference between the sale price and market value is considered a gift, and if this gift from the parents is more than $6000, a gift tax return must be made. A sale at a reduced price to a member of the family, usually son or daughter, has at least one serious disadvantage: Property which can be depreciated must be set up on a basis of the reduced sale price and not a fair market price. In some cases it may be desirable to sell a part of a farm containing the improvements for full market value and at another time make a complete gift of the balance of the farm to a son or daughter, thereby allowing full depreciation on all or most of the depreciable property.

Gift of farm property. Next, we should discuss the gift of farm property to members of the family. A gift is one of a few remaining devices to reduce heavy death taxes. Each person has a $30,000 lifetime exemption, plus a $3000 exclusion which may be used each year. This means that a husband and wife may make a gift of $66,000 to one individual in one year without any tax liability. Lifetime gifts also provide an excellent means of saving income taxes and probate expenses. They save income taxes because they remove the income from the property transferred, from the high income tax brackets in which it fell prior to the transfer. Such gifts frequently reduce estate shrinkage and forced

sales because they reduce the amount of cash required to pay expenses and taxes. The donor must consider, however, the practical problem of whether he can afford to make the gift. That is, is his estate large enough after the gift to afford a comfortable living for the balance of his and his wife's life. If the estate is sufficient, it may be advisable to make gifts even though a gift tax is payable since gift tax rates are about 30% less than death tax rates.

Marital deduction. Since the Revenue Act of 1948, when planning gifts either during lifetime or effective at death, it is always necessary to consider what is known as the "marital deduction." A "marital deduction" means that up to ½ of your property may be given to your spouse tax free. For example, if a gift of a farm is made from husband to wife, valued at $100,000, ½ or $50,000 would be a marital deduction, and the husband would be subject to gift tax only on the balance of $50,000 minus his exemption of $30,000 and exclusion of $3000. Usually a maximum tax advantage will result by making maximum use of the marital deduction. However, this is a difficult and technical device to explain and no general rule can be stated as to how it should be used.

Transfers at death. I have discussed briefly several types of transfers during lifetime. There are also transfers of property at the time of death, and taxes can be extremely painful at that time, although not to the deceased.

A successful accumulation of farm property demands a successful plan for its transfer to heirs. Take an example of a family of 4 having a net estate (personal property and land) worth $190,000 plus $30,000 worth of life insurance. That size estate is a little above average, but is certainly not uncommon today.

Let's say the husband dies first and had title to all the realty. If he made no plans and had no will, the tax, both federal and state, on his property would be $19,566. If he made a will and left all property to the wife, or if it was held in joint tenancy, the tax would be $13,200. If he made a will and left all the property to the children, the tax would be $42,700. If he made a will and left ½ of the property to his wife and ½ to the children, the tax would be $10,100. By proper planning, a saving of $32,600.

With a little more forethought and some action, the tax on this $190,000 estate (plus $30,000 life insurance) can be reduced to $1,225. This may be accomplished by making gifts during lifetime of $85,000. The difference to this family between no or bad planning, and a thoroughly considered estate plan, partially executed during lifetime, is about $41,000 in taxes. If sufficient cash or liquid assets are not available at the death of the father, part of the farm may have to be sold to meet these obligations.

Unfortunately, there is no one tax formula that each family can use in planning the present or future distribution of their property. In each case, there will be several possible solutions. The problem is to consider all of them carefully and select the best one which is in harmony with the distribution of property desired by the parents. Usually this requires advice and help from persons qualified to give it.[1]

N. G. P. Krausz

NEW INVESTMENTS IN DAIRY STRUCTURES

A recent study of 350 Illinois dairy farms revealed many problems of investment, cost and function in dairy buildings.[2] This article deals mainly with the problems of new construction that dairymen in Illinois face. In general, farmers whose dairy buildings are inadequate may be divided into the following groups: (1) those who for various reasons require entirely new structures and (2) those who must remodel or make additions to their present inefficient and inadequate structures.

Material shortages during and following World War II forced many dairymen to delay construction of new buildings for an indefinite period. Current events indicate that this situation may continue for some time. Together with the changes that have occurred in farm production methods, this situation emphasizes the need for more efficient and more economical structures.

When to build. It costs more than twice as much to build today as it did in 1941. Should construction be postponed until the price of building materials declines? No doubt many farmers have been thinking for years that the next year would be better for building. Thus postponements plus earlier war-time scarcities of materials have resulted in an accumulation of demand for building replacements. What is the answer to the question, "When should we build?"

The essential functions that buildings provide must be maintained. When material and labor costs are high, the problem is one of trying to

[1] See also "Joint Tenancy — Is It Taxwise?" in the January 1952 *Illinois Farm Economics.*

[2] Cooperating agencies in this study, "The Economics of Service Buildings on Illinois Dairy Farms," were the Bureau of Agricultural Economics, the Bureau of Plant Industry, Soils, and Agricultural Engineering, and the Illinois Agricultural Experiment Station. The project was financed in part by funds allocated to the Bureau of Agricultural Economics under authorization of the Research and Marketing Act of 1946. This article was prepared by R. N. Van Arsdall, Agricultural Economist, employed jointly by the Illinois Agricultural Experiment Station and the Bureau of Agricultural Economics, United States Department of Agriculture, and Thayer Cleaver, Agricultural Engineer, BPISAE, USDA.

keep the outlay within a range that is commensurate with the expected future value of these functions. If current price relationships are maintained, farmers can build now with as much assurance as in 1941. The purchasing power of milk for materials and labor used in constructing farm buildings is about the same now as it was in 1941. Relative to costs of dairy stock, feed, and farm labor, building construction costs were less in 1947 than before the war, even though the dollar costs of construction had doubled.

The dairy enterprise cannot be conducted successfully if some of the essential factors of production are inadequate. It would be poor management to delay building improvements that might result in lowering other costs of milk production or that might result in higher prices for milk. The farmer should build when the need arises. He should study different types of buildings, learning the advantages or disadvantages for his particular situation. He can then build with assurance if he emphasizes functional characteristics and adaptability to meet changing needs.

Capital requirements. The inventory value of dairy buildings at 1947 price levels comprised 49 percent of the total investment in the dairy enterprise on the farms included in the study of dairy housing.[1] Dairy stock accounted for 27 percent, feed inventories 21 percent, and equipment three percent. Average dairy investments for 329 farms in the Illinois portion of the Chicago and St. Louis dairy areas are shown in Table 1.

Reproduction of the dairy buildings on these farms, including feed storage facilities and shelter for young stock, would amount to $350 per dairy animal unit in the Chicago area and $372 in the St. Louis area with 1947 prices for materials and labor. This is equivalent to $500 for each producing cow in the Chicago area and $555 per cow in the St. Louis area. On one-third of the farms in the two areas the cost of reproducing existing dairy buildings would have been about $750 per cow.

Recent construction still includes many of the features that were considered necessary fifty or more years ago. Duplication of buildings erected within the last 15 years would require nearly five percent more capital per dairy animal unit than the average amount needed to reproduce buildings of all ages. These facts indicate that the average dairyman can expect to invest at least $500 per cow for buildings under the stated price conditions if he continues to follow past building patterns.

How much should a farmer invest in housing and storage facilities for dairy cattle? To answer this question one of the first problems a farmer

[1] Land was not included in dairy investments because charges for land use were covered by feed costs.

TABLE 1. — DAIRY INVESTMENTS ON 329 FARMS IN THE CHICAGO AND ST. LOUIS AREAS[a]

	Chicago area			St. Louis area		
	Per farm	Per DAU	Per cow	Per farm	Per DAU	Per cow
Buildings	$5,997	$187	$267	$5,082	$221	$330
Equipment	412	13	19	342	15	22
Dairy stock	3,900	122	174	2,170	94	140
Feed	2,759	86	123	1,919	83	124
Total	$13,068	$408	$583	$9,513	$413	$616

[a] Investments were calculated on the basis of 1947 price levels.

or investor in any business must consider is the balance among the various uses of his capital. A dairyman markets in the form of dairy products such items as farm-produced feeds and roughages, the labor of the operator and his family, and the skill of management used in organizing and operating the dairy enterprises in addition to the items he may buy. The quality of the dairy animals puts a definite ceiling on the returns that can be derived from the enterprise.

A herd of good cows may easily carry an investment in buildings that would be a burden on other farm enterprises with lower-grade cows. This does not mean that more expensive buildings need to be constructed for the more productive herds. Comparison between investment in dairy stock and that in dairy buildings shows that replacement of existing dairy buildings would cost $286 for each $100 invested in dairy stock in the Chicago area and $395 in the St. Louis area. With high-producing animals, suitable dairy buildings can be constructed for approximately the value of the dairy herd and in some cases even less.

Based on post-war prices in east-central Illinois a satisfactory loose housing system for 30 cows, including space for young stock and feed storage, could be built for about $195 per dairy animal unit or $280 per cow.[1] This is assuming that all construction is done with hired labor. Actually, from 20 to 50 percent of the construction of some buildings is commonly done with farm labor. A one-story stall barn for 10 to 20 cows would require a slightly larger investment. Depending on the circumstances encountered these costs may vary widely. However, the important point to recognize is that it is not necessary to invest $500 per cow in order to provide serviceable buildings.

On many successful dairy farms the cost of new buildings and equipment chargeable to the dairy enterprise does not exceed the annual gross income from dairying. For maximum economic returns, of course, the justifiable upper limit is the lowest investment at which the essential

[1] Thirty percent of the dairy animal units in the average herd are young stock.

functions can be provided. The dairyman should determine what functions are essential to him. In addition to reliance on his own experience, he should observe other dairymen's buildings and operations, particularly those who have attained a high degree of proficiency in producing high quality milk with low building investments and low operating costs with reference to those items where cost is influenced by the buildings.

Current prices for materials, equipment, and labor are variable. Sometimes shortages make it necessary to substitute one material for another. Consequently, investments will vary from farm to farm and from area to area, but they can be minimized through a sound building program. Some points to consider are: (1) Select a good plan. The State Experiment Station has good plans and information available. The local farm adviser, equipment companies and lumberyards often have suitable plans and information. (2) Have building cost estimates made and calculate them closely. (3) Use farm labor, both skilled and unskilled if practicable. (4) Consider the less expensive and more easily constructed types of buildings such as pole frame with open front for the bedded and feeding areas. (5) Use home-grown or salvage lumber if available. It is always advisable to check sources of supplies to make certain all building materials are available before accepting a plan and starting to build. (6) One-story structures are practical and usually more economical to build, especially for loose housing systems. One-story stall barns may also be more economical than two-story stall barns, especially for the smaller herds of 8 to 16 cows.

Dairy housing systems. Dairymen who are faced with the necessity of replacing old structures with new ones or extensive remodeling of the old ones must make a choice between two general types of dairy cattle housing. These are: (1) the "loose housing" system where cows in production are allowed the freedom of a feeding area, bedded area and an open lot at all times; and (2) the conventional stall barn or "stanchion barn" as it is commonly called where the milking herd and frequently the oldest heifers are confined by stanchions to stalls throughout most of the winter months. Sometimes the two systems are combined by allowing the herd to run loose in a feeding area where hay is fed from self feeders. The herd is then milked in the original stall barn where concentrates and possibly silage are fed.

Neither system can be recommended for all situations. A wise decision can be made only when the dairyman is thoroughly familiar with the services offered by each system of housing. There are several important things to consider before making a choice: (1) What amount of capital is available for new construction for the present and future herd?

(2) What degree of flexibility is desired in the new structures from the point of view of a changing size of herd or the possibility of converting to other types of livestock housing if dairying is discontinued? (3) How well will the new structures fit into the farmstead with respect to related structures such as feed storages? (4) What is the present and future farm labor situation? (5) Is production of Grade A milk for fluid consumption desired? If so, certain minimum sanitation requirements must be met. In any event the dairy structures should make it easy to follow practices that are necessary to produce high quality milk. (6) Which housing system does the operator prefer?

The loose housing system with a milking room is one good way to reduce building investments and labor requirements and increase efficiency of the buildings. A well-arranged, well-managed loose housing system makes it possible for a single operator to milk and care for a larger herd more easily than is ordinarily possible with a conventional stall barn. Further advantages are: (1) Initial investment usually is comparatively low. The milking room is a small structure or part of a structure. The loose housing structure can be a comparatively simple and economical type of construction. Equipment costs are lower. (2) Usually, it can be fitted into an old building with remodeling for most efficient use of space. (3) It is practical for an expanding herd or diminishing herd. A well arranged loose housing structure can be expanded comparatively easily and economically. (4) Cows can be milked faster and easier in a milking room; there is less walking and very little stooping or bending. (5) Because of its small area and convenient facilities, good sanitation can be maintained with less effort. (6) Handling of manure is more efficient. The manure pack in the bedded area retains most of the fertility value. It is removed and spread on the fields only a few times each year and usually at a convenient time for the operator. Power equipment for removal of manure can be used for a variety of farm jobs and it costs less than a gutter cleaner for a conventional stall barn. (7) Loose housing structures can be converted rather easily for use by other livestock enterprises such as beef cattle and sheep. (8) Loss of animals by fire is less likely because the milking herd is free at all times to leave the buildings. (9) There are fewer injuries to animals and the health of the herd is generally better. (10) Cows in heat are more easily detected.

When compared with the stall barn the loose housing system may be unfavorable in some cases because: (1) The dairyman may prefer and may already have a stall barn; he may be accustomed to stall barn operations; and he may prefer to shelter, feed, bed, and milk his herd all within one area. (2) Those who rear and sell purebred animals may prefer to keep the animals confined to stanchions for convenience in

showing to prospective buyers. (3) Cattle should be dehorned in a loose housing system. This usually impairs their value as show animals. (4) More bedding may be required. A poor arrangement may require twice as much bedding as a stall barn, but this is a disadvantage only if farm-produced bedding is in short supply. (5) The loose housing system usually requires more building area in the farmstead. This extra space requirement may not be a disadvantage in some farmsteads and it does not necessarily imply a higher cost for the total improvement.

Regardless of the system of housing selected, the type of buildings constructed, or the kinds of materials used, dairy buildings should be planned and constructed for efficiency of operation and maintenance of high-quality milk production. Building costs (or benefits) do not end with the initial capital outlay and annual upkeep charges. The influence of buildings is reflected in most other factors used in milk production. Nor does the problem end with the construction of good buildings. The selection of good equipment is also important. Good equipment does not insure quality milk production, but it makes the job much easier. The chief single factor is management. The dairyman must know not only how to feed and care for his herd, but he must also understand fully the problem of quality milk production and must be able to organize his work routine efficiently. He must have a good technique, method, and manner of handling animals and equipment.

R. N. Van Arsdall
Thayer Cleaver

CHANGES IN METHODS OF MARKETING MILK IN SIXTEEN SOUTHERN ILLINOIS COUNTIES, IN ILLINOIS, AND THE UNITED STATES, 1899-1949

The general trend in methods of marketing milk is toward an increased percentage being marketed as fluid milk instead of cream, farm butter,[1] or farm cheese. In 1899 about 30 percent of the milk produced in the United States and about 41 percent of that produced in Illinois was marketed as fluid milk. By 1949 about 67 percent of the United States production and about 71 percent of the Illinois production was sold as fluid milk (Table 1).[2] In 1899 farm butter was the second most important form of marketing milk in both the United States and Illinois. By 1939 only four-fifths of one percent of the milk produced in Illinois was marketed as farm butter. Farm-made butter as a method of market-

[1] Butter made on the farm.

[2] In 1949, the 122 billion pounds of milk in the United States was utilized as follows: fluid milk and cream 47.2 percent; farm butter 4.6 percent; creamery butter 23.1 percent; cheese 9.7 percent; evaporated, condensed, and powdered 6.4 percent; ice cream 6.3 percent; and other 2.7 percent. (Illinois circular 684.)

ing milk in the United States or Illinois has been of little importance since 1940 (Table 2).

Although the trend toward the marketing of milk as fluid milk is general throughout the country, there are sections where the change has been slow in coming. The sixteen southernmost counties of Illinois, commonly referred to as "Little Egypt," represent an area in which the percentage of milk marketed in fluid form has been less than in the rest of the state or in the United States. Only ten percent of the milk produced in this 16-county area in 1899 was marketed as fluid milk while the state average for that year was 41 percent. By 1949 the volume marketed as fluid milk had increased to 41 percent while the state average was 71 percent of the total production (Table 1). The relationship between the percent of milk marketed as fluid milk in the 16-county area and in Illinois is shown in Figure 1.

In 1899 the sale of milk in the form of cream was of little importance with less than three percent being marketed in that form in the United States. Only .03 percent of the production in the 16-county area was marketed as cream in 1899 (Table 2).

After 1899, however, the percent of milk marketed as cream increased rapidly until by 1919 about 30 percent of the milk produced in the United States and Illinois was marketed as cream. The increase was even greater in the 16-county area with 56 percent being marketed in the form of cream. The shift from the sale of cream to that of fluid milk has been slower in the 16-county area than in Illinois (Figure 1).

TABLE 1. — CHANGES IN VOLUME OF MILK PRODUCED AND PROPORTION SOLD AS FLUID MILK IN SIXTEEN SOUTHERN ILLINOIS COUNTIES, ILLINOIS, AND UNITED STATES, 1899-1949[a]

	Southern Illinois sixteen counties		Illinois		United States	
	Milk produced	Percent sold as fluid milk	Milk produced	Percent sold as fluid milk	Milk produced	Percent sold as fluid milk
	(million pounds)		(million pounds)		(million pounds)	
1899	220	10	3,931	41	62,490	29
1909	152	9	2,754	49	64,211	26
1919	183	11	2,866	48	67,124	32
1929	259	21	4,355	47	95,047	40
1939	241	24	4,539	57	98,971	47
1944	249	31	5,196	69	109,310	60
1949	237[b]	41	4,956[b]	71	110,473[c]	67

[a] Source: United States Census of Agriculture 1900-1945. "Farm Production, Disposition, and Income From Milk, 1949-50." Bureau of Agricultural Economics, April, 1951.

[b] Production for 1949 calculated from Bureau of Agricultural Economics figures in same ratio that this was to the census figure in 1944.

[c] When adjusted to census estimates, total production was somewhat less than estimate of the Bureau of Agricultural Economics.

TABLE 2. — CHANGES IN PERCENT OF TOTAL MILK PRODUCTION SOLD AS CREAM AND FARM BUTTER IN SIXTEEN SOUTHERN ILLINOIS COUNTIES, ILLINOIS, AND UNITED STATES, 1899-1949[a]

	Percent sold as cream[b]			Percent sold as farm butter[b]		
	Sixteen counties	Illinois	United States	Sixteen counties	Illinois	United States
1899	.03	1.2	3	15	14	17
1909	2.2	11	19	30	18	14
1919	56	31	30	13	6	7
1929	45	25	32	6	2	3
1939	40	25	28	2	.8	2
1944	39	16	18	4	.1	.7
1949	26	14	14	0	0	.5

[a] Source: United States Census of Agriculture 1900-1945. "Farm Production, Disposition, and Income From Milk, 1949-50." Bureau of Agricultural Economics, April, 1951.
[b] Milk equivalent.

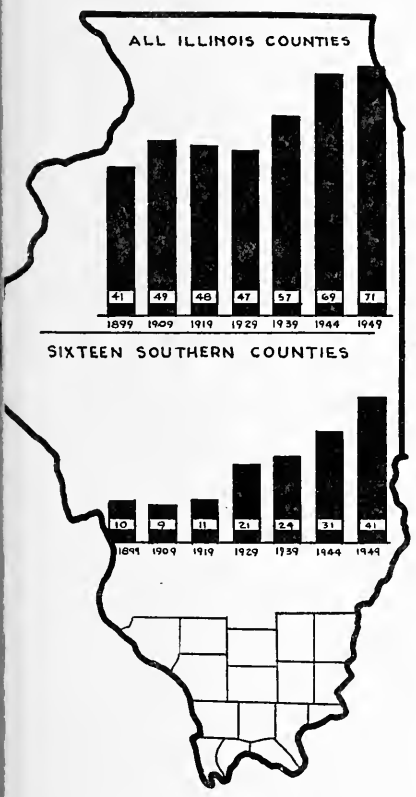


FIG. 1A. FLUID MILK

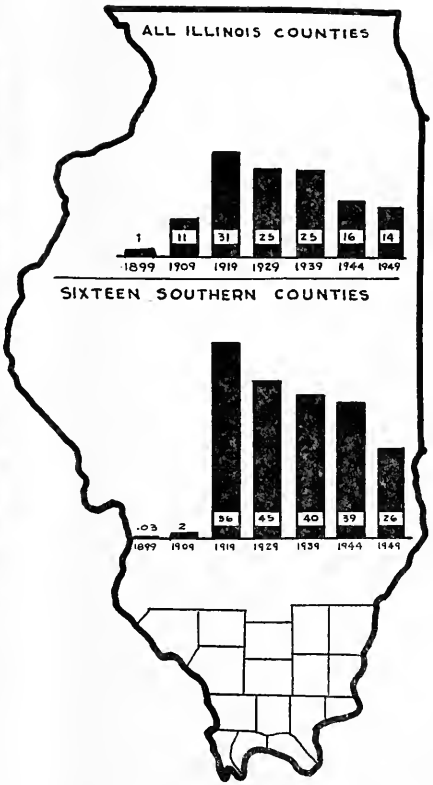


FIG. 1B. CREAM

FIG. 1. — PERCENT OF TOTAL MILK PRODUCTION MARKETED AS FLUID MILK AND CREAM, SIXTEEN SOUTHERN ILLINOIS COUNTIES AND ILLINOIS, 1899 TO 1949

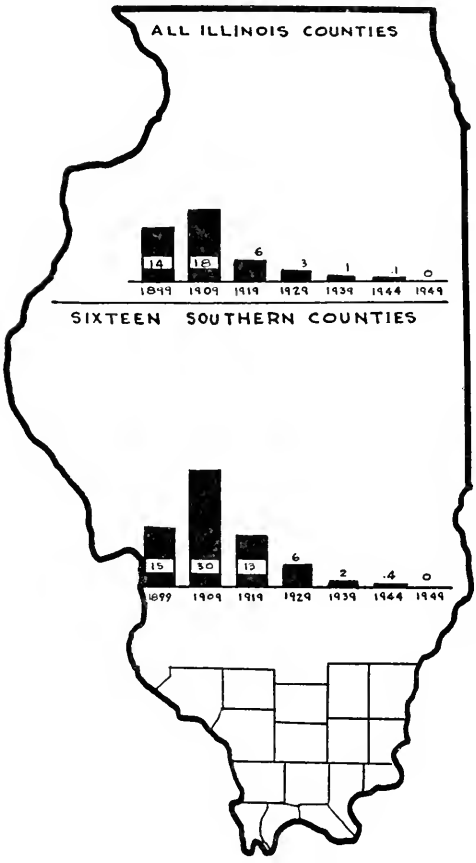


FIG. 2.—PERCENT OF TOTAL MILK PRODUCTION MARKETED AS BUTTER, SIXTEEN SOUTHERN ILLINOIS COUNTIES AND ILLINOIS, 1899 TO 1949

Farm butter as a form of marketing milk has been of relatively little importance since 1929 although 14 percent of the milk produced in Illinois in 1899 was marketed in this manner. The relationship between the percent of milk marketed as farm butter in Illinois and the 16-county area is shown in Figure 2. The 16-county area was slower than Illinois in shifting from farm butter as a form of marketing milk but even in this area this method of marketing has gone out of the picture completely.

Several factors have been responsible for the percent of milk marketed as fluid milk being lower in the 16-county area than in the state and nation. A lack of improved roads has retarded the shift from cream to fluid milk marketing. The average number of cows per farm and the production per cow is much lower in the 16-county area than in Illinois and the United States. Under these conditions a good market for fluid milk has been slow in developing. Until recent years too little attention has been given to producing quality milk. Poor quality milk has tended to discourage consumption in the areas where milk is utilized as whole milk.

Improved roads, increased production per farm, more attention to quality, and increased use of paper containers[1] have done much to speed the transition from the marketing of cream to marketing of fluid milk in the 16-county area from 1944-1949.

[1] Relation of this factor to per capita consumption discussed in *Illinois Farm Economics*, July, 1951.

Summary and Conclusion

Around the turn of the present century, the production of farm butter decreased, and more milk was sold as cream to be manufactured into butter. This was true of the 16-county area in southern Illinois known as "Little Egypt," in Illinois as a whole, and throughout the United States. The conversion from butter to cream was even more marked in the 16-county area than in the rest of the state or the country.

In more recent times the general trend throughout the United States has been toward the marketing of milk as fluid milk rather than as cream or farm butter. In southern Illinois conversion to the fluid milk business has been slower than in the country as a whole because of poor roads, low production per cow, and lack of incentive for producing quality milk.

Improved transportation and refrigeration and use of paper containers in recent years have materially expanded the area to which milk can be profitably sold from a centrally located plant. These changes along with increased production of quality milk in the area may permit expansion of the present marketing area to a radius of from four to five hundred miles, especially to the South.

ALEX REED

Footnotes for the last page:

[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.

[1] Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 3-52 — 11,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	107	105	99	105	106	107	101	97	103
1937.....	107	113	118	105	111	111	105	107	107	113
1938.....	98	91	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	138	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	163	165	145	255	243	168	242	205	236
1945.....	132	168	171	151	270	248	164	250	198	203
1946.....	150	195	204	165	312	302	185	255	195	170
1947.....	189	238	265	192	377	391	204	279	223	187
1948.....	205	248	275	207	383	389	189	303	241	192
1949.....	192	218	217	200	352	362	181	304	245	176
1950.....	200	224	228	204	356	361	169	332	265	200
1951.....	221	258	271	224	403	419	187	369	290	220
1950 Nov....	213	242	240	210	511	470	224	346	278	215
Dec....	218	247	251	212	417	357	168	359	285	218
1951 Jan.....	223	256	261	217	378	393	181	356	284	221
Feb	228	267	277	220	281	307	140	358	285	221
Mar....	228	268	276	224	303	376	168	362	288	222
Apr	228	266	278	226	313	395	175	366	289	223
May	227	263	274	226	319	390	173	368	288	222
June....	225	261	270	225	323	348	155	370	290	221
July....	223	255	269	225	398	497	221	370	286	212
Aug....	221	251	271	225	450	393	174	372	287	217
Sept....	220	249	270	225	511	394	175	373	292	219
Oct.....	221	253	272	226	655	662	293	377	292	218
Nov....	221	257	267	227	541	492	217	377	293	219
Dec....	221	255	267	227	467	383	169	377	300	218

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Feb. 1951	Current months, 1951-1952		
	1933-39	1950	1951		Dec.	Jan.	Feb.
Corn, bu.....	$ .66	$1.35	$1.67	$1.66	$1.77	$1.76	$1.69
Oats, bu.....	.31	.76	.87	.94	.96	.94	.88
Wheat, bu.....	.86	2.02	2.24	2.32	2.38	2.34	2.31
Barley, bu.....	.62	1.20	1.36	1.42	1.39	1.40	1.37
Soybeans, bu.....	.90	2.49	2.95	3.15	2.89	2.84	2.85
Hogs, cwt.....	8.52	18.19	20.38	22.20	17.90	17.80	17.70
Beef cattle, cwt....	7.88	24.54	30.56	30.00	29.00	28.70	29.00
Lambs, cwt.....	8.36	25.12	31.66	35.40	28.70	28.20	26.90
Milk cows, head	58.00	216.67	267.50	255.00	275.00	280.00	280.00
Veal calves, cwt.	8.66	27.73	33.53	35.60	32.00	32.50	32.80
Sheep, cwt.....	3.58	10.52	16.07	19.10	13.30	13.30	13.30
Butterfat, lb.	.27	.58	.66	.66	.72	.75	.80
Milk, cwt.....	1.68	3.45	4.16	4.25	4.60	4.55	4.60
Eggs, doz.....	.19	.31	.42	.37	.43	.35	.30
Chickens, lb.	.15	.23	.27	.29	.23	.25	.26
Wool, lb.....	.25	.53	.80	.94	.54	.51	.50
Apples, bu.....	1.08	2.24	2.04	2.30	2.10	2.40	2.40
Hay, ton[13].....	9.39	20.77	21.08	23.70	21.70	22.50	22.30

[1-13] For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics
G. L. Jordan, Editor | March, 1952 | Number 202

Articles in This Issue

HOW SOON WILL HOG-CORN PRICE RELATIONSHIPS FAVOR HOG FEEDERS?

The hog-corn price ratio for the United States was 10.4 in February, 1952. That ratio was based on the farm price of all hogs and the farm price of corn. Only four times in the past 21 years have the price relationships been so unfavorable to hog feeders in February. Those years were 1934 (8.5), 1935 (8.7), 1937 (9.1), and 1940 (9.1). The 21-year February average was 13.3. The high was 19.8 in February, 1947.

Why were the hog-corn price ratios so low in 1934, 1935, 1937, and 1940? Why are they so low in 1952? The ratio declined from 15.6 in March, 1933, to 7.2 in July, 1933. That was caused by the rise in corn price from 15 cents to 53 cents (Illinois farm prices) and a rise in the Illinois farm price of hogs from $3.40 to $4.15. The price of corn increased 250 percent while the price of hogs increased only a little over 20 percent. Although the national average corn yield declined from the recent high figure of 26.5 bushels in 1932 to 22.6 bushels per acre in 1933, the reduction in yield was not the cause of the March to July rise in the corn price. That was the result of the phenomenal recovery in prices of speculative commodities associated with the monetary manipulation preparatory to devaluation of the dollar. Corn prices responded promptly to that stimulus because corn was traded on futures markets, was not perishable, and could be held off the market, could be used as collateral for government or private loans, and could be exported to take advantage

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

of the changed exchange relationship between the dollar and foreign currencies, such as the franc, which were not devalued. The assurance of a government loan on the 1933 crop was a stimulant to corn prices. However, hog prices had to wait until consumers' incomes increased enough for them to pay higher prices for meat. Consumers' incomes rose slowly. The low hog-corn price ratio carried on through 1934 and till midsummer 1935 as the result of the severe drought of 1934 and the resulting drastic reduction in the corn crop and the liquidation of livestock.

The drought of 1936 also caused the low hog-corn ratio from mid-1936 to mid-1937.

We had an average-size corn crop in 1939, but carry-over stocks had increased. The hog-corn price ratio was high and favored hog feeders in the fall, winter, and spring of 1938-39. Hog numbers increased rapidly. The number of pigs saved in 1939 reached a new ten-year high at almost 87 million head. The U. S. farm price of hogs declined from $9.50 in 1937, to $7.74 in 1938, to $6.23 in 1939, and to a new post-depression low of $5.39 in 1940. Personal income in the United States had declined from 74.0 billion dollars in 1937 to 68.3 billion dollars in 1938, but had recovered to 72.6 billion dollars in 1939 and rose to 78.3 billion dollars in 1940. Stocks of corn under loan or government ownership October 1, 1939, were 258 million bushels and on October 1, 1940, were 471 million bushels. Total stocks October 1, 1939, were 584 million bushels and on October 1, 1940, were 688 million bushels. The loan program really supported corn prices above the competitive supply-demand price. The farm price of corn was lower than the price support level every month from October, 1938, to March, 1940, inclusive. The low hog-corn ratio throughout 1940 apparently was caused by a very substantial rise in hog numbers, combined with an insignificant change in corn production, an accumulation of stocks of corn, and a price support level too high to encourage the complete utilization of a medium-size corn crop.

Summarizing for the four previous periods during the past 20 years when the February hog-corn ratio was as low as or lower than in 1952:

February, 1934: Associated with devaluation of the dollar, some reduction in yield in 1933 (below 1932), assurance of a corn loan, and the relatively slower recovery in consumers' incomes, hence in the demand for meat.

February, 1935: Associated with the drastic reduction in the corn crop as the result of the 1934 drought. Meat supplies to consumers remained at a relatively high level through the winter of 1934-35 as the result of forced liquidation of livestock.

February, 1937: Associated with the drought of 1936.

February, 1940: Associated with a very large number of hogs, hence low hog prices, and a corn loan that supported corn prices at a relatively high level.

Now what about 1952; does it fit any of the earlier patterns?

Here are some facts:

(1) The 1951 corn crop was relatively small, 2941 million bushels, as the result of reductions in yields and acres harvested. Carry-over was large but smaller than in the two previous years.

(2) The number of pigs saved from spring and fall litters in 1951 was 102 million, exceeded only twice (1942 and 1943) in the past 20 years. This represented an increase of almost seven percent from the spring litter but only two percent from the fall litter.

(3) Total commercial hog slaughter in November and December, 1951, was 4.3 percent larger than in the same months of 1950.

(4) On January 1, 1952, farm stocks of corn per hog in the United States were 30.0 bushels. Only in 1944 and 1948 were they lower. They were 30.0 bushels on January, 1943.

(5) Disappearance of corn from October-December, 1951, was larger than average, partly as the result of heavy feeding of high-moisture corn, particularly in the west north-central states.

(6) Disposable personal income in the United States was being maintained at a rate about five percent above a year earlier.

(7) Wholesale lard prices, tank car lots, Chicago, dropped from 17.3 cents to 13.2 cents a pound from January, 1951, to January, 1952. This was the result of larger output of lard and a probable reduction in foreign demand. Total lard consumption in the United States reached a new high in 1951 but increasing quantities had to be shipped abroad or go into storage. Actually storage stocks were reduced between the above dates; the lard was exported. These exports had to compete with a bumper crop of olive oil and good supplies of other vegetable oils.

(8) The February, 1952, corn loan rate ($1.57) was below the average price received by U. S. farmers ($1.66), hence was not an important factor in maintaining corn prices at a level high relative to the price of hogs. Neither was the minimum guarantee of $1.60 for the 1952 crop a significant factor in February, 1952.

(9) Argentina had less feed grain than usual for export, but Canadian supplies of feed grain and feed wheat were large.

Conclusion. The February, 1952, situation differed from the four periods discussed. Doubtless the dominant influences were: (1) the reduced corn supplies, (2) the increased hog marketings, (3) the decline

in the export demand for lard at a time when supplies were large, and (4) the rapid disappearance of corn because of the high moisture content.

None of these factors is likely to change prior to midsummer. At that time new corn crop prospects will become a factor. Hog prices may strengthen as liquidation ceases. But corn prices are just as likely to strengthen as the result of reduced supplies. However, there is the possibility of further substantial imports of feed grains from Canada and particularly the large volume of wheat which stood in the Canadian fields over winter will probably be suitable for feed and available to export to us. Any substantial improvement in the hog-corn ratio, from the hog feeders' standpoint, probably will have to wait on the new corn crop. With increased acreage and good corn yields in 1952, the hog-corn price ratio could be very favorable to hog feeders in the winter of 1952-53.

G. L. JORDAN

FINANCING FARMS AND FARMING TODAY[1]

Perhaps no business job that farmers have to do requires a more careful look at the economic situation than does financing. Financing often involves borrowed money which must be paid off with future income. The future is important whether one is putting his own capital into a venture or whether one is borrowing other people's money. It is the returns over the next 10, 20, or maybe even 30 years which will pay for a farm or earn a return on the investment in a farm; it is not the earnings of the past. What is the position today?

Since 1932 or for over 20 years, prices of farm products, farm lands and farming costs have gone up. This rise has been very sharp since the beginning of World War II. Nineteen years is a long time for prices to rise. We have records going back to 1786. Prices rose from 1791 to 1814, or for 23 years; from 1843 to 1863, or for 20 years; from 1897 to 1920, or for 23 years. In each case the peak came in a war period. The rise of the last 20 years through which we have lived has created a strong feeling of optimism and a general tendency not to discount the possibility of future declines.

Are there any signs that this rise may have nearly run its course? I think that there are. The most basic thing we did in the 20-year period affecting the level of prices was the devaluation of the dollar back in 1933 which made an ounce of gold worth $35 compared to $20.67. We thereby shortened the yardstick with which prices are measured. This might have

[1] A talk given at Farm and Home Week, University of Illinois, January 30, 1952.

been expected to cause a rise in prices of about 70 percent. Using 1926 as 100, wholesale prices are now 177. This base is back before the big dip caused by the depression which set in about 1930. Compared with 1932 our wholesale price level now is at 245 percent.

The countries of Western Europe have recently become tired of inflation and in general have adopted anti-inflationary policies. The United Kingdom joined this group after their recent election and has since taken vigorous action. France may be an exception. In the U. S. the balance of public opinion is becoming tired of inflation. Action to stop it is being taken. During 1951 we restored some measure of control over the money markets to the Federal Reserve System by allowing the Federal Reserve banks a free hand in supporting government bonds. Government bonds declined in price and interest rates began to rise. And people began to show more respect for the dollar and began to save more heavily. In spite of heavy government spending, our index of wholesale prices turned down from a high of 184 in February and is now at about 176 percent of 1926. One can be confused by following prices of an individual product. Corn has been higher in price this year because it is scarcer. To keep up with what is going on, watch the averages.

An upward trend in prices would be certain should we get into full-scale war. This I do not think will happen. The heavy government spending which is planned for the next two years will tend to cause higher prices unless offset by other factors. But two years is a short time.

In addition to general inflationary forces — an excess of money demand over supplies of goods and services — business has been supported over the last three or four years by a very high rate of house building, our most common type of capital investment. This is beginning to slow down.

Therefore the signs point to the wisdom of more cautious investment and borrowing than the one that has paid off over the last 20 years. This is the most important point in any financing program at this time.

Buying a farm. I shall talk about a few common cases. Farms are typically financed with cash or mortgages. In recent years the percent of cash paid has been high but since 1946 the total farm mortgage debt has tended to go up. But last January the debt of $5.8 billion was only eight percent of the estimated value of farm real estate, $72.6 billion. The over-all situation of our mortgage debt is very sound.

As is well known I have been critical of all appraisal systems based on normal values in periods of structural price changes such as we have been in. By structural I mean changes in prices which contain an element of permanence. Their use is generally falling off, I understand. Normal values look backward, not forward. But it is future and not past income

that pays for farms, bought on credit. The correct principle in appraisal is to discount the future, not to capitalize the past. All forward markets are based on this principle. Applying this principle to land values, we would calculate what a farm is worth based on its recent earnings. Then discount this figure for an estimate of the risk of decline in earnings in the future. My rate of discount would now be 30 percent. If the earnings value of a farm were shown to be $500 an acre, I would appraise it 30 percent less than this, or $350. This does not mean that I think the income will decline by 30 percent but it is the risk premium I would charge if I were to underwrite the future by financing such a farm. This is the lesson that the commodity markets have for the land market. My point can perhaps be better understood if I were to ask you: "How much would you agree to pay for a cow that is now worth $300, if you were not to get delivery for two years?" You would not pay $300. Neither should you buy an income to be earned over the next 20 years on the belief that it will continue to be as good as it has been over the last three years. It is future income, not past income that will pay off a mortgage.

There are plenty of sources of mortgage credit: your local banks, individuals (neighbors and sellers), the insurance companies, the Federal Land Bank. This is a good time to get your mortgage on the following basis: (1) for a long-term; (2) on an amortized basis (payments in small annual amount); (3) at as good a rate as you can get, fixed for the term; and (4) reasonable repayment privileges. The next movement in interest rates will be up. Money supply in relation to demand for it is getting tighter. A farm with a low-rate amortized mortgage on it will sell better than one without it.

Farming. Short-term farmers' debts have been going up. Loans of commercial banks and government and cooperative agencies rose from 1.9 billion January 1946, to 4.2 billion January 1, 1951. They likely went up still more during 1951. Loans by merchants and individuals have probably risen in proportion, perhaps more. But the ratio of farmers' debts to assets is still low. The total value of livestock, machinery, motor vehicles, stored crops, and household furniture of farmers was estimated at $47 billion January 1, 1951, and their non-real estate debts at $6.8 billion or 14.5 percent of the value of the assets listed. Thus the short-term debt ratio is higher than the mortgage debt ratio. Why have these debts increased? Probable reasons are higher prices, increased use of capital items, and probably a greater willingness to borrow and to lend as good times have continued.

There are numerous sources of credit. They include commercial banks, production credit associations for those with adequate credit ratings, and individuals and merchants for others. And the Farmers' Home Admin-

istration is available to those who have lower credit ratings up to the limit of the funds which Congress authorizes this agency to lend. The CCC provides liberal commodity loans on stored corn, soybeans, oats, and other grains.

As loans expand some of these agencies may reach their loan limits and interest rates will go up as money markets tighten. One should never haggle over interest rates with a responsible agency. If you need credit, pay the going rate. It would be a good thing if interest rates to farmers could be closely tied in with national interest rates. Then they would go up and down as conditions tighten and ease. Interest rates are signals. If they are spiked down, it creates a dangerous situation.

There are few facts available but I would say that the two biggest uses of farming credit in Illinois are to finance purchases of feeder cattle and farm machinery. The markets for these types of credit are well organized. With the increase in borrowing to finance feeder cattle this year, more of the loans have gone directly or indirectly into bigger city banks.

The real question is where can we wisely use capital. When this is settled men short of capital can decide whether they should take the risk of borrowing. When most men start farming, there is no question; they must borrow. They had best hold down such borrowing to prime necessities. The risk of borrowing in uncertain times is high. Better expand in hogs than in feeding beef cattle, for example.

Capital means inputs. And adequate inputs are essential to successful farming. I recently saw an excellent English study. The investigator raised this question: How can English farmers increase output most economically? This is important both to the nation and to the individual farmer in England just as it is in Illinois. He divided 80 farms into four groups and measured results, first by the intensity of the system (more dairy cows, more potatoes, sugar beets and vegetables) and second by yields per acre and per animal. Costs and capital needs went up in both cases. But efficiency (ratio of costs to value of output) went up for only the first degree of increase in the intensity of the system. But with higher yields the efficiency increased over the whole range of increase in yields. The costs of the causes of higher yields, more fertilizer, more feed, more sprays, better seeds went up faster than the value of total output. In the high yield group these things were used well beyond the point of greatest returns per unit of input of these things. But the higher yields caused over-all economies per unit of output. More efficient use was made of the land, labor and machinery. So he concluded that the way to accomplish the objective of more efficient agriculture was to increase inputs of the things which increased yields.

Now what is the point? My opinion is that Illinois farmers tend to

underestimate the opportunities for investments, which make for higher yields, soil improving materials, fertilizers, etc. It does not pay to be Scotch in using these even if it requires borrowing. Investments in mechanical equipment are probably over-done on many farms. When it comes to buildings, it is probably easy to put more money into them than the returns justify. We need more work on how to get more service out of buildings per dollar invested. Probably many farms would make more efficient use of their labor force and of available feed supplies if they had more livestock.

A big challenge to U. S. agriculture in the coming generation will be whether it can increase its output to keep up with the expanding market. Our population seems to be now increasing at the rate of about 2.5 million per year. At the time of the census in 1950 it was about 150 million. At the end of 1952 it is expected to be about 158 million. If this rate keeps up we will have 50 more million people to feed in the next twenty years or a third more than we had in 1950. Also the population of the world is rising and there are a number of agricultural products which the outside world cannot now buy in adequate quantities except in the U. S. It will require increased use of capital in order to provide the things which will make possible the increased output. Most of this increase must come from land now in use, as but little land can be reclaimed in this country. This increased capital needs to be invested in a balanced fashion: (1) soil improving materials and land improving structures, for example, limestone, fertilizers, drainage; (2) storage for the larger crops; (3) better and more expensive seeds to get better hay and pastures; (4) more and better livestock to convert the increased crops into salable animal products which the increased production will demand; (5) more buildings to shelter the livestock. Such an increased output will likely increase the labor needed and so (6) more rural dwellings will be needed. It will take a great deal of capital to do this job. Most of this will come out of the savings of those engaged in the farming business. But all of the time large numbers of people will find it necessary to borrow.

Borrowers can well observe the following rules:

1. Understand the business for which you are borrowing.
2. Confine your borrowing so far as possible to income producing purposes.
3. Keep an eye on the economic situation and govern your commitments. There might be stormy weather within a few years.
4. Do not let your debts get too high for your own capital.
5. Do not let your debts get too high for your likely income.
6. Keep your debts at the lowest point that permits you to have a business large enough to be efficient.

7. Have a definite plan for repayment.
8. Pick out a credit agency able and willing to go along with you when incomes are low.
9. Be business-like with your banker.
10. Have an adequate amount of insurance.

L. J. NORTON

NUMBERS OF LIVESTOCK ON FARMS

Numbers of livestock on farms are of interest to farmers and consumers because of the relationship between numbers of livestock, supply of meat, and price. The various marketing agencies, processors and distributors are concerned with numbers as they affect volume and per unit operating costs.

Each year, the United States Department of Agriculture, through the Crop Reporting Board, Bureau of Agricultural Economics, makes an estimate of the number of livestock on farms on January 1. This estimate is possible only through the cooperation of many farmers who return cards showing numbers of livestock on farms. In Illinois the Cooperative Crop Reporting Service office is at Springfield.

On January 1, 1952, there were over 88 million cattle on farms in the United States. This is the largest recorded number of cattle on farms. Dairy cows continued their decline to 23.4 million from a 27.7 million high in 1945. During 1951, there was a 12 percent increase in beef cows to an all-time high of 20.6 million. During the year, the West and Southwest had less increase in beef cows than the rest of the country.

During 1951, Illinois had a 19-percent increase in beef cows. Illinois, with 481,000 beef cows ranks fifteenth in number of beef cows.

The number of ewes increased another two percent during 1951. But 20,885,000 ewes is only about half the number on farms in 1942. On January 1, 1952, Illinois had 366,000 ewes — an increase of nearly 14 percent during 1951. Illinois ranked seventeenth in numbers of ewes on farms. (Table 1)

Numbers of livestock on farms are important as related to numbers of livestock sold. In the long run, 76 percent of the changes in numbers slaughtered is explained by numbers on farms on January 1. But in the short run, 63 percent of the changes in slaughter is explained by changes in numbers on farms during the year.[1]

In recent years, cattle marketings have been less than production as evidenced by increases in numbers. A 12-percent increase in beef cows will result in about a six-percent increase in cattle production because of

[1] Breimyer, Harold F., *Livestock and Meat Situation,* November-December, 1951.

TABLE 1. — NUMBERS OF LIVESTOCK ON FARMS IN ILLINOIS AND UNITED STATES ON JANUARY 1 FOR SELECTED YEARS

(000 omitted)

Specie	1940	1945	1950	1951	1952
			Illinois		
Cattle	2,884	3,244	3,159	3,317	3,550
Milk cows	1,100	1,192	992	972	922
Beef cows	180	292	362	402	481
Hogs	5,750	5,709	6,285	6,851	6,920
Stock sheep	603	525	396	436	509
			United States		
Cattle	68,309	85,573	77,963	82,025	88,062
Milk cows	24,940	27,770	23,853	23,722	23,407
Beef cows	10,676	16,456	16,743	18,396	20,608
Hogs	61,165	59,373	58,852	62,852	63,903
Stock sheep	46,266	39,609	26,182	27,253	27,841

the over-all effect of dairy animals. If a smaller increase in beef cows follows during 1952, total cattle marketings during the year can increase substantially.

According to a study made by Jordan[1] year-to-year changes in cattle numbers are associated with changes in the purchasing power of beef cattle. In recent years the purchasing power of beef cattle has been relatively favorable.

Continued increases in 1952 in beef cattle numbers should be expected, especially in the corn belt and south Atlantic states.

The increase in breeding ewes during the past year was largely in the less important corn belt and southern states. In 1952, a continued expansion of these farm flocks should be expected.

Cost and availability of feed are often factors that reduce livestock numbers. The effect of an unfavorable hog-corn ratio was demonstrated in the December 1951 pig crop report when farmers indicated a nine-percent reduction in 1952 spring farrowings. On January 1, 1952, there were about eight percent fewer sows on farms than a year previously, but still more sows than in any year in the 1945-1949 period. The pasture shortage is considered one of the important factors limiting cattle expansion in Texas and New Mexico and reducing ewe numbers in Texas in 1951.

Summary. Several years elapse between the time farmers decide cattle or sheep are good property and substantial increases in marketings occur. Female stock is kept on the farm for breeding purposes so that marketings are less than production. When breeding herds and flocks are built up, marketings rapidly increase. Beef cow numbers are at a record

[1] Jordan, G. L., "Beef Cattle Numbers Respond to Earlier Changes in Beef Cattle Prices," *Illinois Farm Economics*, July 1951.

high and marketings of cattle should increase substantially. Ewe numbers are still low. It will probably be three or four years before much of an increase in lamb marketing can be expected. W. J. WILLS

SOIL CONSERVATION DISTRICTS—SOME QUESTIONS AND ANSWERS

Soil conservation districts have been functioning in Illinois since July, 1938, when the Shiloh-O'Fallon district was organized in St. Clair County. At the present time there are 95 districts. They include all the farmland in Illinois except that in Lake, DuPage, Sangamon and Logan counties, and in the southern portion of Cook County. During the past few years, the directors of these districts have raised many questions with regard to the power, authority, obligations and general legal status of a soil conservation district. These questions have been studied and reduced to eight in number.

1. How Did Soil Conservation Districts Come About?

The Act of Congress of April 27, 1935 (16 U.S.C. 590a), creating the Soil Conservation Service as an agency of the United States Department of Agriculture, and describing its power and functions, gives legislative recognition to the cumulative findings about soil erosion and soil losses in this language: "It is recognized that the wastage of soil and forest lands of the nation, resulting from soil erosion, is a menace to the national welfare and that it is declared to be the policy of congress to provide permanently for the control and prevention of soil erosion and thereby to preserve natural resources . . . , and the Secretary of Agriculture, from now on, shall coordinate and direct all activities with relation to soil erosion. . . . "

The Federal Soil Conservation Service is authorized, among other things, to " . . . cooperate or enter into agreements with, or to furnish financial or other aid to any agency, governmental or otherwise, . . . subject to such conditions as (may be deemed) necessary. . . . " In furtherance of this authorization is the following provision:

> As a condition to the extending of any benefits under this chapter to any lands not owned or controlled by the United States or any of its agencies, the Secretary of Agriculture may, insofar as he may deem necessary for the purposes of this chapter, require —
>
> (1) The enactment and reasonable safeguard for the enforcement of state and local laws imposing suitable permanent restrictions on the use of such lands and otherwise providing for the prevention of soil erosion;

(2) Agreements or covenants as to the permanent use of such lands; and

(3) Contributions in money, services, materials, or otherwise, to any operations conferring such benefits.

In June, 1935, the Secretary of Agriculture's Interbureau Committee on Soil Conservation reported as follows:

We believe that the Federal government cannot manage erosion control operations efficiently with hundreds of thousands of individual farmers, but that local group responsibility will have to be obtained through the organization of cooperative control associations or Governmental agencies, which should be permanent in character, and legally empowered to own and dispose of real estate, to lay assessments on their members, and otherwise to obtain compliance in a complete erosion-control program on the area owned or controlled by the members of the Association. . . .

We therefore recommend:

(1) That on and after July 1, 1937, and sooner wherever feasible, all erosion control work on private lands, including new demonstration projects, be undertaken by the Soil Conservation Service only through legally constituted soil conservation associations or Governmental agencies empowered to function as indicated above. . . .

In 1936 the Department of Agriculture issued in pamphlet form "A Standard State Soil Conservation Districts Law." The purpose of this publication was to inform the states about the kind of state law which would be acceptable to the Department as a basis for further assistance from the Soil Conservation Service. According to a statement on the title page this was "prepared at the suggestion of representatives of a number of states." In the foreword signed by the Secretary of Agriculture is the statement that "While it is anticipated that the Standard Act will be appropriate to the needs of most of the states in its present form, it is true, of course, that changes may have to be made in some of the provisions to adapt the legislation to the requirements of particular states."

This Standard Act was studied by members of the Illinois Agricultural Extension Service, the State Department of Agriculture, and interested farm organizations. As a result, several changes were made in the law, the principal ones being to require land ownership as a qualification for voting, to require a favorable majority of all qualified voters for organization, and to increase the necessary favorable vote for the adoption of a land use regulation to three-fourths of all land owners. For the most part the states were hesitant about changing the law lest their changes not be acceptable to the Department and lest Soil Conservation Service personnel and activities be curtailed. This feeling is confirmed by the following statements from a letter of July 29, 1939, from the Acting Chief of the Soil Conservation Service to the State Coordinator in Illinois: "Assistance of all types . . . will be offered . . . only to the

districts organized under those state laws which fully meet the departmental standards. In the case of those districts organized under state laws which depart substantially from the basic principles embodied in the Standard State Soil Conservation Districts law recommended by the Department, assistance may be made available prior to such time as the basic statute can be adequately amended but on a limited scale only.

"An analysis of the provisions of the Illinois Soil Conservation Districts Law indicates . . . that the Illinois Statute deviates in certain respects from the provisions contained in the Standard State Soil Conservation Districts Law . . . but, until such time as it is apparent that a well-rounded, comprehensive soil conservation program cannot be carried out effectively under the law in its present form, the Secretary of Agriculture has determined that all types of assistance thus far approved may be extended. . . . "

Thus far, no aid or assistance has been withheld from Illinois because of the kind of law adopted.

Two things are notable about this requirement in the federal law. First, the requirement amounts to a legislative vehicle which permits an agency of the federal government to write the law for a state, the penalty for a state not conforming being the denial, or at least the threat of denial, of substantial federal aid; second, in the opinion of the writer the phenomenal growth of soil conservation districts, instead of being a spontaneous grass-roots movement stemming from intense farmer concern about the fate of the nation's soil, is rather a logical follow-through resulting from the threat of "no local agency, no federal assistance." This is not said for the purpose of condemning soil conservation districts — they are agencies capable of much good — it is said only to keep the record clear on just why we had so many districts organized under the various state acts in such a short space of time.

2. What Is the Legal Nature of a Soil Conservation District and How Does It Fit into Our Governmental Scheme?

There are many mistaken notions about the nature of a soil conservation district. Perhaps a statement of some of the things a district is not will prove as helpful as a definition of what it is.

It is *not* an agency of or a political subdivision of the federal government.

It is *not* subject to legal control by any federal agency.

It is *not* an agency of or a political subdivision of the state of Illinois.

It is *not* subject to the control of any state agency in the determination and execution of its program.

It is *not* in any sense a county governmental agency or in any way subject to control by the county board of supervisors, though it may be organized along county lines. In this connection, it is interesting to note that drainage districts in Illinois cannot be legally organized to correspond to a political unit such as a township or county. Soil conservation districts would probably be subject to the same limitation if they had the power to levy assessments.

In the language of the law itself, a soil conservation district *is* " . . . a public body, corporate and politic, organized in accordance with the provisions of this act." It is answerable only to its electorate and so long as it operates within the scope of its authority has complete autonomy. No agency, either public or private, federal or state, has the power to dictate its program in any respect.

3. Once Organized, What Duties Are Owed by a District to the Public Comprising the District?

Since districts in Illinois receive no funds from the state, and since they have no fund-raising power through assessment, it is doubtful if any very clear-cut and direct responsibility to do anything can be spelled out. It probably cannot be compelled to enter agreements or accept aid and assistance. However, there are three provisions in the law which, by implication at least, would seem to impose some duty on the directors:

The petition for organization must recite that there is " . . . a need for a soil conservation district to function in the territory described."

The State Department of Agriculture (replacing the State Soil Conservation Districts Board) as the organizing agency, must determine that there is a need for the district.

There is a procedure for discontinuance, which would seem to imply that as long as the district is in existence, it should be operative.

From a practical standpoint, the only satisfactory way to get a district to function is to elect competent and interested directors.

4. What Duty Does the District Owe the Public Once It Accepts Applications and Commences Functioning?

Since soil conservation legislation and the agencies established by such legislation are predicated on the idea that soil is a national resource and its conservation a problem affecting the public welfare, it should go without saying that the district owes certain duties to the public. These things at least the public is entitled to expect:

That work will not be done in a haphazard pattern on anybody's farm, but that some sound plan or design calculated to achieve maximum con-

servation will be worked out and a conscientious effort made to block in the pattern.

That any work done on an individual farm will be on the basis of sound research and adequate farm planning.

That the district will establish standards for the types of work to be done and will insist on reasonable compliance with such standards.

That means will be employed to prevent the dissipation of work accomplished and to insure relative permanence for structures built with its funds, personnel or equipment.

The fact that Soil Conservation Service personnel actually do the planning and furnish assistance does not excuse the district from any of its duties. It has a further obligation when it enters into agreements with the Soil Conservation Service or any other agency — an obligation to enter only such agreements as are coordinate with the discharge of its duties to the public. If the directors find that these duties cannot be fully discharged under an existing agreement or memorandum of understanding, they have but two choices — to consult with the agency and attempt to revise the agreement, or failing this to withdraw from the agreement.

5. What Is a District Legally Empowered to Do?*

The Illinois law (modeled in this respect after the Standard Act) sets out in some detail nine powers of the district. Summarized, these are as follows:

(1) To develop comprehensive plans for the conservation of soil resources and for the control and prevention of soil erosion . . .

(2) To carry out preventive and control measures within the district . . .

(3) To cooperate, or enter into agreements with . . . any agency, governmental or otherwise, or any owner or occupier of lands within the district . . .

(4) To obtain options upon and to acquire, by purchase, exchange, lease, gift, grant, bequest, devise or otherwise, any property, real or personal, or rights or interests therein necessary for the purpose of the district; . . .

(5) To make available, on such terms as it shall prescribe, to land owners or occupiers within the district, the use of agricultural and engineering machinery and equipment . . .

(6) To construct, improve and maintain such structures as may be necessary for the performance of any of the operations authorized in this Act.

(7) To take over, by purchase, lease or by voluntary agreement, and to administer, any soil-conservation, erosion-control or erosion-prevention project located within its boundaries; . . . To accept donations, gifts and contributions in money, services, materials, or otherwise, . . .

(8) To sue and be sued in the name of the district; . . . To make, and

* The functional operation of a district and a discussion of the things directors need to do are set out very clearly on pages 6-23 of the "Handbook of Soil Conservation Districts" issued by the State Board.

from time to time amend and repeal rules and regulations not inconsistent with this Act, to carry into effect its purposes and powers.

(9) . . . to require contributions in money, services, materials, or otherwise for any operations conferring benefits, and to require land owners to enter into and perform such agreements or covenants as to the permanent use of such lands as will tend to prevent or control erosion thereon; . . .

Besides this enumeration, districts have one additional power of great importance — the power to adopt and enforce land use regulations. This poses an interesting question: What role may soil conservation districts come to play in view of their power to adopt land use regulations? First of all there is the problem of constitutionality. Would land use regulations adopted in accordance with the law, providing for publication of proposed ordinances, hearing and referenda, stand the test of constitutionality? Probably so. But among other things they would need to be well drafted and would have to be backed by necessary technical findings. This is probably the most important consideration of all. It can be assumed that conserving soil resources is within the police power of the state, and that soil conservation districts are properly constituted public corporations, but it cannot be assumed that any particular land use regulation will stand the test of reasonableness unless it is definitive in its terms, certain in its application, productive of a result which benefits the public, and based on findings which are scientifically sound. With these limitations in mind, try to imagine how percent of slope, soil texture and profile, cropping history, present use and all the other factors which should be considered are to be reduced to a workable land use regulation. It can be done: two Colorado districts adopted regulations which were sustained by two different courts of original jurisdiction in Colorado. But that is only a beginning. Ideally land use regulations should be a means of protecting the conquests which a district is able to make, and of coercing the few. Until some conquest has been made, and until those who need to be coerced are "the few," land use regulations, if brought into being, will lead a troubled existence.

6. What Is the Legal Relation of a Soil Conservation District to the Soil Conservation Service of the United States Department of Agriculture?

Neither federal nor state law imposes or establishes any legal relation between a soil conservation district and the Soil Conservation Service, and there is nothing in either law to compel the establishment of such relations. As a matter of practice, there is a relationship, established voluntarily by contract. But such a relationship can be established by the district with any other agency — the PMA, State Department of Agri-

culture, State Department of Conservation or the Agricultural Extension Service, for example. In practice, the district does enter into a basic agreement or memorandum of understanding with the United States Department of Agriculture. Since districts are the agencies through which the Soil Conservation Service works, a memorandum of understanding setting forth the duties and undertakings of each is executed by both parties and becomes the guide under which soil conservation assistance may be supplied to and used by the district. This memorandum should be drafted to cover such important questions as: "How much help may the district request?" "To what extent can the Soil Conservation Service withdraw its personnel and assign them to other agencies such as PMA?" "What standards are to be followed in planning and executing conservation plans and structures?" "What control does the memorandum permit the district to exercise over personnel of the Service, once they are assigned to work in the district?" "What machinery is created for the mutual consideration of problems that arise?"

Reorganization plans within the United States Department of Agriculture and the courtship, engagement or eventual marriage of federal agencies do not affect the status of a district (except insofar as there may be changes in the powers and duties of agencies with which it has contractual relations). If a district is invited and is willing to sit as an equal in a county council of agencies, federal or otherwise, well and good, but the decision as to its participation is entirely up to the directors.

While directors have no legal right to direct or control personnel of the Soil Conservation Service, they are deeply concerned with the personnel policy of the Service, with the ability and training of farm planners and technicians, and with the standards under which these employees operate. Certainly, directors should be articulate in a constructive way about any of these matters, and should feel that they have a right to express their views to appropriate persons in the Service, in the Department, or even to their congressman.

It should be further pointed out that while a district may contract with public agencies, it cannot bargain away the "discretion" of its directors. It cannot transfer to some other agency the authority to make decisions or determine policies which the law places on the shoulders of the directors.

7. What Is the Legal Relation of the District to a Cooperating Farmer?

When the directors of a district accept a farmer's application for assistance, a contractual relation is created — whether evidenced by a written memorandum or not. The contractual relation is between the

farmer and the district, not between the farmer and the Soil Conservation Service. In such a contract, the district cannot legally agree to something beyond its authority, or beyond its financial resources, nor can it give one farm better "terms" than another for the same service — there must be uniformity and non-partiality in the rendition of service and in the scheduling of charges. Furthermore, since the district has contracted with the Soil Conservation Service, it cannot make a contract with a farmer, which in any way contravenes its relation with the Service. Otherwise, the Service may rightfully refuse to perform. Generally speaking, the policy has been to make individual agreements which are acceptable to the farmer-cooperator and which will encourage rather than discourage his participation in the program of the district.

8. What Can a Citizen Do When He Feels That the District Is Not Meeting Its Responsibility?

The first line of approach for anyone who feels that his district is not functioning properly is through the directors. A constructive discussion with them may lead to improvement or may serve to explain why the situation must be as it is — many persons do not realize for example that a district has no power to raise funds by assessment. But if discussion fails to satisfy, there are many ways of bringing pressure to bear — including publicity, appeals to farm organizations, and an appeal to the electorate of the district. If extreme measures seem justified, the legal actions of injunction and mandamus are always available — the former to prevent the directors from doing something, the latter to make them do something.

Conclusion

The substance of the answers to the questions posed may be briefly restated as follows:

Soil conservation districts, though organized by farmers in the district, came about as a result of federal legislation which made their creation within the states a necessary condition to the securing of further assistance from the Soil Conservation Service: A district is a public body, autonomous and free from direct governmental control both federal and state: Once organized, there is a presumption that the directors will do whatever is within their means to achieve the purposes of the district, operating within the rather broad range of powers enumerated in the law: In carrying on its work, the district may enter cooperative agreements with the United States Department of Agriculture, the Soil Conservation Service or any other agency, but in so doing cannot legally bargain away any of its powers: Its relation to the farmer-cooperator is contractual and the

district owes a duty to the public in entering such contracts to see that effective means are employed to achieve the conservation plan on the individual farm; and to further see that the completion of individual plans fulfills an over-all conservation pattern for the district. These responsibilities the directors cannot delegate to anyone.

H. W. HANNAH

Footnotes for the last page:

[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.

[1] Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-14 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Director, Extension Service in Agriculture and Home Economics

Ill. 8900, 4-52 — 11,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	107	105	99	105	106	107	101	97	103
1937.....	107	113	118	105	111	111	105	107	107	113
1938.....	98	91	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	138	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	163	165	145	255	243	168	242	205	236
1945.....	132	168	171	151	270	248	164	250	198	203
1946.....	150	195	204	165	312	302	185	255	195	170
1947.....	189	238	265	192	377	391	204	279	223	187
1948.....	205	248	275	207	383	389	189	303	241	192
1949.....	192	218	217	200	352	362	181	304	245	176
1950.....	200	224	228	204	356	361	169	332	265	200
1951.....	224	258	271	224	403	419	187	369	290	220
1950 Dec....	218	247	251	212	417	357	168	359	285	218
1951 Jan.....	223	256	261	217	378	393	181	356	284	221
Feb....	228	267	277	220	281	307	140	358	285	221
Mar....	228	268	276	224	303	376	168	362	288	222
Apr....	228	266	278	226	313	395	175	366	289	223
May...	227	263	274	226	319	390	173	368	288	222
June...	225	261	270	225	323	348	155	370	290	221
July....	223	255	269	225	398	497	221	370	286	212
Aug....	221	251	271	225	450	393	174	372	287	217
Sept....	220	249	270	225	511	394	175	373	292	219
Oct.....	221	253	272	226	655	662	293	377	292	218
Nov....	221	257	267	227	541	492	217	377	293	219
Dec....	221	255	267	227	467	383	169	379	300	218
1952 Jan.....	...	...	265	229	390	...	...	378	298	219

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Mar. 1951	Current months, 1952		
	1933-39	1950	1951		Jan.	Feb.	Mar.
Corn, bu.....	$ .66	$1.35	$1.67	$1.64	$1.76	$1.69	$1.68
Oats, bu.....	.31	.76	.87	.92	.94	.88	.90
Wheat, bu.....	.86	2.02	2.24	2.23	2.34	2.31	2.30
Barley, bu.....	.62	1.20	1.36	1.42	1.40	1.37	1.37
Soybeans, bu.....	.90	2.49	2.95	3.15	2.84	2.85	2.83
Hogs, cwt.....	8.52	18.19	20.38	21.30	17.80	17.70	16.80
Beef cattle, cwt.....	7.88	24.54	30.56	30.50	28.70	29.00	28.50
Lambs, cwt.....	8.36	25.12	31.66	37.20	28.20	26.90	25.80
Milk cows, head....	58.00	216.67	267.50	260.00	280.00	280.00	270.00
Veal calves, cwt.....	8.66	27.73	33.53	34.00	32.50	32.80	32.80
Sheep, cwt.....	3.58	10.52	16.07	19.90	13.30	13.30	13.10
Butterfat, lb.....	.27	.58	.66	.65	.75	.80	.74
Milk, cwt.....	1.68	3.45	4.16	4.25	4.55	4.55	4.65
Eggs, doz.....	.19	.31	.42	.40	.35	.30	.29
Chickens, lb.....	.15	.23	.27	.30	.25	.26	.26
Wool, lb.....	.25	.53	.80	1.15	.51	.50	.48
Apples, bu.....	1.08	2.24	2.04	2.00	2.40	2.40	2.40
Hay, ton[13].....	9.39	20.77	21.08	22.40	22.50	22.30	21.60

[1-12] For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | April, 1952 | Number 203

Articles in This Issue

EXPERIENCES OF NORTHEASTERN ILLINOIS FARMERS WITH GRASS WATERWAYS[1]

The grass waterway is one of the simplest and most common soil conservation practices known. The channel of the grass waterway functions as a wide, shallow, open ditch designed to carry peak runoff following rain storms without damage to the land. The need for protected waterways has increased with the growing of larger acreages of intertilled crops which leave the land without protective cover during the months of heaviest rainfall. The problem tends to be more serious in the slowly permeable soils areas where much of the water must be carried away by surface drainage, particularly following intense rains.

The construction of good grass waterways is a problem both in engineering and agronomy. The waterway must be designed so as to have sufficient capacity to carry peak runoff following the most intense rainstorms. From the agronomy standpoint, it is important that a satisfactory seedbed be prepared, that proper soil treatment be applied, and that proper seed mixtures be used in order to establish a desirable growth of erosion-resistant sod. Small waterways can usually be shaped with the regular

[1] Summarized from studies carried out cooperatively by the Agricultural Economics Department, University of Illinois, College of Agriculture, and Research Division of the Soil Conservation Service, U.S. Department of Agriculture, W. H. Heneberry, Agricultural Economist and E. L. Sauer, Project Supervisor.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

farm equipment; large waterways, however, can best be built with a bulldozer or a motor patrol grader.

Where it is desirable to secure quick cover in the establishment of a waterway, sodding can be used. Sodding is the most successful if the sod is transplanted during the early spring or early fall when rainfall is ample.

The cost of constructing and establishing grass waterways varies, of course, with the size of the watershed, the soil type, the amount of earth moving necessary, the amount of soil treatment required, etc. Frequently a satisfactory sod is not secured the first time and it is necessary to rework and reseed the waterway two or more times before desired results are obtained. It has been estimated that grass waterways can be prepared in Illinois at a cost of from 75 cents to $1.50 per 1,000 square feet of waterway, plus the cost of any earth moving necessary in constructing the waterway.

Survey to Determine Farmers' Experiences With Grass Waterways

Data on costs and other aspects of grass waterways were secured through a survey of 59 farmers in northeastern Illinois in 1951.[1] The majority of the farms included in the survey were on Elliott-Ashkum and similar soil types. No marked differences in costs were shown for the different soil types.

Relationship of cost to size of waterways. In general, costs per acre and per linear foot of waterway decreased as the waterway increased in area and length. The wider waterways had lower bulldozing costs per square foot. Table 1 shows the variation in costs when the waterways

[1] Surveys taken by W. H. Heneberry and R. J. Becker, Asst. in Agricultural Economics.

Table 1. — Costs per Acre of Waterways of Various Sizes

Size of waterway (acres)	Average cost per acre	Number of farms included
Less than 1.00	$269.21	17
1.00–1.99	142.09	19
2.00–2.99	144.71	8
3.00 and over	111.24	15

Table 2. — Costs per Linear Foot of Waterways of Various Lengths

Length of waterway (feet)	Average cost per linear foot	Number of farms included
Less than 1,500	$.211	25
1,500–2,999	.120	19
3,000–4,499	.111	6
4,500–5,999	.100	4
6,000 and over	.104	5

TABLE 3. — COSTS OF WATERWAYS BY SIZE OF DRAINAGE AREA

Area drained by waterway	Average cost per acre drained	Number of farms included
Less than 100 acres	$3.80[a]	28
100–199 acres	2.00[a]	13
200–299 acres	2.50[a]	11
300 acres and over	.53[a]	7

[a] Median values were $3.04, $2.32, $1.95, and $0.35, respectively. Use of the median places less emphasis on the extremely high and low values.

TABLE 4. — COMPARISON OF COSTS BY METHODS OF MOVING EARTH

Method of moving earth	Number of farms included	Average size of waterway	Average cost per acre of waterway	Percent of total cost represented by:				
				Bulldozing or grading	Farm equipment	Seed	Fertilizer	Labor
		(acres)						
Farm equipment[a]	15	0.9	$56.20	..	42	23	11	24
Road grader[b]	6	2.9	86.72	69	5	13	10	3
Bulldozer[b]	38	2.8	149.62	76	7	8	5	4

[a] Includes manure loaders and scrapers.
[b] Machine cost includes wage of operator.

were grouped by size. Where the waterways covered an area of less than one acre there was a tendency to make heavier applications of fertilizer and seed. In order to show the relationship of cost to length, waterways were converted to 40-foot widths. Costs per linear foot are shown in Table 2.

Relationship of costs to size of drainage area. Waterways were also compared by the number of acres drained, as shown in Table 3. Costs per acre drained varied widely within the four groups. In a few cases, parts of the waterway extended into other farms where cost data were not available, making the cost per acre drained seem lower than it actually was.

Bulldozing largest cost. Total cost figures include bulldozing or grading, seed, fertilizer, farm machinery and labor.[1] Bulldozing and grading accounted for a very large proportion of the costs (Table 4). On the 15 farms where waterways were built with farm equipment only, the cost per acre was less than 40 percent as large as when a bulldozer was used and about 65 percent as large as when a road grader was used. The difference between the costs of regular farm equipment and the bulldozers and graders is mainly a reflection of the larger amount of earth moved by the latter two. The difference between the bulldozer and road grader groups is partly because of the amount of earth moved and partly a result

[1] Farm machinery and labor costs were estimated from Department of Agricultural Economics Publication AE2811, "Detailed Cost Report for Northwestern and Western Illinois," 1949.

of the higher cost per hour for the bulldozers. Charges for road graders were $5.00 per hour in all cases except three. One farmer paid $10.00 per hour and the other two did not pay anything for the use of the grader. Bulldozing costs ranged from $5.50 to $15.00 per hour and averaged $10.63. Ten dollars per hour was the most common charge for bulldozing.

Seed costs. Seed costs varied widely because of size and the different seed mixtures used (Table 5). On the smaller waterways, the

TABLE 5. — SEED COSTS FOR VARIOUS SIZES OF WATERWAYS

Size	Average seed costs per acre	Number of farms included
Less than 1.00 acre	$15.99	17
1.00–1.99	11.55	19
2.00–2.99	11.32	8
3.00 acres and over	10.76	15

seeding rate was usually higher than on the larger ones. Eleven farmers seeded more than 30 pounds per acre of waterway. Including a large amount of legumes such as alfalfa and Ladino clover also increased the cost per acre. The wide variety of seed mixtures used is illustrated by the fact that only eight of the mixtures were used on more than one farm, and none were used on more than two. Timothy was the most commonly used seed, appearing on 51 of the 59 farms. Brome grass was included 45 times and redtop 25 times. Alfalfa and alsike clover were the most common legumes; they were used on 24 and 19 farms respectively. Most of the farmers used four or more kinds of plants in their mixtures, giving the reason that they did not like to depend on only one or two species. Seven farmers used six or more kinds of plants, while 19 used three plants or fewer. There was a tendency to use two or three kinds of grasses along with one or more legumes. Other grasses and legumes used were ryegrass, orchard grass, blue grass, Reed's canary grass, alta fescue, Sudan grass, red clover, lespedeza, Ladino clover, and vetch. Rye was used as a nurse crop on 23 waterways and oats on 19.

Fertilizer costs. On the 35 waterways where fertilizer was used, it represented nine percent of the total costs. Costs varied widely in all size groups because of different rates of application. A few farmers had applied as much as 1,000 pounds of mixed fertilizer per acre, but the prevailing rate was around 300 pounds. Costs averaged $10.51 per acre on all waterways where fertilizer was applied. A number of the farmers commented that they would not construct another waterway without adequately fertilizing it, either with barnyard manure or mixed fertilizers or a combination of both.

Benefits of waterways. It is difficult to assign specific values to grass waterways. Grass waterways are an integral part of the entire farm conservation plan and benefits from them are tied in with the over-all benefits of such a plan. However, grass waterways are of great value in reducing or preventing soil and water losses and once established, they make for easier farm operation and a reduction of farm operating costs. It is easier to drive machinery through the waterways or use waterways as a turnrow than it is to go through ditches or turn around in the middle of the field because of gullies or ditches. Studies in Illinois show that farm operating costs have been reduced five to ten percent when farm operations are on the contour and grass waterways are established.

Another specific benefit of waterways is for the production of hay. A number of conservation cooperating farmers in Illinois report that they annually harvest from one to one and a half tons of hay per acre of waterway.

W. H. Heneberry and E. L. Sauer

RECENT CHANGES IN ILLINOIS FARM LAW

The sixty-seventh General Assembly of the State of Illinois, which adjourned on June 30, 1951, approved many laws of significance to Illinois farmers. Following is a summary of the more pertinent ones. Further information about them may be obtained from the State Department of Agriculture, Springfield, from the University of Illinois College of Agriculture, Urbana, or from the state agency administering the particular law.

Brucellosis in cattle. The principal changes in this law provide:

(a) That female cattle of the beef breeds under 18 months of age, for feeding and grazing purposes only, may enter the state or be shipped from public stockyards without test. They are under quarantine, however, and remain so until they are slaughtered or pass a negative test. The period for holding cattle under this provision is 12 months, with the possibility of a 90-day extension upon application to the Department.

(b) The age after which a dairy or breeding animal shipped into Illinois must be accompanied by a certificate of health was raised from four months to six months.

(c) Additional requirements, including a provision on branding, were made regarding the quarantine and disposition of animals vaccinated within the ages of 4 and 8 months but which after reaching 30 months of age react to the agglutination test. However, female cattle properly vaccinated between the ages of 4 and 8 months need not be branded until they reach 36 months of age.

(d) The term "abortion-free accredited herd" was changed to "certi-

fied Brucellosis-free herd" and now means a herd in which at least two annual negative tests for Brucellosis have been conducted on all animals in the herd six months of age or over, and for which a certificate has been issued by the State Department of Agriculture.

(e) Springer heifers and cows, or heifers and cows with calves, are classed as breeding cattle and must comply with the requirements on breeding cattle.

(f) Restrictions on the sale within the state of female cattle and breeding bulls now apply to animals more than 6 months of age. Formerly they applied only to animals more than 8 months of age.

Tuberculosis in cattle. (a) The law now provides that reactors may be shipped directly to a stockyard where federal meat inspection is available, presumably for slaughter though the law does not so state.

(b) Certificates of registration must be presented at the time of appraisal of purebred animals three years of age to qualify for the indemnity on a purebred; previously the certificate was required on animals over two years of age.

(c) The maximum commitment of the state for condemned animals in case the federal government should make no appropriation was increased from $70 to $100 for grade animals, and from $140 to $200 for purebred animals.

(d) Provisions on the shipment into Illinois of female cattle of the beef breed under 18 months of age were changed to accord with new provisions in the Brucellosis law.

Due to the number of changes in both the Brucellosis and tuberculosis laws it is recommended that anyone interested procure a copy of the law from the Division of Livestock Industry, Springfield.

Brucellosis in swine. A new law provides that no person shall sell or offer for sale any male swine or services of any male swine for breeding purposes unless such animal has been tested and found free of Brucella micro-organisms by a licensed accredited veterinary within a period of 30 days previous to such sale or offer to sell. A certificate of the veterinary who made the test, dated as of the day of such test and certifying that the animal is free of Brucella micro-organisms, shall be displayed to any person buying the services of the animal and given to any person to whom possession or ownership of the animal is transferred.

Community sales. (a) Operators of such sales must file a bond in the amount of $10,000 with the State Department of Agriculture; before amendment the amount was $1,000. If $10,000 appears inadequate, the amount may be increased to $25,000; the previous limit was $5,000.

(b) The annual license fee was increased from $50 to $100.

(c) Sales operators no longer are required to keep records on property other than livestock. However, with respect to livestock they must still make a record of:

1. The name and address of each person offering animals for sale.
2. A description of the animals.
3. Method of delivery to the sale.
4. Name and address of the purchaser.
5. The sale price and the commission and fees charged.

(d) Animals known to be infected with or to have been exposed to any contagious disease shall not be consigned or sold through any community sale, except that animals reacting to a Brucellosis test made at the sale by the supervising veterinarian may be sold, for immediate slaughter only, under regulations of the Department of Agriculture. The veterinarian shall examine all animals, prohibit the sale of those that are diseased, and issue quarantines when applicable. Female cattle and bulls more than six months of age may be sold only if they have been tested for Brucellosis and found negative within 60 days of the sale, *or* if they are under 30 months of age and were vaccinated in calfhood, *or* if they are from a certified Brucellosis-free herd.

There is a further provision that "springer heifers and cows, or heifers and cows with calves, are classed as breeding cattle and as such must comply with the requirements governing breeding cattle."

County veterinarian. The contribution of the State Department of Agriculture to a county for the employment of a county veterinarian was increased from $225 to $300 per month.

Dead animal disposal. This act, approved in 1941, was amended as follows:

(a) Inspectors from the Department of Agriculture are now required to inspect equipment, as well as buildings, in determining if a license to operate should be granted.

(b) The fee for an original license was increased from $100 to $150, and for each annual renewal, from $50 to $100.

(c) Sanitary specifications for buildings and equipment were set forth in greater detail.

(d) The hauling of an animal that has died of a highly contagious, infectious, or communicable disease may be prohibited by the Department, and the owner ordered to destroy it on the premises by burning or burial.

(e) The minimum and maximum penalties for violation of the law were increased from $5 and $100 to $50 and $500.

Department of Agriculture. The Department was designated as

the state agency to administer the provisions of the present Federal Soil Conservation and Domestic Allotment Act if and when the Secretary of the United States Department of Agriculture determines that the plan may be administered by the states.

Division fence responsibility. The Illinois Legislature made an important amendment to the Division Fence Law during the 1951 session. The amendment prescribes the conditions under which an owner may legally avoid maintaining his part of a division fence. Stated briefly he must do the following:

(a) Give the adjoining owner one year's notice in writing of his intention to remove his portion of the fence.

(b) Let his lands lie uncultivated.

(c) Let his lands be unpastured.

Stated another way, the law now means that if a farmer uses his lands either for growing crops or for pasturing livestock, he owes a division fence responsibility and cannot escape it. Prior to the amendment, he could avoid the responsibility by giving notice and letting his lands "lie open." The purpose of the present amendment is really to define the term "lie open." As now defined, it means unused for either cropping or grazing purposes.

Dogs. The legislature passed three additional laws affecting dogs. One of them provides that scientific and educational institutions may procure unclaimed dogs and cats from a public pound for use in their scientific work, upon obtaining a license from the State Department of Public Health and complying with other provisions of the law. This act also prohibits the killing of any stray animal by any private organization or person, except that farmers may kill such animals if necessary to protect their livestock or poultry.

Another 1951 law permits sheep owners to recover from the county indemnity fund the "reasonable market value" of an animal killed by dogs, instead of $15 per head.

The third law increases the authority of the State Department of Agriculture to check the spread of rabies by cooperation with local officials and through quarantine.

Farm machinery. Recognizing the shift from horse to tractor economy the legislature made it a criminal offense to ". . . remove, alter, deface or destroy the manufacturer's serial number . . . or identification mark upon any tractor, hay baler, combine, corn picker, mower, grain drill, planter, plow or other farm machine, farm implement or piece of farm equipment for the purpose of concealing or destroying the identity thereof."

Farm machinery dealers cannot legally sell machinery or equipment on which the number or mark has been destroyed without first procuring an identifying mark. This may be done by applying to the director of the State Department of Agriculture on blanks supplied by the department. The application must be accompanied by a $5 fee. If the department approves the application it issues an identifying number for the owner to stamp on the machine, after which the machine may be sold and transferred as though the original number or mark were on it.

Penalties for a first offense are a maximum fine of $200 and a maximum jail sentence of six months; for a third and subsequent offense imprisonment for one to five years. If the offender is a corporation a fine of from $2,000 to $10,000 may be imposed.

Farmers Institute. The act of June 24, 1895, creating the Illinois Farmers Institute, was repealed. The educational program contemplated in this law is fulfilled by the program of the Agricultural Extension Service.

Horse meat. The first Illinois legislation on horse meat was adopted at the last session of the legislature and became effective on September 1. This law requires that anyone engaged in the business of slaughtering or wholesale distribution of horse meat shall have a license. However, slaughtering for tankage is not included. The annual license fee is $50 plus a $25 fee for each vehicle not used in connection with a licensed establishment with a fixed location. Licensees are required to operate their business in a sanitary manner.

Vehicles must be marked with the operator's name, address and license number. Common carriers are excluded.

Like the federal law, the Illinois law requires that distributors and slaughterers label each package or piece with the words "horse meat," or other appropriate term if the product is made of other equine meats. Any such meat held for distribution by a retailer must be plainly labeled.

Milk. Many detailed changes were made in the Grade A milk law, all of which are not summarized here. Among the more important changes are provisions that:

(a) Periodic inspection must be made of all farms operating under the law.

(b) Monthly samples must be taken from each farm and dairy plant.

(c) Milk delivered to a milk plant or receiving station for pasteurization, separation or transshipment must be cooled to 65° F. or less and maintained at that temperature until delivered.

(d) Persons who are carriers of or who are infected with a communicable disease are prohibited from working at a dairy farm or milk plant

in a capacity which will bring them into contact with milk, containers, or equipment.

Oleomargarine. Illinois has had laws on oleomargarine or "butter substitutes" since 1879. Included among these laws has been one prohibiting the sale of colored oleomargarine. The 1951 legislature repealed this law and repealed and amended certain others in two separate acts.

One of these acts provides that "No person shall manufacture or sell any oleomargarine which has less than 80 percent fat or which contains any fat or oil ingredient other than any one or more of the following: cottonseed oil, peanut oil, soybean oil, corn oil, oleo oil from cattle, oleo stock from cattle, oleo stearine from cattle, beef fat, neutral lard from hogs, or milk fat."

The other act provides the conditions under which colored oleo may be sold in stores and restaurants. Oleo sold in stores must be packaged and labeled "oleomargarine." Also "oleomargarine" must appear on the wrapper of each separate part of the contents of the package. There is a further provision that if "any words appear on the package which indicate that the contents are artificially colored or artificially flavored, such words shall be printed either in a contrasting color to the other words of the text in which they appear or in type of a bolder face than such other words."

The law also defines "yellow oleomargarine" and provides that the term "margarine" may be used in place of "oleomargarine."

Soil conservation districts. Although districts are not directly under any state or federal agency, but are independent public corporations, they are to a limited extent answerable to the State Department of Agriculture. The department manages the procedure when a district is being organized and discharges certain responsibilities in the election of directors. Prior to 1951 these functions were performed by a State Soil Conservation Districts Board composed of three farmers, the Dean of the College of Agriculture and the State Director of Agriculture. In 1951 these functions were transferred to the State Department of Agriculture, and the State Soil Conservation Districts Board became purely an advisory body.

H. W. Hannah

CHANGES IN EMPLOYMENT IN FOOD PROCESSING INDUSTRIES BETWEEN 1939 AND 1947

The American people are changing their eating habits. These changing habits are reflected both in total numbers of employees and in the relative numbers of men and women employed in the 43 food processing

industries in the country. Between 1939 and 1947, the average person increased his consumption of meat by 22.2 pounds, eggs by 8.5 pounds, fluid milk and cream by 55.0 pounds, canned and frozen fruits by 14.5 pounds, and fresh, canned, and frozen vegetables by 18.4 pounds. Meantime, he consumed 16 fewer pounds of bread and bakery products, 6.2 fewer pounds of sugar, and 6.2 fewer pounds of butter.[1] These changes in consumption required adjustments within the food processing industries.

Change in number of production workers. During this period, the total number of workers increased from 787,492 to 1,047,376, a gain of 259,884 or 33 percent.[2] Based upon total number of workers, the meat

TABLE 1. — MAJOR FOOD PROCESSING INDUSTRIES, BY NUMBERS OF WORKERS, UNITED STATES AND ILLINOIS, 1947

Industry	*Number of workers*		*Men employed*		*Industry rank*	
	United States 1947	Increase from 1939	United States 1947	Change from 1939	United States	Illinois
	(thousands)		(percent)			
Meat packing	167.1	52.0	83.7	−1.5	1	1
Bread and other bakery products	150.0	(a)	77.9	(a)	2	3
Canning and preserving except fish	121.9	28.3	53.2	(a)	3	5
Candy and confectionery products	64.9	15.1	35.9	+2.4	4	2
Malt liquors	63.7	27.6	99.4	− .1	5	7
Soft drinks	41.2	19.9	93.4	−3.8	6	..
Biscuits, crackers, and pretzels	37.5	8.4	41.8	−8.0	7	9
Food preparations, N.E.C.[b]	35.0	23.4	51.7	−1.8	8	10
Prepared meats	34.5	16.8	63.9	−5.6	9	4
Flour milling	30.7	6.0	95.6	−2.6	10	..
Distilled liquor, except brandy	25.7	19.1	....	.....	11	8
Corn products	10.2	3.4	....	.....	(c)	6

[a] 1939 figures not comparable with 1947.
[b] Not elsewhere classified—includes establishments manufacturing food specialties, such as powdered sugar, bouillon cubes, peanut products, potato chips, etc.
[c] Ranks twenty-fourth in United States.

packing industry was the largest in the United States in 1947. It was followed in order by the bread and other bakery products, canning and preserving, except fish; and candy and confectionery products (Table 1).

Only four of the 43 industries had fewer workers in 1947 than in 1939. These were cottonseed oil, cake, and meal; butter; sugar cane mills, and vinegar and cider.[3] These changes resulted from smaller cotton crops and decreased use of butter, sugar and vinegar. The bread and other bakery products industry probably employed fewer workers also because of decreased per capita consumption. Increased population compensated in part.

The important place in food processing held by Illinois is shown by

[1] "Consumption of Food in the United States, 1909-48," Miscellaneous Publication Number 691, United States Department of Agriculture, Washington, D. C.
[2] 1947 United States Census of Manufacturers.
[3] Statistical Abstract of United States, 1950, Bureau of Census, Page 626.

the fact that the five largest industries in the United States were within the top seven industries in Illinois (Table 1). Here meat packing employed the largest number of workers, followed in order by candy and confectionery, bread and other bakery products, and prepared meats.

Change in sex of production workers. The majority of the food processing industries had a larger proportion of women employed in 1947 than in 1939. One of the main factors causing this shift was the shortage of manpower during World War II. More women were employed during the war than formerly. Many of them liked to work and many employers preferred the quality of work they did. As a result, many women continued to work after the acute manpower shortage was past.

Of the ten largest food processing industries, only one, candy and confectionery products, had an increase in percent of men employed between 1939 and 1947 (Table 1). The figures for the other industries showed an increase in the numbers of men employed, but the proportions of men were smaller. An increase in the general use of machines, combined with the desire of consumers for more packaged goods contributed to this shift.

The industries listed in Table 1 may be divided into three groups based upon percent of men employed. The malt liquor and flour milling industries had the largest percentage of men because of the labor requirement for highly skilled workers, and of manual labor involved.

The soft drinks, meat packing, bread and other bakery products, and prepared meats industries require a rather larger proportion of men because of the nature of the work, e.g., heavy lifting and unpleasant atmosphere. The canning and preserving, except fish; food preparations, not elsewhere classified; biscuits, crackers, and pretzels; and candy and confectionery products industries employed the smallest proportions of men. These industries require a large amount of hand labor, much of which is seasonal. Increased packaging to meet consumers' demands also adds to the amount of hand labor required. L. D. Erlewine

THE CHANGING PATTERN OF MILK DISTRIBUTION

Until recent years, milk sold in most Illinois markets was produced within a milkshed adjacent to each market. Now, however, shipments of milk from a centrally located bottling plant may include markets as far away as 200 miles.[1] Many of the larger markets in Illinois are receiving milk from sources outside their local milksheds. In Illinois, the expansion

[1] Professor Edward H. Ward of Montana State College reports shipments of milk in paper containers as far as 600 miles from the bottling plant in his state in letter dated February 4, 1952.

of intermarket shipments of milk on a state basis began in 1948. In that year, the Dean Milk Company of Chicago initiated a program of supplying milk in paper containers to many markets from their shipping point in Chicago.

Since that time, there has been a very rapid development of intermarket shipments. In Champaign-Urbana alone, five companies from other markets now regularly furnish milk for stores. These include: Dean Milk and Borden of Chicago, the Producers' Dairy of Danville, Roszell from Peoria, and Beatrice Foods from Bloomington.

In June, 1951, nine percent of sales of milk packaged in Chicago were made outside the local marketing area.[1] Ordinarily, this milk would have been utilized as Class IV milk (butter or cheese). Its inclusion in Class I meant $1.02 per 100 pounds more for Chicago producers, a total gain of $1,551,000 through outside market shipments. Because of increased per capita sales in most markets, this did not reduce sales of locally produced milk.

The growth of intermarket shipments of milk may be attributed to: (1) an ever-increasing mileage of improved roads; (2) the use of paper containers; (3) the lifting of legal barriers against intermarket shipments; and (4) the introduction of store prices two cents or more a quart below the home-delivered prices.

Improved roads. In 1951, Illinois had 29,749 miles of concrete, macadam or high-type surfaced roads, compared with 435 miles in 1918.[2] In addition, gravel roads in many parts of the state are usable for trucking the year round. Improved roads have made possible the use of large refrigerated trucks capable of transporting high-quality milk for long distances. One truck used for hauling Illinois milk a distance of 1700 miles to Florida, in 1951 had an average load of 8,000 quarts.[3]

Increased use of paper containers. The use of paper containers for packaging milk has increased greatly since 1940. According to statistics assembled by the Pure-Pak division of the Ex-Cello Corporation, 71 percent of the milk sold throughout the United States by grocery stores in 1950 was packaged in paper containers, and 29 percent in glass bottles. Pure-Pak reported that in 1940 only 4.8 percent of all milk sold in villages and cities was packaged in paper containers. By 1950, this percentage had increased to 31.2. Because of the use of paper containers intermarket shipments of milk have increased through simplifying transportation problems and facilitating store sales of milk. As yet, only a very small volume of milk distributed to homes is packaged in paper containers.

[1] Based upon audits of the Chicago Federal Milk Marketing Administration.
[2] From Illinois Division of Highways in letter dated January 14, 1952.
[3] *Illinois Farm Economics,* October, 1951, page 1238.

Legal decisions. Since milk is highly perishable most cities have ordinances regulating its quality. Sanitary regulations, which were originally set up to control quality, in more recent years have been used in more and more markets as trade barriers to prevent shipments of milk from outside areas. This situation is unique since of some 2,000 items handled in a food store, milk is the only food sold in large quantities in the United States against which legal barriers have been created to prevent free intermarket shipments. These barriers have not been limited to one area or region, but have been found in markets scattered all over the country.

Illinois has taken the lead in breaking down these barriers. Three decisions of the Illinois Supreme Court have indicated that the city has no authority to regulate the area from which milk is secured or where bottled or pasteurized so long as it conforms to quality requirements.[1] Decisions in four other states and a ruling of the United States Supreme Court hold essentially the same viewpoint. The growth of intermarket shipments throughout Illinois and in these other states is now established on a firm legal foundation. It is likely, however, that further decisions of the United States Supreme Court will be necessary before all groups become convinced of the legality of interstate shipments of packaged Grade-A or other high quality milk.

Per Capita Milk Sales Increase in Illinois Markets Receiving Out-of-Area Milk

Legal decisions, paper containers and improved roads which paved the way for intermarket shipments of milk throughout Illinois, have changed the pattern of milk distribution within the state. Markets in southern Illinois, sometimes known as "Little Egypt," are now regularly supplied by five plants which distribute milk throughout most of this area. St. Louis and nearby dairies have broadened their distributing outlets to outlying markets, and as stated, dairies in Chicago and central Illinois now regularly distribute milk to neighboring towns and cities. With this change in the pattern of milk distribution, come certain questions: Of what value has this change been from the viewpoint of the public? From the viewpoint of farmers?

Increased per capita consumption of milk aids in improving health since present consumption is materially below that recommended by nutritionists for an adequate diet. Data on per capita sales of milk available for eight Illinois cities indicate that intermarket shipments have been an important factor in increasing milk sales in these markets. From 1945 to 1949, per capita sales of milk in the eight markets increased 15 percent

[1] The Illinois decisions were reported in *Illinois Farm Economics,* October-November 1950, pages 1073-1084.

TABLE 1. — PER CAPITA SALES OF MILK IN EIGHT ILLINOIS MARKETS, 1940, 1945 TO 1950[a]

Market	1940	1945	1946	1947	1948	1949	1950	Percent change 1945 to 1949[b]
				(pint daily)				
Bloomington	.506	.599	.718	.731	.730	.741	.803	+24
Champaign-Urbana	.543	.661	.709	.774	.802	.814	.909	+23
Danville	.743	.888	.875	.873	.957	.991	.870	+12
Decatur	.542	.853	.835	.755	.737	.766	.840	−10
Peoria	.510	.673	.727	.750	.764	.832	.866	+24
Quad-Cities	.600	.778	.780	.839	.869	.880	.908	+13
Quincy	.588	.706	.717	.796	.827	.831	.856	+18
Springfield	.497	.686	.779	.781	.775	.839	.944	+22
8-city average	.566	.730	.768	.787	.808	.837	.874	+15
Index (1940-1945=100)	88	113	119	122	125	130	136	

[a] *Illinois Farm Economics*, October-November, 1950. See footnote one, page 1073 for source of data.
[b] Used as basis for comparison with consumer prices for the same period.

at the same time that those for the United States decreased 10 percent (Table 1 and Figure 1). This increase in milk sales was directly associated with an increase in store sales resulting from the introduction of a store differential.

In 1945, the store prices and the home-delivered prices in each of the

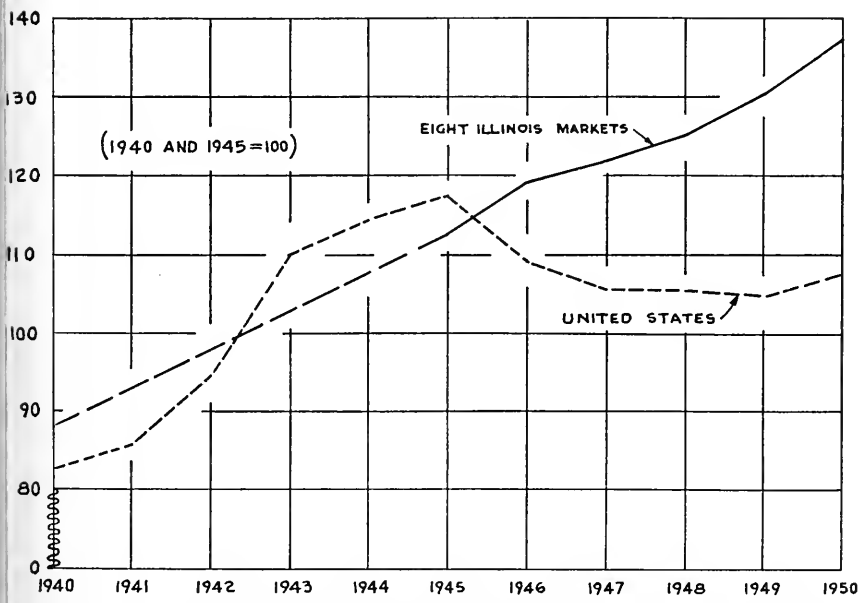


FIG. 1. — INDEXES OF CHANGES IN PER CAPITA SALES OF MILK, EIGHT ILLINOIS MARKETS AND UNITED STATES, 1940 TO 1950

TABLE 2. — PRICES PAID BY CONSUMERS AT STORES AND AT HOMES, 1940, 1945, AND 1949[a]

Market	1940		1945		1949	
	Cents per quart					
	Home and store		Home	At stores	Home	At stores
Bloomington	10.0	10.0	12.5	12.5	20.0	18.0
Champaign-Urbana	11.0	11.0	14.0	14.0	20.0	18.0
Danville	9.0	9.0	12.5	12.5	20.0	18.0
Decatur	11.2	11.2	13.0	13.0	20.0	18.0
Peoria	12.3	12.3	15.0	15.0	20.0	18.0
Quad-Cities	11.0	11.0	14.0	14.0	19.5	17.5
Quincy	9.5	9.5	12.0	12.0	16.0	14.0
Springfield	12.0	12.0	15.0	15.0	20.0	18.0
8-city average	10.8	10.8	13.5	13.5	19.4	17.4

[a] These prices were for single quarts. Half-gallons in some markets sold in stores for 2½ cents per quart less than the home delivered price for single quarts.

eight markets were the same (Table 2). By 1949, each of the eight markets had a store price two cents a quart below that of home-delivered milk. Higher per capita sales increase returns to farmers since the price for Class I milk is higher than for milk manufactured. While prices received for manufactured milk vary somewhat in different markets, on the average producers would have received about $1.00 per 100 pounds more if the entire volume had been sold as Class I.

Champaign-Urbana milk sales increase. The situation in Champaign-Urbana illustrates what has happened to the distribution pattern. One group of ten stores in this market each day now (1952) sell about 500 quarts of milk per store, most of which is received from Chicago. The bulk of this is sold in one-half gallon paper containers at two and one-half cents per quart less than the home-delivered price. A small volume is sold in single quarts at two cents a quart less than the price charged for home-deliveries. The store differential was introduced in March, 1948, when out-of-area milk first came to the market.

In 1945, when these stores had the same price as that at homes, they sold an average of only about 25 quarts daily per store, or one-twentieth their present sales. Store sales in Champaign-Urbana then averaged 18 percent of all milk sold to consumers. By 1950, store sales had increased to 55 percent of total sales.

Increase in out-of-area shipments to the Champaign-Urbana market cause no loss in sales of local producers. In 1945 no outside shipments were received. By 1949 outside shipments to this market were about 17 percent of total shipments, and per capita sales were 23 percent higher than in 1945 (Fig. 2). In fact, had per capita sales in Champaign-Urbana fallen from 1945 to 1949 as much as those in the United States, the price

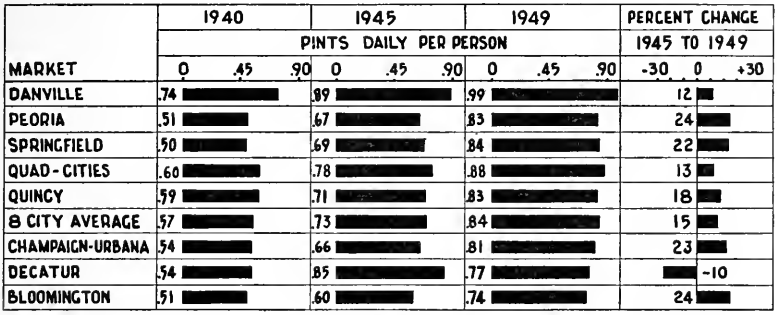


FIG. 2. — PER CAPITA SALES OF MILK IN EIGHT ILLINOIS MARKETS, 1940, 1945, AND 1949

of milk to local producers would have been less than that received because of the higher proportion of their sales going to the low-priced classifications.

In 1950, per capita sales in Champaign-Urbana averaged .91 pint daily or 12 percent above those for 1949. This increase in milk sales was directly associated with the introduction in 1949 of the one-half gallon container at a price two and one-half cents a quart below the home-delivered price.

Danville ranked first in per capita sales. In 1940, Danville had the same per capita sales of milk as New York City (.74 pint).[1] New York was the highest for all Eastern markets while Danville ranked first for the Illinois markets. High milk sales in Danville were directly associated with low prices charged for milk at milk depots in this market.

Between 1934 and 1939, the usual depot price for milk in Danville was eight cents per quart or four quarts for 28 cents. Home-delivered milk was ten cents per quart. Depot milk was highly publicized and people became aware of the price advantage. Many of them grew used to buying more milk and to buying it at depots.

In 1949, Danville again ranked first in milk sales in the Illinois cities for which data were available. This resulted in part at least, from the introduction of intermarket shipments. In 1948, a Chicago dealer made arrangements with a Danville dealer to sell Grade-A milk through stores and to homes in Danville. This milk, packaged in paper containers, sold in stores for two cents less than home-delivered milk. The City of Danville sued the Chicago dealer. The case was eventually settled out of court and intermarket shipments of milk to Danville continued. The publicity accompanying the suit increased the sales of milk.

[1] *Illinois Farm Economics,* October-November, 1950, page 1076.

Use of Grade-A Milk Increases Sales

Following the cessation of World War II, many of the markets in central Illinois introduced a program of selling only Grade-A milk. This took place in many markets about the same time that intermarket shipments and store differentials were initiated. Hence, it is impossible to determine exactly the relative influence of these two forces.

Consumer Income Also a Cause for Higher Sales in Illinois Markets

Consumer income along with price and introduction of Grade-A milk has been a factor causing increased sales of milk in the eight Illinois markets. From 1940 to 1945, both consumer income and per capita sales rose in these markets and in the nation (Fig. 1). But, between 1945 and 1949, the picture changed. Per capita sales in the Illinois markets continued to increase while those for the United States fell off sharply.

The drop in national sales can be explained by the increasing competition which milk markets faced with automobiles, houses and other consumer products. This same competition, however, existed in the eight Illinois markets, yet sales of milk went up. Between 1945 and 1949, consumer income increased in both the eight markets and in the United States. The rate of increase, however, was somewhat greater for the Illinois markets than that for the country. In 1949, per capita consumer income in the United States was about two and one-half times that of prewar while that of the Illinois markets had increased to two and three-fourths times that of prewar. Hence, the increase in per capita sales in Illinois markets, when those for the United States were declining, may be attributed, in part, to the greater increase in consumer incomes in the eight markets.

In 1950, per capita sales of milk in both the Illinois markets and the nation were above those of 1949, those for Illinois having risen faster than for the United States. Consumer income increased in the United States, but decreased somewhat in the eight markets. The increase in Illinois sales in 1950 was associated with increased store sales, particularly those in one-half gallon containers, at reduced prices.

Long-Distance Shipments of Milk and Cream Increase

During World War II, as well as in more recent years, milk shortages in many Southern and Eastern markets forced them to import milk from the surplus-producing areas of the Midwest. According to the report of the Northeastern Dairy Conference of August, 1950: "The most serious shortages occurred in the New Orleans market where Class I sales in 1946 equaled 114 percent of the milkshed supply, and the 1943-48

average was close to 100 percent. Large quantities of "emergency" whole milk and reconstituted milk were needed to make up the deficit in the milkshed supply. Milk shortages also were severe in Philadelphia, St. Louis, and Kansas City markets, and large quantities of emergency milk were required. Annual fluid milk sales in these markets averaged about 90 percent of milkshed supplies during the 1943-48 period. Much lesser degrees of shortage were experienced . . . in the Boston market."[1]

In 1940, about 10 percent of the fluid cream receipts at the three markets of Boston, New York and Philadelphia came from outside sources. The proportion increased to 51 percent in 1946 and declined to 16 percent in 1949. During 1950 and 1951 cream continued to be shipped regularly to Boston and other markets. Large volumes of milk were also sent from surplus-producing areas to shortage markets, particularly in the shortage months of 1951. Many Southern markets have issued licenses to dealers in Chicago, Minnesota and Wisconsin permitting them to sell milk and cream in these markets. From October to December, 1951, Chicago dealers sold about 42,000,000 pounds of Grade-A milk in bulk to markets outside of the Chicago milkshed.

Looking ahead, consideration may well be given to the following points:

1. *Intermarket and long-distance shipments of milk should be encouraged as they increase the availability and per capita sales of this product.*

2. *Major attention should be centered upon breaking down trade barriers which now prevent the free flow of milk from some low-cost to high-cost producing areas, and upon preventing the initiation of new trade barriers.*

3. *Continued efforts should be made to make sure that only high-quality milk and cream are made available for intermarket and long-distance shipments.*

R. W. Bartlett

[1] Dairy Production and Marketing in the Northeast, issued by the Executive Committee, Northeastern Dairy Conference, August, 1950, page 32.

Footnotes for the last page:
[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.
[1] Survey of Current Business, U. S. Department of Commerce; Monthly issues. Converted from 1947-49 = 100 by multiplying by 1.9098549 for Col. 1, and 2.3854962 for Col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); Monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-14 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Survey of Current Business, average weekly earnings (U. S. Department of Labor) converted to index (1935-39 = 100) by multiplying by 4.4595077. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] All hay prices except those for 1933-39 refer to baled hay.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Director, Extension Service in Agriculture and Home Economics

Ill. 8900, 5-52 — 13,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	403	419	187	369	290	220
1951 Jan.....	220	268	261	217	378	393	181	356	284	221
Feb....	222	280	277	220	281	307	140	358	285	221
Mar....	222	280	277	224	303	376	168	362	288	222
Apr....	222	280	278	226	313	395	175	366	289	223
May...	221	276	274	226	319	390	173	368	288	222
June...	220	272	270	225	323	348	155	370	290	221
July....	218	265	269	225	398	497	221	370	286	212
Aug....	217	263	271	225	450	393	174	372	287	217
Sept....	217	262	270	225	511	394	175	373	292	218
Oct.....	217	266	272	226	655	662	293	377	292	218
Nov....	217	267	267	227	541	492	217	377	293	219
Dec....	217	266	267	227	467	383	169	379	300	219
1952 Jan.....	216	262	265	229	395	...	...	379	299	220
Feb....	215	257	261	230	303	...	...	381	298[11]	222[11]

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Apr. 1951	Current months, 1952		
	1933-39	1950	1951		Feb.	Mar.	Apr.
Corn, bu.....	$ .66	$1.35	$1.67	$1.67	$1.69	$1.68	$1.69
Oats, bu.....	.31	.76	.87	.92	.88	.90	.86
Wheat, bu.....	.86	2.02	2.24	2.26	2.31	2.30	2.28
Barley, bu.....	.62	1.20	1.36	1.40	1.37	1.37	1.35
Soybeans, bu.....	.90	2.49	2.95	3.15	2.85	2.83	2.76
Hogs, cwt.....	8.52	18.19	20.38	20.60	17.70	16.80	16.60
Beef cattle, cwt.....	7.88	24.54	30.56	31.60	29.00	28.50	29.00
Lambs, cwt.....	8.36	25.12	31.66	36.40	26.90	25.80	26.80
Milk cows, head....	58.00	216.67	267.50	265.00	280.00	270.00	270.00
Veal calves, cwt.....	8.66	27.73	33.53	34.20	32.80	32.80	32.30
Sheep, cwt.....	3.58	10.52	16.07	19.90	13.30	13.10	13.10
Butterfat, lb.....	.27	.58	.66	.64	.80	.74	.68
Milk, cwt.....	1.68	3.45	4.16	4.10	4.55	4.65	4.55
Eggs, doz.....	.19	.31	.42	.40	.30	.29	.30
Chickens, lb.....	.15	.23	.27	.32	.26	.26	.26
Wool, lb.....	.25	.53	.80	.96	.50	.48	.45
Apples, bu.....	1.08	2.24	2.04	2.00	2.40	2.40	2.40
Hay, ton[13].....	9.39	20.77	21.08	22.00	22.30	21.60	21.10

[1-12] For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | May-June, 1952 | Number 204

Articles in This Issue

TRENDS IN ILLINOIS AGRICULTURE[1] — OUR NEW FRONTIER

Introduction. For more than a century prior to 1910, the United States expanded farm production by settling new land. Then, with the coming of mechanized power farming during the first quarter of the present century, we "traded" about 50 million acres of "worn-out" land east of the Mississippi for about an equal amount of new wheat land in the Great Plains area. Some additional land was cleared, drained, or irrigated, but during the past 30 years there has been practically no change in the area of tilled land in the U. S.

The old frontier of agriculture has become virtually stationary. In future years some new land can be cleared, drained, or irrigated. But the cost of such improvements often will outweigh the gain to farmers and taxpayers — even with the increased demands for food.

We now seek a new frontier for agriculture — better use of the land now being farmed. A few facts will help to show the need for studying our future program for agriculture.

Our population has doubled since 1900. If our present rate of gain continues — 2½ million a year — there will be five or more mouths to feed in 1975 where there are four today. Since 1940 world food production is estimated to have increased by nine percent, while world popula-

[1] Summary of panel discussion, Farm and Home Week, University of Illinois, January, 1952.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

tion has increased about 12 percent. This is a real challenge for straight thinking and planning.

Total food production in the U. S. has increased 60 percent since 1920. This increase was accomplished with more food acres, larger production of food crops per acre, and increased production per animal. Much of the gain in total food production since 1920 came from a source that cannot be repeated. The displacement of horses and mules, along with reduced cotton acreage, resulted in 15 percent more land being available for food and feed crops. Without this gain in land the gain in food production per acre would not have matched our 45 percent growth in population.

New techniques in farming, coupled with the highest wages and the highest level of employment on record, have permitted us to consume 15 percent more food products per person than we did in the years 1935-39. This increase was accompanied by changing eating habits — more meat, dairy, and other animal products, and less cereal foods.

The current situation in Illinois. Since 1940 agricultural production in the United States and in Illinois has averaged more than a third higher than in the period 1935-39. Most of the displacement of horses took place before 1940. How, then, have we accomplished this increase in production? Here are eight major reasons for the change:

1. Some increased production was accomplished at the expense of our land. The fertility level has been reduced both by heavy cropping with tilled crops and by destructive erosion resulting from the cropping plan.

2. We have had excellent farming weather. The average annual rainfall at St. Louis was 39 inches for the period 1940 to 1951. In contrast, during the drouth year of 1936 there were only 26 inches of rain in that area, with an acute moisture shortage during the early growing season.

3. Acreage of intensive crops such as soybeans and wheat has been increased. In 1935, 1,509,000 acres of soybeans were harvested in Illinois, compared with an average acreage of 3,333,000 for the past ten years. Since most of the soybean oil is used directly for food, this expansion has meant a large increase in food output.

4. Better crop varieties have been introduced: hybrid corn and improved varieties of wheat, oats, and soybeans. In Illinois average yields of corn increased from 41 bushels an acre in the period 1935-39, to over 53 bushels in the past several years, largely because of hybrid corn.

5. The use of fertilizers has increased rapidly. From 1940 to 1951 the use of nitrogen fertilizer in Illinois has increased 15 times, phosphorus 12½ times, potassium 19 times, and the use of limestone has doubled.

6. Better control of insects and diseases has been accomplished with sprays, vaccines, and antibiotics. This means higher crop yields and increased efficiency in livestock production.

7. Improved feeding practices have been more widely adopted, increasing the animal gain per pound of feed fed.

8. There has been an adjustment in the growing of crops to areas best adapted to their production. This crop area shifting has taken place especially in years when crop controls were not in effect.

A forward look. At the close of 1951 a committee of the College of Agriculture made a study of the productive capacity of Illinois agriculture.[1] This study was based on an analysis of farming conditions in different parts of the state, the results obtained on the soil fields of the Department of Agronomy, trends in yields of crops, livestock production reported by the Illinois Cooperative Crop Reporting Service, and the experience of farmers. This article attempts to summarize some of the more significant aspects.

Problems involved in improving farming vary greatly from one part of Illinois to another and from one farm to another in the same community. In general, production of grain per acre in all parts of the state could be materially increased through the growing of more grass and legumes on tillable land and through the use of more commercial fertilizers. There are five general areas in the state, each of which has rather distinct farming characteristics and problems. These will be discussed.

1. **The northern one-fifth.** In the eastern part of this area dairying predominates, and there is also a heavy production of vegetable and truck crops. Mixed livestock production is found in many communities, especially in the western part of the area. In a number of counties with considerable rolling land, the growing of grasses and legumes on tillable land closely approximates the acreage recommended by the committee. In general, an increase of less than ten percent in grass and legumes is recommended on the tillable land. This area has the highest average county yields of corn, oats, and hay for the state.

2. **The area between the Mississippi and Illinois rivers in west central Illinois and including rougher areas east of the Illinois River.** This area has a large acreage of land suited to permanent pasture, and much rolling, tillable land that needs to be protected from erosion. There are also extensive areas of relatively level tillable land. An increase in grass and legumes ranging from ten to 30 percent of the total tilled land is recommended. Relatively little has been done to improve permanent pastureland. Improvement would greatly increase the carrying capacity of

[1] Members of the committee were: H. C. M. Case, chairman, F. C. Bauer, A. J. Cross, K. E. Gardner, R. C. Hay, A. A. Klingebiel, W. B. Nevens, Dwight Powell, H. G. Russell, E. L. Sauer, J. N. Spaeth, W. N. Thompson, and O. L. Whalin. Other members of the College of Agriculture staff and federal agencies were consulted and assisted with the study.

pastureland, but such a change would shift the system of farming materially toward more beef cattle or other roughage-consuming livestock. This would be emphasized still further if ten to 30 percent more of the tilled land were put into grass and legumes. Such practices, however, should add greatly to the total feed production of the area.

3. **East-central Illinois cash-grain area.** This area, consisting of about 20 counties has been the leading cash-grain area of the country, noted for the growing of corn and soybeans. During the period, 1945-49, six counties in this area averaged more than 70 percent of the tilled land in corn and soybeans. The yield of corn averages from ten to 20 percent below that of a number of northern Illinois counties. This area, under a better cropping system and the general use of needed fertilizers, might readily increase the yield of corn by 40 to 50 percent. An increase in grass and legume crops of from 10 to 30 percent of the total tilled land area, either as standover or catch crops, should materially increase the yield of grain crops. The proper use of fertilizers together with catch crops of legumes will make it unnecessary to increase the acreage of standover grass and legume crops to the full extent indicated.

4. **The claypan area of south-central Illinois.** With the adoption of mechanical farm power, improved tillage equipment, and the increased use of fertilizer, this area of about 15 counties has materially increased the production of corn and soybeans. Some of the land is being used for these crops with little attention to the use of fertilizers. Red top, formerly an important crop, has been reduced by more than 70 percent since 1940. This area particularly requires a heavy outlay of capital for soil improvements in order to bring production up to an optimum level. Rolling land is especially subject to erosion and systems of farming need to be designed to prevent harmful erosion. This should add materially to the production of grass and legumes.

5. **The more rolling southern one-fifth.** This area has an advantage over the claypan area in having better natural drainage, but presents a greater need for controlling erosion by keeping a large proportion of the land in grass and legumes. Here is a real opportunity for increased dairy and beef cattle production. Marked changes in livestock production are taking place through improved feeding practices and better selection of animals. Along with this has come marked improvement in the development of better pasture and hay land. The use of grass and legumes for silage for winter feeding is a practice that will become more popular.

New frontiers. The study emphasized that improvements in the future will come about slowly through use of the many practices mentioned, but it does not set forth as marked changes as we experienced with the development of hybrid corn.

Assuming good weather and the adoption of better practices, Illinois agriculture will do well to increase crop yields annually at the rate of 1.2 bushels of corn, .6 bushels of soybeans and wheat, and one-tenth of a ton of hay per acre over the next five to ten years. This increase must assume the availability of fertilizer and necessary machinery. It will mean greater use of fertilizers on most crops. A continued increase of perhaps one percent in dairy cattle per year may be expected, and an increased output per cow of about 60 pounds of milk per year. With more roughage, beef cattle should continue to increase in numbers, and the production of beef per cow should be greater as we gain better control of diseases and adopt improved feeding practices. The favorable experience with grass and legume silage may lead to trebling its use in the next three years. Permanent pastures will be improved slowly, but they present an opportunity for increased livestock production as the type of production changes. Methods being adopted by farmers should increase the number of pigs raised per litter from 5.8 to 6.8 with some gain in the efficient use of feed.

These expected changes in livestock production will require continued attention to improved feeding practices and the control of disease. The production for a given amount of feed is expected to increase slowly.

The conclusion of the report, then, is that production of farm products in Illinois can be increased materially, but these increases will come slowly and they will be gained only through careful attention to many good farm practices. Larger production per acre will be gained by having fewer acres in soil-depleting crops and from improved cropping systems and soil practices that will increase the total state production of grains. With these changes will come a larger production of grass and legume pasture, hay, and silage, a situation which will make possible the adaptation of more livestock production.

Since farms in the same community vary widely in productivity because of natural conditions and the way they have been handled, the program for each farm needs to be planned on the basis of its particular adaptation and the resources of the operator. H. C. M. Case

THE IDENTITY OF STOCKHOLDERS IN A FARMERS' COOPERATIVE

One of the requirements for the approximately 500 organizations incorporated under the Agricultural Cooperative Act of Illinois (1923) is that ". . . substantially all of the issued and outstanding shares of capital stock or memberships are owned, held, and controlled directly or indirectly, by producers of agricultural products." (Section 2c).

The capital stock records of a cooperative grain company which has

been in business almost 50 years were analyzed by the authors to determine the degree to which it met this requirement.

Agricultural Interests of the Stockholders

Ninety percent of the stock was owned by persons with active agricultural interests (about half were landlords), six percent by estates, and four percent by people without agricultural interests.

Agricultural interest	Number of shareholders	Number of shares owned	Average	Percent of total shares owned
Owner-operators	72	468	6.5	34.8
Tenant-operators	35	161	4.6	12.0
Landlords	69	585	8.5	45.5
Estates	6	78	13.0	5.8
No agricultural interest	5	52	10.4	3.9
Total	187	1,344	7.2	100.0

About two-thirds of the landlords were retired farmers; the remaining third had varied business interests, mostly other than agricultural.

Most of the shares were owned by stockholders residing within the trade area of the cooperative. Of the 18 nonresident stockholders, 17 were landlords and one had no agricultural interest. Twelve of these nonresidents were in nonagricultural businesses, two were in businesses dealing with farmers, and four were retired. The nonresident stock-

	Number of shareholders	Number of shares owned	Average	Percent of total shares
Residents	163	1,095	6.7	82.1
Nonresidents	18	171	9.5	12.1
Estates	6	78	13.0	5.8
Total	187	1,344	7.2	100.0

holders had larger average holdings of stock than residents. Nearly all of them maintained contact with the company by returning their proxy votes.

Distribution of Shares Among Stockholders

The par value of stock in this company is $25 a share. The company was reorganized in 1931 to conform with provisions of the Agricultural Cooperative Act (1923) and the by-laws now limit stock ownership to

20 shares per shareholder; a husband and wife may each hold 20 shares, so the limit per family is 40 shares. One shareholder with more than 20 shares had acquired them before the limit on shares was established.

About 30 percent of the stockholders owned 70 percent of the stock outstanding. Eleven stockholders owned a single share; 23 stockholders owned 20 shares. Among stockholders with 13 or more shares, the percentage distribution was: landlords, 54; owner-operators, 25; estates, 9; and tenants and others, each 6.

Number of shares	Number of shareholders in each group	Total number of shares owned by each group	Total value of shares owned by each group
1–4	101	252	$ 6,300
5–8	28	182	4,550
9–12	23	236	5,900
13–16	8	122	3,050
17–20	26	514	12,850
21 or more	1	38	950
Total	187	1,344	$33,600

Date When Outstanding Stock Was Acquired

This cooperative has been more successful than many in getting active patrons to finance needed capital additions. Over three-fourths of the stock has been issued since January 1, 1944, and less than seven percent

Year	Number of shares acquired in each period	Percent of total shares acquired in each period
Before 1932	90	6.7
1932–1935	126	9.4
1936–1939	24	1.8
1940–1943	70	5.2
1944–1947	528	39.3
1948–1951	506	37.6
Total	1,344	100.0

of the outstanding stock was acquired before reorganization. Owner-operators and tenants acquired 50 percent of the outstanding stock issued since 1944, compared to 37 percent of that issued prior to 1944; estates owned three and 16 percent, respectively, of that issued after and before January 1, 1944. The newer issues were offered without restriction, but they resulted in a wider distribution of stock among active farmers.

Amount of Patronage by Stockholders

The stockholders of the cooperative were its largest and steadiest patrons. Of 177 stockholders (does not include ten shareholders whose husbands were also shareholders) in 1951, 159 had patronized the cooperative at some time in the 15-year period, 1936-50. Eighteen had not patronized at any time, and seven others had not patronized the cooperative within the last three years. Thus 25 (or 15 percent) of the present stockholders were not currently active patrons.

The 159 stockholders who patronized represented 6.3 percent of the cooperative's 2,516 total patrons over the 15-year period, 1936-50, but they accounted for 39.9 percent of its total business (based on patronage refunds paid). The average amount of patronage by stockholders was larger than that of 90 percent of the cooperative's patrons.

Continuity of Stockholder Patronage

The patrons who were stockholders had done business with the association much longer than other patrons. The average patronage of all patrons was 3.4 years; half of the patrons in the period 1936-1950 had been patrons only two years. In contrast, half of the stockholder patrons had been patrons 14 of the 15 years, and all stockholder patrons averaged 10.7 years of patronage. Many of the stockholders who acquired stock after 1945 had been continuous patrons of the association for many years.

Lessons from This Study

The association studied has been successful. Its net worth increased from $2,500 in 1931 to almost $150,000 in December, 1950. It has acquired two additional elevators and has developed a plant food and feed business. The preceding analysis has disclosed that:

1. A high percent of the shareholders have an active agricultural interest, and they have been steady patrons.
2. Most of the shareholders are residents in the community.
3. A high percent of the outstanding stock has been issued in recent years; most of this was acquired by active producers of agricultural products.

This association has adhered to the principles that producers of farm products should retain control of the association and that users of a cooperative should provide its capital. The stockholders have actually furnished more capital in undistributed savings through their extensive continuous patronage than in direct capital investments in stock; in addition, patrons who were not stockholders have also supplied a significant amount of capital in the form of undistributed savings.

While a fairly small percent of the stock of this association was held

by nonproducers, such a record cannot be duplicated by many other cooperatives. Many associations need to adopt definite policies in: (1) redeeming the stock of those who are no longer producers, and (2) in providing some means whereby current patrons who are not stockholders can acquire some evidence of ownership in the business (especially with respect to their contributions in undivided earnings). The latter have demonstrated that they will invest in the association if encouraged to do so. Firms which have not issued stock for many years find an increasing proportion owned by nonproducers; they may also lose potential patrons of the business.

Some cooperatives have solved both of the above problems by adopting a revolving method of financing. In this plan part of the current earnings are withheld and used to refund earnings withheld in earlier years, or to purchase part of the stock outstanding (oldest first). If large increases in capital are desirable, they could still be secured by issuing more stock.

C. P. Schumaier and R. J. Mutti

ECONOMIC PHILOSOPHY AS APPLIED TO AGRICULTURE

Do you believe in:

Price ceilings?
Price supports?
Acreage controls?
Government subsidies to farmers?
Cooperative purchasing or marketing?
Government ownership of productive resources?
Private ownership?
Free competition?
Selling farm products abroad at one price and to U. S. consumers at a higher price?
Is maximum cash income a desirable goal?

It is our privilege to answer these questions for ourselves but our answers depend on our philosophy or point of view.

The Italian philosopher Croce distinguished between four expressions of the human spirit: beauty, truth, utility, and goodness. The disciplines most directly related to these dominant interests of all of us are: esthetics, logical disciplines, economics, and ethics.

Many of us think only of ethics when we think of philosophy but philosophy refers to the knowledge of phenomena as explained by, and resolved into, causes and reasons, powers and laws. So we have philosophy of art, of morals, of education, of religion, of history, and of economics.

But man is not just an esthetic man who devotes all his time and energy to the study and appreciation of beauty, nor just a moral man who contemplates only his ethical obligations to his fellow men, nor just a religious man whose sole interest is in his relationship to Deity, nor exclusively an economic man whose sole interest is in acquiring and using material goods. He is a combination of all of these. Therefore we cannot isolate economic philosophy, representing utility, from man's philosophy of beauty, truth, and goodness.

Philosophy is not stationary. It changes as man's environment changes. There have been many philosophies down through the ages. There will be many more. That statement applies to all kinds of philosophies. To assume that a given philosophy or attitude or body of knowledge is the last word on any subject leads to stagnation and discourages the spirit of adventure, the search for new facts, new relationships, and new discoveries. On the other hand, to assume that no esthetic, ethical, or economic concept has any value because it may be replaced tomorrow is also very discouraging and leads to a feeling of insecurity, confusion, and frustration. Rather than to study and think diligently for solutions to problems we may prefer to accept dogmas which someone assures us are "everlasting." But at least in the fields of the natural sciences we have found that our former beliefs were unfounded or were only half-truths which had to be modified. In the social sciences and humanities we have made less progress, but we are living in a dynamic period and the next generation is bound to have different concepts and philosophies than we have today.

The economic environment has changed. Economic philosophy has changed through the ages. In the United States in the early days, the individual was forced to be self-reliant. He was most frequently his own employer. His economic welfare depended largely upon his ability to produce. He developed self-reliance and an independent attitude. In some areas the dependence of the producer on export outlets for his produce and on imports for some producer and consumer goods was apparent before the colonies became a nation. But among farmers the feeling of independence was strong and was sustained by the frontier conditions as the Midwest and West were settled.

That spirit of individual self-reliance was conducive to maximum output as production was then organized. The farmer may have earned his bread by the sweat of his brow, but at least only nature and his skill and energy set limits on his accomplishments. To be sure a crop failure might cause him to lose his equity in his farm but that was caused by an act of God over which he had no control. He hoped for better luck next time. If there was a financial panic in the cities, the farmers could still

subsist on what they produced on the farm. They hadn't many debts, except the mortgages on their farms, because they didn't buy much and couldn't obtain cash by borrowing if they wished. Most of them could survive a financial panic. They were hard hit by low prices caused by the great expansion in output, but there wasn't anything to do about it except to go on producing all they could and to hope that the demand for their products would improve. The rapid rise in population and urbanization brought about the improvement in demand.

Farmers in the United States in the 1800's were affected by monetary developments just as they are today. In periods of inflationary credit expansion, paper money expansion, and wars, prices rose. That made it easier to pay off the mortgages. The long periods of falling prices associated with increasing world demand for gold at a faster rate than it was produced and associated with the very rapid increase in output of goods hit the farmer too. History records some of his political attempts to improve his lot by raising prices. The seeds of a philosophy of government interference with the economic machine as it affected U. S. farmers were sown in the fourth quarter of the nineteenth century. But the interference was to be general in scope and no interference with the activity of individual farmers was considered.

As the decades passed, the nation became more thickly populated. Large cities sprang up. Farmers' neighbors became more numerous. We approached the stage in which the division of labor in production and distribution increased the economic interdependence of all groups in society. We had to choose whether to fight other groups or work with them. Marx and Engel, in Europe, emphasized the inevitability of class struggle based partly on the idea that employers and property owners exploited labor. Labor unions were organized to fight organized employers. Farmers were organized to fight for their rights. By this means a sort of cooperation resulted, but it was largely forced cooperation. The emphasis on the individual had shifted somewhat to emphasis on group action. Still farmers remained individualists. By the sweat of the brow they earned their bread and all they wished from labor and business was fair play. They couldn't see much good in labor unions; they fought monopolies and discriminatory practices. They feared depressions but didn't understand their causes.

People are more interdependent. There have been rapid improvements in technology in industry, in transportation, and in farming. But some of the greatest improvements have been in communications and these have tremendously important implications. For thousands of years man has been a social animal but his contacts, for the most part, have been limited by physical barriers and distance. In an age when messages

can be sent around the world in the space of seconds and when aircraft travel faster than sound, the whole earth has the possibility of becoming one society. At least developments in one part of the world can have a significant impact on a large fraction of the rest of the world within the time interval of minutes. Can we expect economic philosophy to remain static in face of such dynamic changes in our environments?

With the growth of government activities for purposes of aggression or defense, governments become dominant buyers within the nation and from other nations. If our political philosophy permits or encourages more centralization of power in the central government, our economic philosophy must be adjusted to fit into that environment. The philosophy of extreme nationalism leads to strong central governments with all that that implies in the way of economic controls.

Extreme specialization of labor has made possible maximum output of goods. But such a system requires the maintenance of an operating balance within the economy. A disturbance in one sector tends to upset the whole economy. Only a relatively few families are self-sufficient. The rest depend upon the willingness of someone to employ them. But the economy has such an intricate organization that one individual or several hundred individuals may not be capable of getting the economy back into balance once it has got out of balance. When the economy is out of balance unemployment leads to economic distress, to economic disaster for individual families, while the agents of production stand idle for want of operators.

We call on the central government for help. The income of farmers depends directly on the income of the rest of society, so farmers' incomes also decline in periods of depression even though they continue to produce. Everyone feels helpless. They see no justification for the misery. Regardless of whom they blame for what has happened, they look to their governments for relief, preferably by getting the wheels of industry working again. In times of nationwide economic distress we, as individuals, temporarily lose our self-reliance and individualism and delegate power to the central government because we ask the central government to do something which we individually appear incapable of doing and which the government cannot do without more power and authority.

As soon as prosperity arrives we may wish to return to the former ways of doing business: remove government restrictions on production and trade; do away with bureaucracy; possibly give up some subsidies; certainly take the government out of business which private industry can do. But even in prosperity we remember that there was once a serious depression. We are afraid of a repeat performance. So we say: "Maybe we had better retain certain safeguards so we won't be hurt so badly if

there is another depression; maybe if we have a strong central government and give it enough control over finances there need not be another depression; anyhow, maybe we need a strong central government for defense purposes."

Steps to state socialism, then dictatorship. We are told that competition leads to private monopolies as the result of the large concerns gobbling up the small ones or driving them out of business. Maybe someone convinces us that the physical resources of the nation are being used for the benefit of a few. Maybe we are convinced that the state should own the resources and divide the benefits among all of us. Then we have state socialism. What happens under state socialism? The ability to obtain great wealth is greatly restricted. Large incomes result from three sources: (1) the exploitation of rich natural resources to which the individual obtained title before their value was widely known; (2) the exploitation of a personal talent which is exceptional and in small supply relative to the demand; and (3) the ability to obtain pay commensurate with the value added by the optimum combination of large quantities of land, labor, and capital, i.e., by management of very large enterprises. Under state socialism it probably will not be possible to obtain great wealth from sources one and three. Neither will the officers of the state have as much incentive as managers of private business have and they may fail to use incentive systems for their employees. Expansion of output and the adoption of improved practices may not occur because the income incentive is lacking.

When political leaders obtain control over the economy as they do under state socialism, they obtain the authority to hire and fire. The promise of employment or threat of unemployment can be used to maintain themselves in power. Thus the next step from state socialism is dictatorship. With the political dictatorship goes economic dictatorship. The dictator may be benevolent and wise, or otherwise. But the economic philosophy of free competition has been supplanted by the economic philosophy of no competition. The transition probably was accompanied by some such slogan as "the greatest good for the greatest number."

We pointed out earlier that the whole world is in a state of flux. Scientists are making new discoveries and new applications of old discoveries. Nationalism is riding a ground swell, if not a mountainous wave, in Asia and Africa. Strong nations are becoming weak and weak nations strong. Discontent with a bare existence is spreading faster than solutions can be found for the economic difficulties. Improvements in communications have been so great that physical barriers no longer permit advanced nations to be isolated from the affairs of other nations. The machine technology favors extreme specialization of labor which increases

the interdependence of all people. It makes the economy more vulnerable to economic disturbances. We see a shift toward dependence on strong governments with the concurrent loss of individual freedoms. Does that mean that there cannot be any valid, enduring economic philosophy? If people have no philosophy they are like a ship without a rudder. They drift; they are easily led first in one direction and then in another as the current changes; they may be utterly confused. Everyone needs a philosophy to guide his life: everyone needs an economic philosophy. What kind of philosophy is justified under present circumstances?

Does our economic philosophy agree with our political and ethical philosophy? First let me repeat that our various philosophies — philosophy of ethics, esthetics, religion, education, economics — must necessarily be related. All these philosophies must be combined by each individual. Other individuals may have different philosophies and we must learn to be tolerant of their philosophies. But there should be some way to measure the relative values of various philosophies. Those values will be related to our goals.

What are farmers' primary economic interests: what are their goals? Probably most farmers would say that they seek to be prosperous, meaning that they desire a high net income. But they seek to be permanently prosperous; not prosperous this year only to be faced with an economic catastrophe next year. So they seek some economic security. But some fraction of income is usually a payment for risk taking. The greater the economic security the less the payment for risk. Maybe farmers can eat their cake and have it too. Maybe they can take full advantage of large output and high prices in times of prosperity and get government price or income supports in times of depression.

It could be argued that, after all, the process of bolstering the economy by supporting farm product prices in a depression would seem to be the desirable thing to do. It wouldn't hurt anyone because the government would borrow the money from the banking system. That would be inflationary, but inflation is what we need to get us out of a depression. To further protect farmers, it could be argued, we should dump the government-owned produce on foreign markets because to return them to the domestic market would hold prices down later. Maybe we are not particularly interested in whether such a procedure will injure farmers in the importing country or in other exporting countries. We are not too much interested in the fact that the federal government takes a loss on the transaction. We are not too concerned that the federal debt has increased. What harm can a few more million do to a debt which is in excess of a quarter of a trillion dollars? (For that matter, how much is a trillion dollars?) As to repayment of the federal debt, taxation in excess

of government expenditures tends to be deflationary, so maybe we should not pay off the debt. As farmers, maybe we don't worry about the fact that consumers in the United States have to pay higher prices for food in depression times because of government price supports. But economic philosophy cannot be entirely separated from ethics.

Who shall determine economic policies for the farmers of the United States? In a democracy, national policies are presumed to be determined by the majority of all the voters through their elected representatives. Here we get into political philosophy. Are we satisfied with our form of government? If so, then it is our duty and privilege to insist that national economic policies affecting agriculture be determined by the Congress and not by administrative officers.

Few, if any, national economic policies fail to affect the financial welfare of farmers. Foreign trade, tariff rates, foreign exchange rates, loans and gifts to foreign countries, the price of gold, the fiscal policy of the government, monetary policies of the central bank and commercial banks, defense efforts such as stockpiling strategic materials, employee-employer relations, direct price and wage controls, allocation of scarce materials and other forms of rationing, federal subsidies to industry, to communication services, agriculture, or consumers — all these and many more processes are of economic interest to the farmer.

The farmer must have a philosophy by which to judge the economic desirability of all procedures which affect his income, but he must also have a political philosophy which will suggest who or by what agency they shall be considered and approved or disapproved, and ethical standards by which to judge their desirability in terms of his relationships to his fellow men. Probably we shall not go far wrong if each individual examines, without mental equivocation, every important economic issue to see whether it agrees with his philosophy of ethics and his philosophy of government.

G. L. JORDAN

Footnotes for the last page:

[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.

[1] Survey of Current Business, U. S. Department of Commerce; Monthly issues. Converted from 1947-49 = 100 by multiplying by 1.9098549 for Col. 1, and 2.3854962 for Col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); Monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-14 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Survey of Current Business, average weekly earnings (U. S. Department of Labor) converted to index (1935-39 = 100) by multiplying by 4.4595077. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] All hay prices except those for 1933-39 refer to baled hay.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 6-52—11,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	403	419	187	369	290	220
1951 Feb....	222	280	277	220	283	307	140	358	285	221
Mar....	222	280	277	224	303	376	168	362	288	222
Apr....	222	280	277	226	313	395	175	366	289	223
May...	221	276	274	226	319	390	173	368	288	222
June...	220	272	270	225	323	348	155	370	290	221
July....	218	265	269	225	398	497	221	370	286	212
Aug....	217	263	271	225	450	393	174	372	287	217
Sept....	217	262	270	225	511	394	175	373	292	218
Oct.....	217	266	272	226	655	662	293	377	292	218
Nov....	217	267	267	227	541	492	217	377	293	219
Dec....	217	266	267	227	467	383	169	379	300	218
1952 Jan.....	216	262	265	229	395	404	176	379	299	221
Feb....	215	257	261	230	303	325	141	382	299	222[11]
Mar....	214	258	256	230	308	...	...	382	300[11]	220[11]

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			May 1951	Current months, 1952		
	1933-39	1950	1951		Mar.	Apr.	May
Corn, bu.....	$ .66	$1.35	$1.67	$1.67	$1.68	$1.69	$1.71
Oats, bu.....	.31	.76	.87	.88	.90	.86	.80
Wheat, bu.....	.86	2.02	2.24	2.22	2.30	2.28	2.21
Barley, bu.....	.62	1.20	1.36	1.40	1.37	1.35	1.30
Soybeans, bu.....	.90	2.49	2.95	3.15	2.83	2.76	2.81
Hogs, cwt.....	8.52	18.19	20.38	20.50	16.80	16.60	20.20
Beef cattle, cwt.....	7.88	24.54	30.65	32.00	28.50	29.00	29.20
Lambs, cwt.....	8.36	25.12	31.66	33.50	25.80	26.80	26.90
Milk cows, head ...	58.00	216.67	267.50	270.00	270.00	270.00	270.00
Veal calves, cwt.....	8.66	27.73	33.62	35.20	32.80	32.30	32.30
Sheep, cwt.....	3.58	10.52	16.07	18.40	13.10	13.10	12.00
Butterfat, lb.....	.27	.58	.66	.66	.74	.68	.66
Milk, cwt.....	1.68	3.45	4.16	3.90	4.65	4.25	4.00
Eggs, doz.....	.19	.31	.42	.41	.29	.30	.29
Chickens, lb.....	.15	.23	.27	.30	.26	.26	.24
Wool, lb.....	.25	.53	.80	1.08	.48	.45	.45
Apples, bu.....	1.08	2.24	2.04	1.95	2.40	2.40	2.40
Hay, ton[13].....	9.39	20.77	21.08	21.70	21.60	21.10	20.40

[1-13] For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the Unit States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 19

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | July, 1952 | Number 205

Articles in This Issue

AGRICULTURE IN ILLINOIS[1]

Illinois ranks high as an agricultural state. It stands fourth among the states in the acreage of crops grown, third in the value of crops marketed, and second in the marketing of livestock and livestock products. Climatic conditions vary widely throughout the state. The average productivity of Illinois soils is high, although wide differences exist in this respect, some land having low agricultural value and some being highly productive.

Illinois is favorably located from the standpoint of markets for farm products. The densely populated area extending east of the Mississippi River and north of a line running east from the southern tip of Illinois comprises less than one-sixth of the area of the country but includes more than half its population. A network of hard roads, railroads, and waterways provides excellent transportation facilities to the interior markets of Chicago and St. Louis and to distant markets. Large quantities of farm products are consumed within the state by the population of 8.7 millions, less than one-tenth of whom live on farms.

The state lies largely within the region commonly known as the Corn Belt. Combinations of the major crops — corn, soybeans, oats, wheat, and hay — and of livestock — hogs, beef cattle, dairy cattle — form the basis for the organization of farms in much of the state. The relative importance of these products varies greatly from one part of the state to another, and in some localities other products may outrank those named. These differences arise chiefly because of the efforts of farmers to adapt their production to the natural conditions of soils and climate

[1] Most of the data in this discussion are based upon the 1950 Census of Agriculture.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

and to the economic conditions of markets, prices, competition with other areas, and costs of production.

During the last decade farmers in Illinois have generally enjoyed good incomes. Production both of crops and livestock has been at high levels, prices have been favorable and the increased use of capital has added greatly to the production per acre. During this period, however, and especially in the years since World War II, costs of production have advanced rapidly and have held profits in check.

Natural Conditions

Area and topography. Illinois covers an area of 35,798,400 acres or 55,935 square miles. The state extends 385 miles from north to south, and slightly more than 200 miles from east to west. The land surface was shaped by glaciers which in remote times covered most of the state, and by the subsequent action of wind and streams. The last glaciers that covered the northern two-thirds of the state came at a much later date than those that covered the southern one-third. Most of the soils have developed from the loess that was laid down over the glacial drift left by these ice sheets. Much variation occurs in the land surface from nearly level prairie land where artificial drainage is necessary, to rough, unglaciated, hilly areas too steep for cultivation and subject to serious erosion, to river bottomland subject to overflow unless protected. Variations in altitude range from less than 300 feet above sea level to nearly 1,250 feet with seven-eighths of the land area between 400 and 800 feet.

Drainage. Ninety-nine percent of the land area of Illinois is drained by the Mississippi River system — 42 percent by the Illinois River or its tributaries, 25 percent by small streams flowing into the Mississippi, 17 percent by the Wabash River, 10 percent by the Kaskaskia River, and 5 percent by the Ohio River. One percent is drained by streams flowing into Lake Michigan. Natural drainage is supplemented by open ditches and tile drains in flat areas with permeable soils; in flat areas with tight clay subsoils, however, drainage is an unsolved problem.

Soils. As indicated above most Illinois soils developed from glacial drift and subsequent deposits of loess. Conditions, however, differed widely as a result of differences in climate, vegetation, topography and drainage, parent materials, and the length of time through which the weathering forces have been acting. These conditions have resulted in many soil types. The Department of Agronomy has mapped nearly 300 different soil types.[1] These have been grouped into 26 soil association groups based upon topography and slope, surface color, subsoil develop-

[1] AG 1443, Department of Agronomy, Illinois Agricultural Experiment Station, 1950.

ment, and dominant parent material. A detailed discussion of soil association groups or of soil types is unnecessary here. In general, the dark colored soils which cover about half the state, developed in prairie or grassland areas. These predominate in the central and northern parts of the state. The lighter colored soils developed under timber cover and are most prevalent in the southern half of Illinois and along streams. Because they are younger, the light colored soils of northern Illinois are more productive than those in southern Illinois. The differences in adaptability and productivity of Illinois soils have been a major influence in shaping the state's agricultural pattern.

Climate. Illinois has, on the average, hot summers, cool to cold winters, and rather abundant precipitation throughout the year with a high degree of reliability from year to year.[1] In northern Illinois, outside Chicago, the average frost-free period ranges from 150 to 173 days; in central Illinois, 168 to 190 days; and in southern Illinois, 185 to 213 days.

Average annual rainfall is heaviest in extreme southern Illinois where it measures 44 to 46 inches. It decreases from south to north irregularly to 30 to 34 inches at the northern boundary. In nearly all the state the maximum precipitation occurs during the growing season, April to September. Although dry and wet periods occur they are not regarded as frequent or extreme. Snowfall increases from just under 10 inches in the extreme south to more than 35 inches in the northwestern part.

Land values. The average value per acre of farm land and buildings has increased from the depression low point of $69.67 in 1935 to $174.15 in 1950. Land values vary widely from one area of the state to another. They are lowest in southern Illinois in which the average acre value was less than $75 in 20 counties, and highest in central and northern Illinois, where it exceeded $275 in nine counties. (Fig. 1.) Three of these counties are in the Chicago metropolitan area, and the other six in the highly fertile cash-grain area of east-central Illinois. The current selling price is the highest ever experienced, exceeding $500 per acre for many of the better farms. The value of land and buildings per farm reflects both acre values and size of farm; it ranged from $5,069 to $80,428.

Size of farms. Illinois in 1950 had 195,268 farms. The average size of farms has increased and the number has decreased rather steadily over the past four decades. The average size in 1950 was 158.6 acres. This increase in size is largely the result of mechanization which enables one man to operate more acres than formerly. It is natural, therefore, that the larger farms are located on the more productive, nearly level land where mechanized equipment can be used to the greatest advantage. (Fig. 1.)

[1] Illinois Agricultural Experiment Station Bulletin 532, page 109.

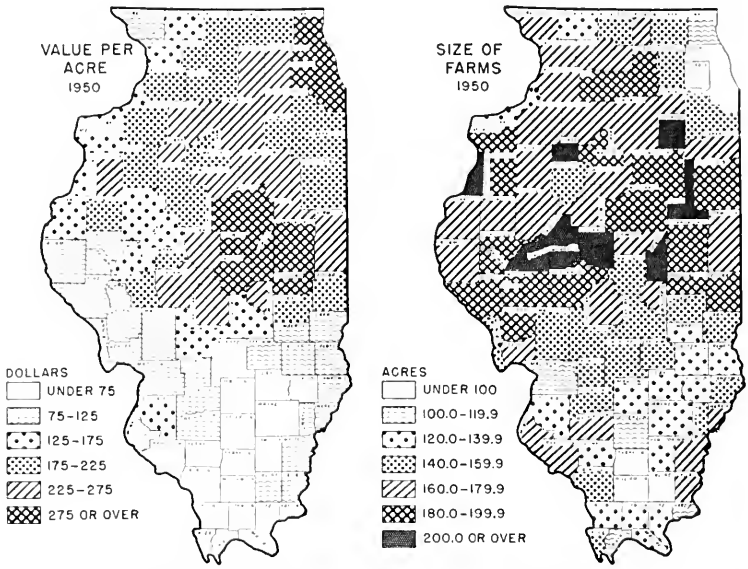


FIG. 1. VALUE OF FARM LAND AND BUILDINGS PER ACRE, AND SIZE OF FARMS IN ILLINOIS, 1950

Acre values are highest in east-central Illinois and counties adjacent to Chicago. Farms are largest in the central part of the state where land values are relatively high and natural conditions are adapted to extensive methods of farming.

Economic Forces Affecting Agriculture

Illinois is important as an industrial as well as an agricultural state. Of the total population, 77.6 percent is urban, affording a nearby market for food products. Manufacturing, food processing, and other industries provide both employment for city dwellers and outlets for farm products. Transportation facilities are adequate.

Ample sources of capital for farming purposes are available. During recent years the capital requirements in farming have expanded greatly, reflecting the higher price levels of land and farm equipment, and the substitution of more capital for labor as a means of increasing output.

During and since World War II farm labor has been in short supply. The reduction in number of farm workers because of service in the armed forces and because of shifting to industrial work in response to the high rate of industrial production and high wages has necessitated much higher wages, improved living conditions, and increased efficiency of workers remaining on farms.

Farm ownership and tenancy. Forty-five percent of the farms in Illinois were owner-operated in 1950; 35 percent consisted entirely of rented land; 20 percent were rented in part and owned in part by the operator; and less than half of one percent were operated by manager

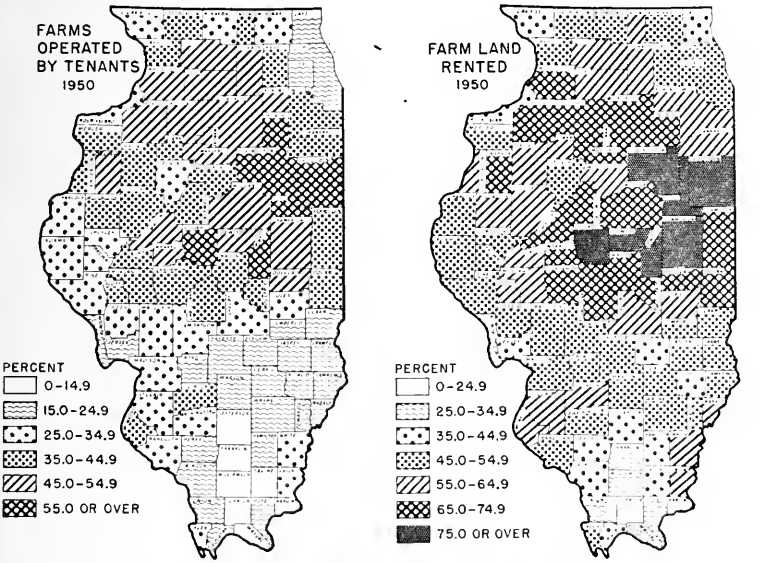


FIG. 2. FARMS OPERATED BY TENANTS AND FARM LAND RENTED FROM OTHERS BY TENANT AND PART-OWNER OPERATORS, 1950

The largest percentage of tenant farms is found in the east-central part of the state. The percentage of farm land rented gives a more accurate picture because tenant farms are larger than those operated by owners, and part-owners also rent land.

The distribution of rented farms varies greatly. (Fig. 2.) In most counties in the southern third of the state, less than one-fourth of the farms are tenant operated. On the nearly level and highly-productive soils of east-central and north-central Illinois the proportion of tenancy quite generally runs from 45 to 55 percent, and in six counties exceeds the latter figure.

When compared with previous Census periods these figures indicate an increase in the proportion of full owners and a decrease in that of tenants, and suggest an increased equity of owner-operators. Further examination, however, reveals that the increase of owner-operators has taken place on farms of less than average size and that tenant holdings, though fewer in number, have increased in size. Moreover, the proportion of part owners has increased. The proportion of the farm land rented by operators of the two groups, tenants and part owners, decreased only slightly, from 58.2 percent in 1940 to 57.7 percent in 1950 for the state. In seven counties in east-central Illinois, the proportion of rented land exceeded 75 percent. (Fig. 2.) Because the highest proportions of rented land are in areas of greatest increase in acre values, it is estimated that the proportion of farm real estate values rented is greater than in 1940.[1]

[1] C. L. Stewart and F. E. Justus, Are Illinois Farm Tenants Fading Away? *Illinois Farm Economics,* November-December, 1951.

Utilization of land. Of the total land in Illinois 86.5 percent or 30,978,495 acres was included in farms in the 1950 federal Census. The remaining 13.5 percent was occupied by cities, railroads, roads, or public institutions; was used for industrial purposes or for recreational areas; or was too rough and unproductive for farming.

Of the land in farms in 1949, 77.3 percent was classed as tillable, either as cropland or tillable pasture; 13.9 percent as untillable pasture, either open or woodlands; 3.3 percent as unpastured woodlands; and 5.5 percent as "other land," including wasteland, building lots, and roadways.

Field Crops

The major field crops of Illinois are corn, oats, soybeans, wheat, and hay. The distribution of the grain crops is shown in Fig. 3. Many minor crops are grown, some of which are important in local areas, but only five had acreages of 40,000 or more in 1949. Total acreages of the major and leading minor crops follow:

Major crops	*Acres*	*Minor crops*	*Acres*
Corn	9,112,343	Red clover seed	159,140
Oats	3,708,913	Redtop seed	74,358
Soybeans	3,287,341	Sweet corn	66,926
Wheat	1,849,248	Rye	53,293
Hay	2,010,018	Cowpeas	49,668

As the above figures show, corn is the most important crop. While it is grown in all parts of the state its greatest concentration is on the fertile soils of the central and northern areas. In the east-central area a large proportion of the crop is sold as a cash crop. In the western and northern parts of the state where livestock numbers are high, corn is largely used locally for feed.

The acreage of oats has been considerably reduced with the decrease in numbers of horses. Oats are still grown extensively in the central and especially in the northern counties where climate and soils are more favorable. They provide a small-grain crop in the rotation as well as a nurse crop for legume and grass seedings. They are utilized both as a feed and cash crop.

The acreage of soybeans was increased markedly during the war years in response to the demand for vegetable oils and protein feeds. This crop has proven both popular and profitable, and Illinois has become the leading state in soybean production. Most of the production is centered in a belt about 150 miles wide extending across the central and south-central parts of the state. The crop is used almost entirely as a cash crop.

The acreage of winter wheat has declined somewhat with the expansion in soybeans. The distribution of wheat is rather general in the central

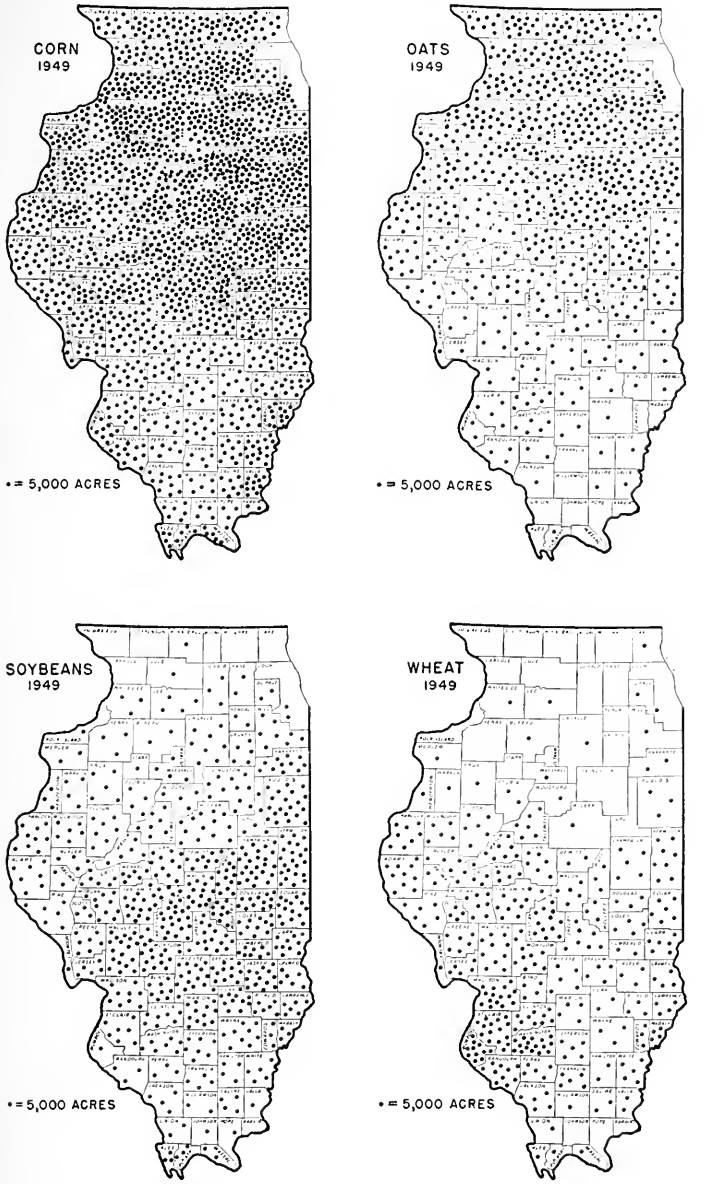


FIG. 3. ACREAGES OF CORN, OATS, SOYBEANS, AND WHEAT

Corn is grown throughout the state with the heaviest production in the east and north-central parts. Oats are important in the northern two-thirds of the state. Soybeans are grown most extensively in the central and south-central parts. Wheat is an important crop in central Illinois, in several counties adjacent to St. Louis, and in the Wabash River valley.

and south-central parts with the greatest emphasis in several counties in the St. Louis area, and a smaller area adjacent to the Wabash River. More than 99 percent is winter wheat, with hard winter wheats generally grown in the central area and soft winter wheats in the southern part.

Alfalfa is the leading hay crop, accounting for 43 percent of the hay acreage. Clover or timothy makes up 42 percent; lespedeza, 8 percent; and other hays, 7 percent.

Vegetables harvested for sale in 1949 were grown on 130,260 acres, about half of which was sweet corn. Most of this production is in the northern third of the state or adjacent to cities. Vegetables to be marketed fresh are centered rather close to large markets, while those for canning or freezing are more widely distributed.

Tree fruits are important in the southern and western parts of the state. Apple trees make up 45 percent of the 3.6 million fruit trees of all ages; peach trees, 42 percent, with pears, cherries, plums and prunes, and apricots making up the remaining 15 percent.

Livestock and Livestock Products

Cattle. Illinois had 2.9 million cattle and calves listed in the 1950 Census. They were classified as follows: dairy cows, 31 percent; beef cows, 12 percent; steers and bulls, 24 percent; heifers, 21 percent; and calves, 12 percent.

Dairy cows are widely distributed over the state with the heaviest concentrations in the northern and northeastern counties which comprise the Chicago milkshed, and in southwestern and south-central counties which supply a large part of the St. Louis market. (Fig. 4.) In the Chicago area milk sales in each of seven counties exceeded 100 million pounds, and in five other counties exceeded 75 million pounds per county. In the St. Louis area dairying is less intensive; sales of milk in each of eight counties exceeded 40 million pounds. The heaviest sales of butterfat as cream, however, were almost wholly in counties outside the areas which market large quantities of whole milk.

Beef production in Illinois is of three kinds: (1) keeping herds of beef cows to produce calves to be fed out for market; (2) the feeding of steers and heifers most of which are shipped in from the range states of the west and southwest; and (3) calves and other animals discarded from dairy herds. Beef herds are most numerous in west-central Illinois where rolling land necessitates considerable pastureland, and where grain supplies are ample for feeding. (Fig. 4.) The area which feeds purchased feeder cattle is most heavily concentrated west and north of the Illinois River extending up to the northern tier of counties. The beef produced as a by-product of dairy production centers in the dairy areas.

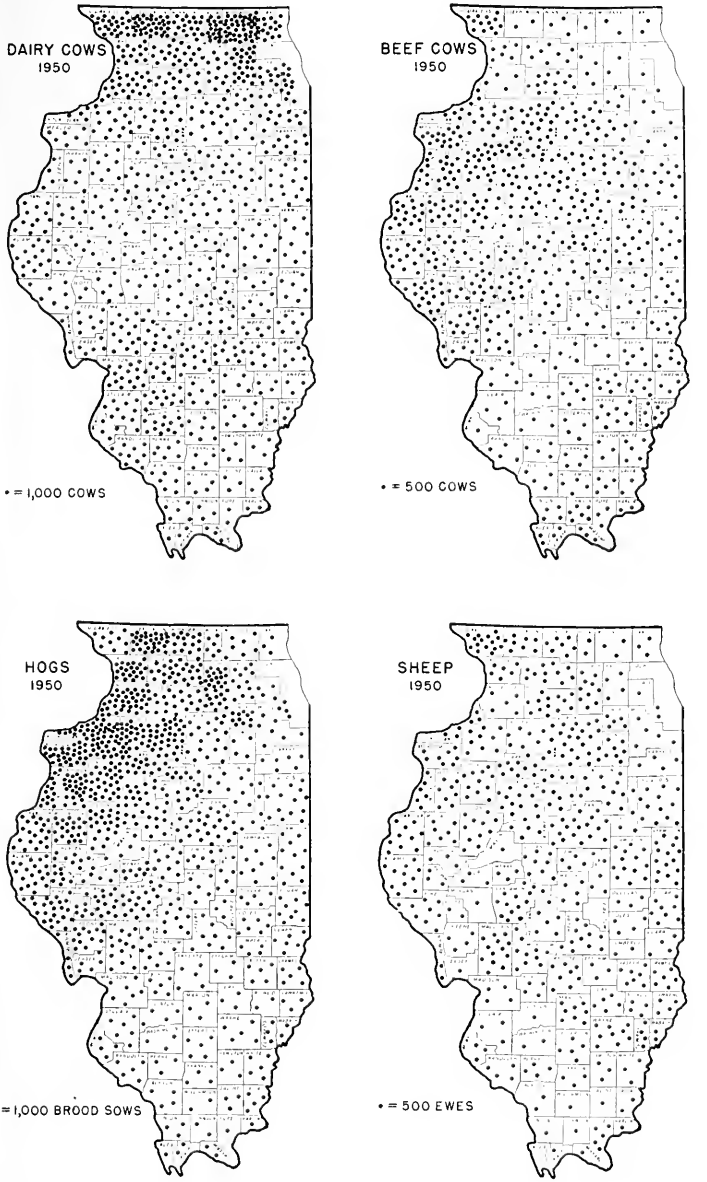


FIG. 4. DISTRIBUTION OF DAIRY COWS, BEEF COWS, HOGS, AND SHEEP

The distribution of dairy cows and beef cows is shown in the upper two maps. The distribution of hogs and sheep in Illinois in 1950 is shown in the lower maps.

Hogs. Illinois ranks second among the states in hog production. From the standpoint of income hogs are the most important type of livestock on Illinois farms. They are distributed in considerable numbers over the area of heavy corn production, since corn is the principal feed used. The heaviest concentration is west and north of the Illinois River, where hog production and beef production are often combined on the same farms. (Fig. 4.) Hogs also fit in well with dairy production especially when cream rather than whole milk is marketed. Pigs usually are raised and finished for market on the same farms, although some feeder pigs from southern Illinois or from areas outside the state are fed out in the areas of heavy corn production.

Sheep. Sheep are a minor enterprise on Illinois farms, less than 11 percent of farms reporting them, and flocks are usually quite small in size. Outside the intensive dairy areas and the southern counties, sheep are rather evenly distributed throughout the state.

Poultry. Chickens, four months of age or older, were reported on 83 percent of Illinois farms. Income from chickens and eggs made up 11 percent of sales of all livestock and livestock products. While poultry is widely distributed it is most important in south-central Illinois. Not only are flocks larger than in other areas, but they represent a higher proportion of the farm income.

The foregoing brief discussion of major crops and species of livestock indicates that conditions in Illinois are adapted to a wide variety of products. In addition to those discussed a large number of minor products are grown which are important on some farms and in some areas. Illinois farmers, therefore, have a wide latitude in the selection of those enterprises which may be combined into a farm business. What enterprises may be best for a particular farm is, of course, an individual farm problem based upon the natural conditions on the farm, the economic situation at the time, and the farmer's aptitudes and skill. How Illinois farmers as a group have proportioned the marketing of their products under recent conditions may be summarized in the cash receipts from sales as averaged for the two years, 1949 and 1950. (Table 1.) Annual sales of crops, livestock, and livestock products were nearly one and three quarter billion dollars. Products with less than one million dollars in sales are not shown.

Farms by Economic Class

The agriculture of the state differs not only as to products sold and major areas of production, but also in economic returns on individual farms within any part of the state. Such variations arise because of differences in size of farm, choice of enterprises, natural conditions, and

TABLE 1. CASH RECEIPTS OF ILLINOIS FARMERS (AVERAGE OF 1949 AND 1950)[a]

Crops	1,000 dollars	Livestock and products	1,000 dollars
Field crops			
Corn	328,088	Cattle and calves	357,293
Soybeans	195,220	Hogs	375,869
Wheat	67,885	Dairy products	150,700
Oats	46,563	Eggs	74,266
Hay	8,837	Chickens (including broilers)	34,160
Red clover seed	2,319	Sheep, lambs, wool	14,634
Redtop seed	1,859	Turkeys	8,076
Popcorn	1,366	Other poultry	2,026
Truck crops	18,286	Other	1,945
Other	4,465	Total livestock and products	1,018,969
Fruits			
Apples	6,773		
Peaches	2,330		
Strawberries	1,002		
Other fruits	495		
Other products			
Forest	1,612		
Greenhouse, nursery	27,888		
Total crops	714,988	Crops and livestock	1,733,957

[a] The Farm Income Situation, U. S. Department of Agriculture, June 1951.

managerial ability of the operators. Of the 195,268 farms listed in the 1950 Census, 82 percent or 159,822 were classed as commercial, that is, the value of products sold was $1,200 or more, or farms with sales totaling $250 to $1,199 whose operators reported less than 100 days off-farm work, and income from non-farm sources did not exceed the farm income. (Figs. 5 and 6.) On a percentage basis, Class I included 4 percent of commercial farms; Class II, 23 percent; Class III, 30 percent; Class IV, 21 percent; Class V, 14 percent; and Class VI, 8 percent.

The other 18 percent or noncommercial farms consisted chiefly of part-time farms with sales like those in Class VI, but with 100 days or more off-farm work, or other income greater than sales of farm products; and of residential farms with sales of less than $250. (Fig. 6.) In these noncommercial groups and also in the lower groups of commercial farms are found many retired or semi-retired older people. Many older people retire on the farm rather than in town.

Illinois agriculture is dynamic. This characteristic is indicated not only by the variety of products grown but also by the shifts that have taken place during the past two decades in response to price changes and national needs. The outstanding example is soybeans of which the acreage has increased almost eight times, placing them among the major crops. Similarly alfalfa hay acreage has increased more than four times to the position of the leading hay crop. Lespedeza hay, too limited for separate listing in 1930, is now in third position among hay crops. Among minor enterprises popcorn acreage and the number of turkeys have increased sharply, while acreages of barley, spring wheat and broomcorn and numbers of apple trees and peach trees have been greatly reduced.

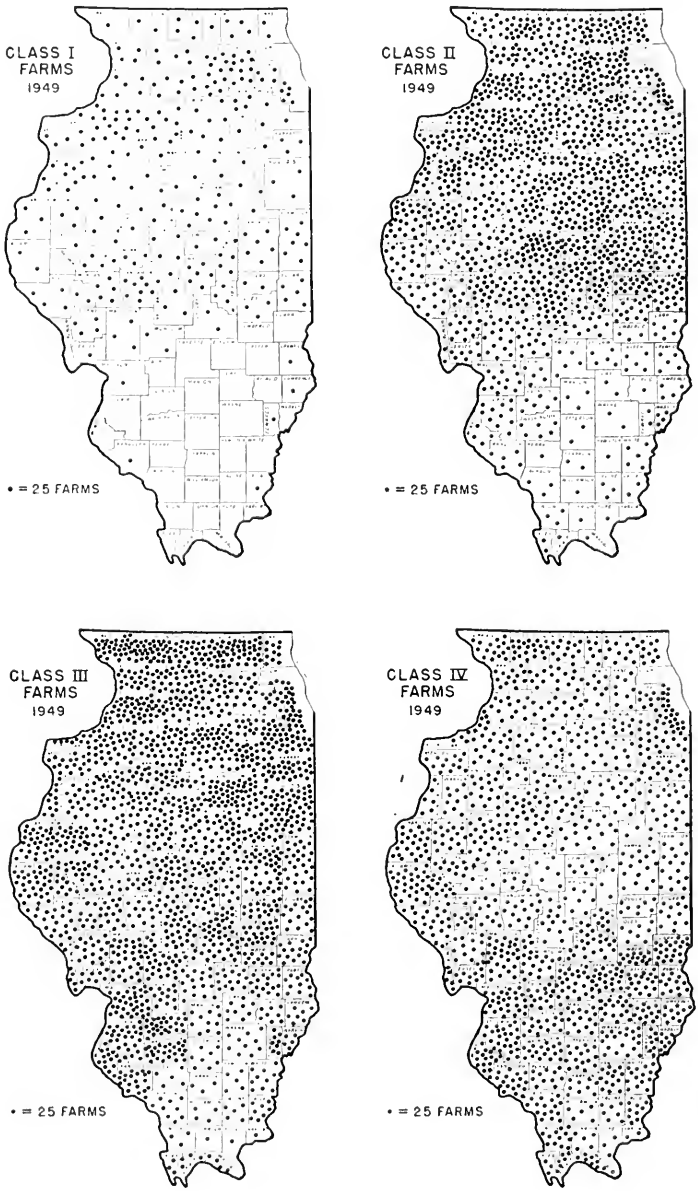


FIG. 5. FARMS BY ECONOMIC CLASS

Commercial farms were classified by value of sales: Class I, $25,000 or more; Class II, $10,000 to $24,999; Class III, $5,000 to $9,999; Class IV, $2,500 to $4,999.

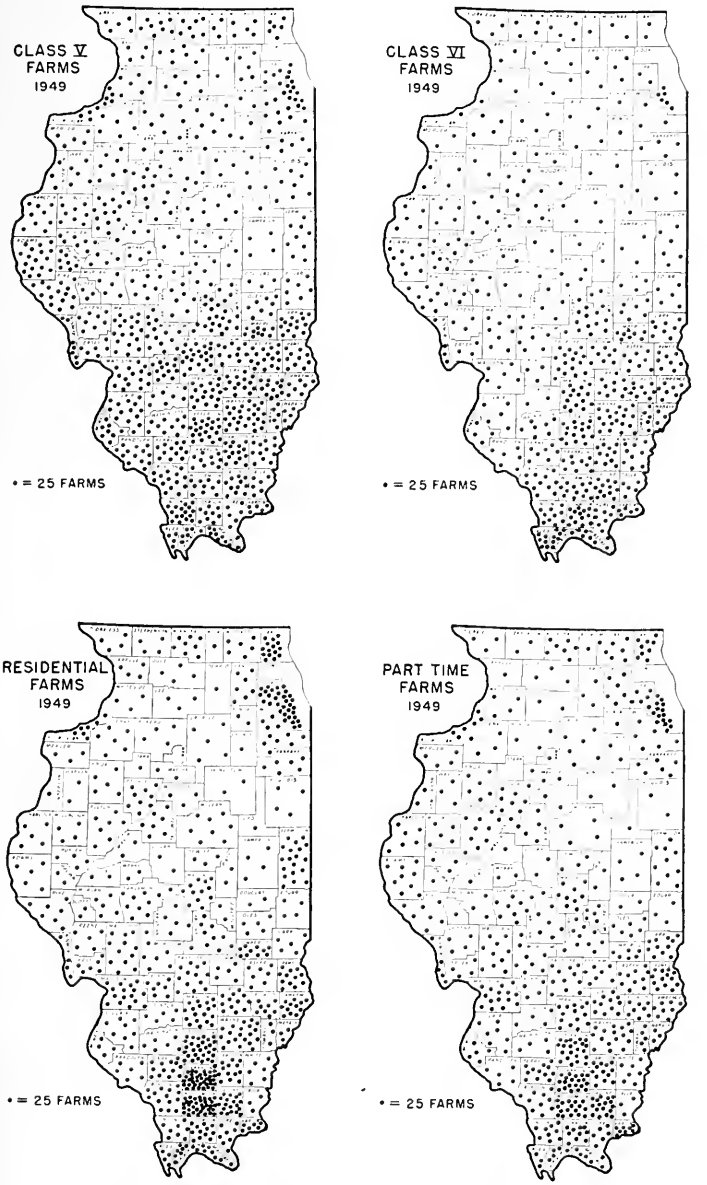


FIG. 6. FARMS BY ECONOMIC CLASS (CONTINUED)

Value of sales, Class V, $1,200 to $2,499; Class VI, $250 to $1,199 (see text); part-time, $250 to $1,199 (see text); residential, less than $250.

Marked changes have taken place also in the use of hybrid corn, improved varieties of crops, adoption of soil conservation measures, increased use of fertilizers, and the degree of mechanization.

Illinois and Indiana are the only states east of the Mississippi River that produce surpluses of feed grains.[1] This surplus in Illinois is much the largest of any state and more than five times as large as that of Indiana. All other states to the east, south, and southwest have feed grain deficits. Illinois, therefore, is the principal source from which these feed grain deficits may be supplied. As mentioned earlier, many food products of Illinois are shipped east to supply the large metropolitan areas. The availability of surplus feed grains and food products in the state, its location in relation to deficit areas, and the favorable conditions for producing many products provide a sound basis for adjustments in Illinois agriculture as conditions change.

R. C. Ross

ILLINOIS RURAL AND URBAN POPULATION

In 1950 the population of Illinois was 8,712,176 or 155.8 per square mile. Among the states Illinois ranks fourth in population, New York, Pennsylvania, and California being larger.

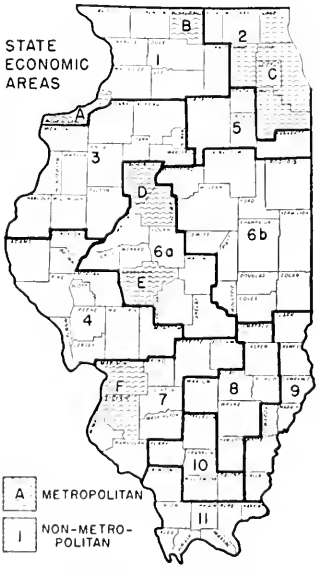


Fig. 1. Metropolitan and Non-metropolitan State Economic Areas

Urban and rural residence. Under the 1950 classification, 6,759,272 (77.6 percent) of the state's population was urban, and 1,952,905 (22.4 percent) was rural. The rural population was broken down into two groups, 1,097,905 (12.6 percent) as rural nonfarm (largely in small towns and villages) and 855,000 (9.8 percent) residing on farms.

As outlined by the Bureau of the Census, metropolitan areas include a standard metropolitan city with a minimum of 100,000 inhabitants in the adjacent territory of one or more counties (Fig. 1). Nonmetropolitan areas include smaller cities, towns and country within their boundaries. The six metropolitan areas included 6,183,453 persons of whom 87.8 percent were urban and 12.2 percent rural (Table 1). Among these areas the urban population varied from 92.2 percent in Area C (Chicago) to

[1] W. N. Thompson, "Systems of Farming Adapted to Highly Productive Level Land in Illinois," pages 60-64, Doctoral Thesis, University of Illinois, 1952.

TABLE 1. DISTRIBUTION OF ILLINOIS POPULATION BY ECONOMIC AREAS AND RESIDENCE[a]

Area	Total	Urban	Rural	Percent Urban	Percent Rural
The State	8,712,176	6,486,673	2,225,503	74.5	25.5
Metropolitan areas	6,183,453	5,429,748	753,705	87.8	12.2
A	133,558	103,075	30,483	77.2	22.8
B	152,385	101,514	50,871	66.6	33.4
C	5,127,212	4,728,843	398,369	92.2	7.8
D	250,512	164,081	86,431	65.5	34.5
E	131,484	81,628	49,856	62.1	37.9
F	388,302	250,607	137,695	64.5	35.5
Nonmetropolitan areas	2,528,723	1,056,925	1,471,798	41.8	58.2
1	242,027	102,743	139,284	42.5	57.5
2	67,726	27,636	40,090	40.8	59.2
3	310,537	116,881	193,656	37.6	62.4
4	264,087	107,324	156,763	40.6	59.4
5	205,466	108,774	96,692	52.9	47.1
6a	232,836	110,918	121,918	47.6	52.4
6b	501,625	237,193	264,432	47.3	52.7
7	142,423	31,445	110,978	22.1	77.9
8	131,985	44,695	87,290	33.9	66.1
9	113,498	32,735	80,763	28.8	71.2
10	188,302	93,823	94,479	49.8	50.2
11	128,211	42,758	85,453	33.4	66.6

[a] The 1940 definition of urban is applied to the 1950 population.

62.1 percent in Area E (Springfield). In the 12 nonmetropolitan areas 41.8 percent lived in cities and 58.2 percent was rural. The proportion of rural population ranged from 47.1 percent in Area 5 to 77.9 percent in Area 7. Of the total urban population more than four-fifths resided in the metropolitan areas, and two-thirds of the rural inhabitants were in the nonmetropolitan areas.

Changes 1940 to 1950. During this decade Illinois population increased 814,935 or 10.3 percent. The urban increase was 11.7 percent and rural 6.6 percent. Of the total increase 94.5 percent was in the metropolitan areas and 5.5 percent in the nonmetropolitan areas. The urban population increased in all areas but one. The rural population increased sharply in all metropolitan areas, showing the effects of the urban fringe around Chicago, East St. Louis, Peoria, Rock Island-Moline, Rockford, and Springfield, but declined in eight of the nonmetropolitan areas.

Preliminary data indicate that the farm population declined from 968,103 in 1940 to 855,000 in 1950, a drop of 11.6 percent. The age groups under 10 and 25 to 35 years increased but all other age groups declined. The greatest loss was in the 10 to 25 years group, indicating that many young productive workers continue to leave Illinois farms.

C. L. FOLSE

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 7-52—13,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[5]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	403	419	187	369	290	220
1951 Apr....	222	280	277	226	313	395	175	366	289	223
May...	221	276	274	225	319	390	173	368	288	222
June...	220	272	270	225	323	348	155	370	290	221
July....	218	265	269	225	398	497	221	370	286	212
Aug....	217	263	271	225	450	393	174	372	287	217
Sept....	217	262	270	225	511	394	175	373	292	218
Oct.....	217	266	272	226	655	662	293	377	292	218
Nov....	217	267	267	227	541	492	217	377	293	219
Dec....	217	266	267	227	467	383	169	379	300	218
1952 Jan....	216	262	265	229	395	404	176	379	298	221
Feb....	215	257	261	230	303	325	141	382	298	222
Mar....	214	258	256	230	314	388	169	383	300	220
Apr....	213	259	254	231	310	358	155	384	295[11]	216[11]

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			June 1951	Current months, 1952		
	1933-39	1950	1951		Apr.	May	June
Corn, bu.....	$ .66	$1.35	$1.67	$1.64	$1.69	$1.71	$1.73
Oats, bu.....	.31	.76	.87	.82	.86	.80	.76
Wheat, bu.....	.86	2.02	2.24	2.17	2.28	2.21	2.11
Barley, bu.....	.62	1.20	1.36	1.33	1.35	1.30	1.25
Soybeans, bu.....	.90	2.49	2.95	3.02	2.76	2.81	3.13
Hogs, cwt.....	8.52	18.19	20.38	21.20	16.60	20.20	19.70
Beef cattle, cwt. ...	7.88	24.54	30.65	31.20	29.00	29.20	28.20
Lambs, cwt.....	8.36	25.12	31.66	31.60	26.80	26.90	26.10
Milk cows, head ...	58.00	216.67	267.50	265.00	270.00	270.00	270.00
Veal calves, cwt.....	8.66	27.73	33.62	34.10	32.30	32.30	31.30
Sheep, cwt.....	3.58	10.52	16.07	16.50	13.10	12.00	11.00
Butterfat, lb.....	.27	.58	.66	.66	.68	.66	.65
Milk, cwt.....	1.68	3.45	4.16	3.75	4.25	4.00	3.90
Eggs, doz.....	.19	.31	.42	.39	.30	.29	.31
Chickens, lb.....	.15	.23	.27	.27	.26	.24	.25
Wool, lb.....	.25	.53	.80	.96	.45	.45	.46
Apples, bu.....	1.08	2.24	2.04	1.95	2.40	2.40	2.50
Hay, ton[13].....	9.39	20.77	21.08	19.90	21.10	20.40	19.90

[1-13] For sources of data in tables see the preceding issue.

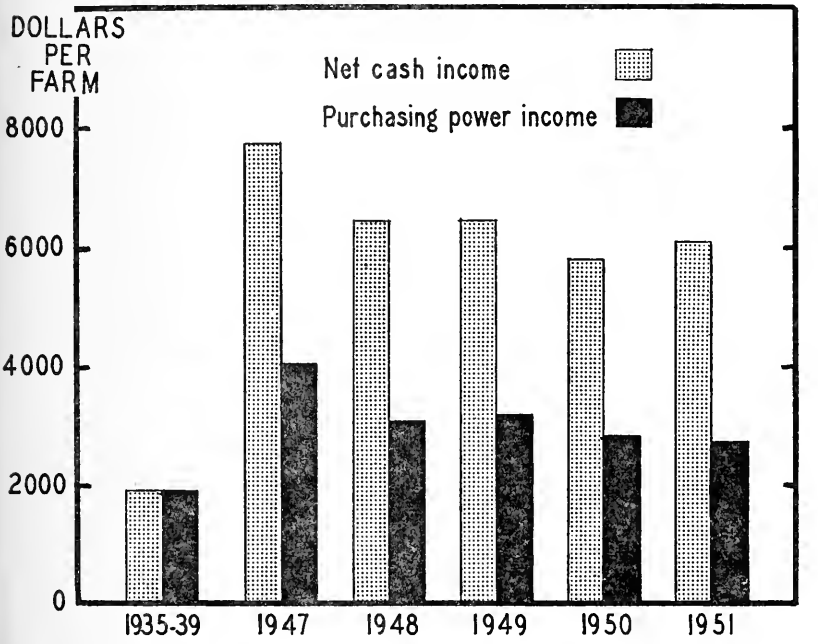
Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the Un States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | August-September, 1952 | Numbers 206 and 207

Summary of Annual Farm Business Reports of 2,993 Illinois Farms For the Year 1951



Net Cash Income per Farm and Purchasing Power Income in Terms of 1935-1939 Price Levels on Illinois Farms for 1935-1939 and 1947 Through 1951.

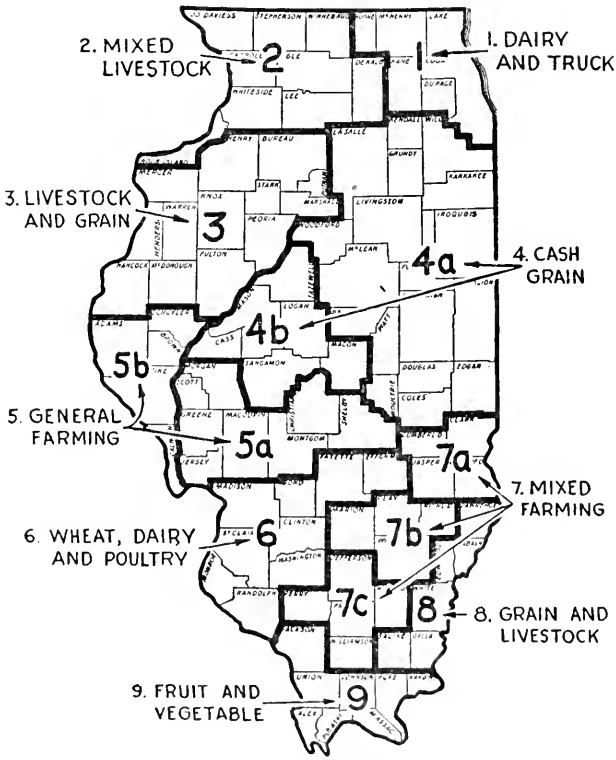
Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

FOREWORD

The need for the agriculture of the United States to feed five people in 1975 where four are being fed today will call for changes in agriculture. We must maintain the production per farm worker if we maintain our present level of living. The increased production per acre of farmland must be obtained by the use of more capital and by doing a better job of farming. The introduction of new techniques, new machines, and new or improved crops and improved classes of livestock all contribute to a more adequate supply of food and fiber. Illinois agriculture in particular is adapted to many different crop and livestock enterprises.

Each farmer needs to adapt his farming operations to the conditions on his own farm, his credit situation, available labor, the plans for his family, and his willingness or unwillingness to follow certain systems of farming. To make the most of the opportunity every farmer needs accurate records on his business in order that he may make decisions on a sound basis.

H. C. M. Case



THE NINE MAJOR TYPE-OF-FARMING AREAS IN ILLINOIS

SUMMARY OF FARM BUSINESS RECORDS ON 2,993 FARMS IN ILLINOIS FOR 1951[1]

A. G. Mueller and F. J. Reiss

Net income an acre (cash basis). The 1951 average net income an acre (cash basis) for accounting farms was slightly lower than the income in previous years. The net income per farm increased, but an increase in the average size of farm resulted in the slightly lower per acre income figure. The net income of $14.54 an acre in 1951 may be compared to the income of $14.92 in 1950 and the $23.28 in 1947.

The average net income an acre (cash basis) for Illinois accounting farms from 1937 to 1951 was as follows:

1937.....$5.33	1942.....$14.99	1947.....$23.28
1938..... 5.25	1943..... 18.55	1948..... 17.76
1939..... 5.40	1944..... 17.30	1949..... 17.45
1940..... 6.82	1945..... 15.35	1950..... 14.92
1941..... 9.91	1946..... 19.63	1951..... 14.54

The net income an acre (cash basis) was computed by subtracting the value of unpaid family and operator's labor from the net cash balance for the year and dividing that difference by the number of acres in the farm. State averages were calculated by weighting farming type area averages by the acres of land in farms (census) in each area.

These returns do not include inventory changes, the change in value of capital items, or the money value of farm products consumed from the farm. The net income an acre provides a good basis for comparing incomes of groups of farms over a period of years, or for comparing the level of income for different areas of the state. During any period of years, earnings fluctuate more widely from year to year when inventory changes are included since inventory changes reflect the quantities of livestock and grain on hand January 1 and the inventory prices of these products as well as the change in remaining value of capital items.

Effect of price levels on earnings. In 1951 the ratio of prices received by Illinois farmers to prices paid for supplies was 109 percent of the 1910-1914 base. This ratio was 101 in 1950. The index of prices received by Illinois farmers increased from 258 in 1950 to 307 in 1951 (1910-1914 = 100). For the same years, the index of prices paid by farmers in the United States increased from 255 to 281 (Fig. 1).

Accounting farms represent better than average conditions. Previous studies indicate that accounting farms are much larger than the aver-

[1] Averages in this report include 2,887 Farm Bureau Farm Management records and 116 extension project records. A total of 3,573 Farm Bureau Farm Management records and 127 extension project records were summarized in 1951.

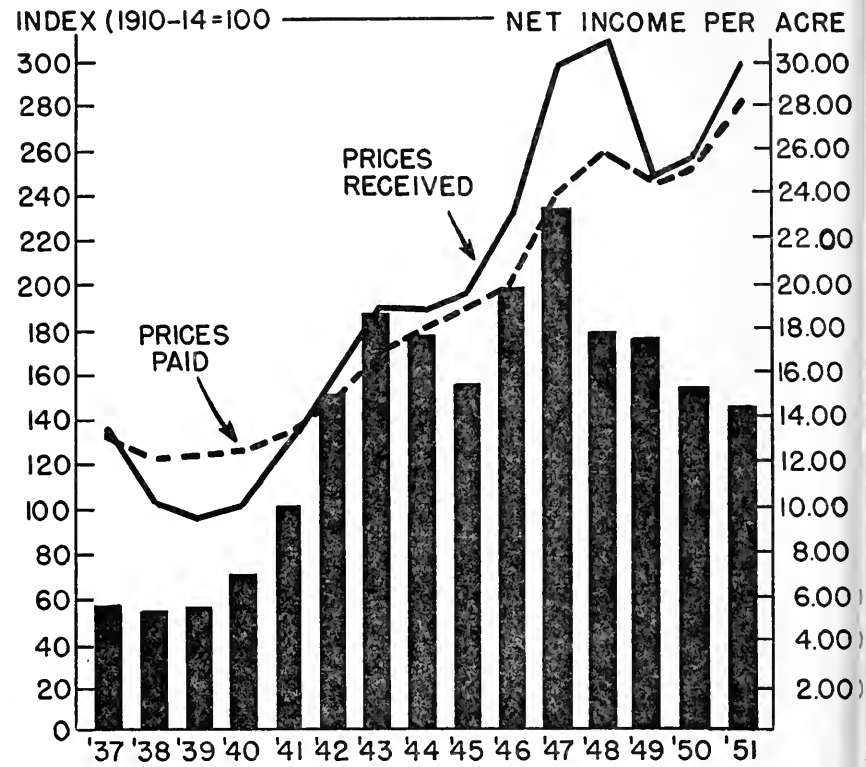


FIG. 1. — AVERAGE NET INCOME AN ACRE (CASH BASIS) ON ILLINOIS ACCOUNTING FARMS, PRICES PAID BY FARMERS IN THE UNITED STATES, AND PRICES RECEIVED BY ILLINOIS FARMERS, 1937-1951

age size of farms for the state. Also, these farms are, as a group, located on better quality soils. Hence, any per farm or per acre averages in this report should not be interpreted as representative for all farms in the state. Figures on costs and earnings per farm are much higher because of the greater-than-average size of farm and better quality of soil.

Data presented in Tables 1 through 18 are useful in showing trends in income, expenses, and investments over a period of years, since the farms included in accounting projects remain fairly constant from one year to the next.

Value of farm products used in the household. In the farm business reports, which have been published separately, and in the tables at the back of this report, the farm values of meat, milk, eggs, and other farm products used in the household were included as a source of income. These products have also been included in comparing the 1945-1951 records in Table 1.

TABLE 1. — SELECTED ITEMS OF INCOME AND EXPENSE ON ILLINOIS ACCOUNTING FARMS, 1945-1951[a]

Item	1945	1946	1947	1948	1949	1950	1951
Acres per farm	255	254	254	259	261	265	271
Cash income per farm	$13 376	$15 544	$21 054	$22 157	$21 560	$22 710	$25 825
Cash operating expense	6 779	7 421	10 566	12 197	11 755	13 640	16 057
Capital purchases	1 229	1 659	2 712	3 516	3 359	3 253	3 625
Cash expenditures per farm	8 008	9 080	13 278	15 713	15 114	16 893	19 682
Cash balance	$ 5 368	$ 6 464	$ 7 776	$ 6 444	$ 6 445	$ 5 817	$ 6 143
Inventory increase	190	2 500	4 595	1 976	85	4 621	4 891
Farm products used in household	413	456	485	492	408	390	434
Cash balance plus inventory increase and farm products used in household	$ 5 971	$ 9 420	$12 856	$ 8 912	$ 6 938	$10 828	$11 468
Unpaid labor	1 696	1 783	2 085	2 078	2 116	2 099	2 376
Net farm earnings	$ 4 275	$ 7 637	$10 771	$ 6 834	$ 4 822	$ 8 729	$ 9 092
Gross earnings per acre[b]	$41.44	$53.34	$79.65	$64.12	$56.04	$70.55	$78.47
Total expense per acre[c]	24.61	23.13	37.59	37.76	37.53	37.75	44.62
Net earnings per acre[b]	$16.83	$30.21	$42.06	$26.36	$18.51	$32.80	$33.85
Net income per acre (cash basis)[d]	15.35	19.63	23.28	17.76	17.45	14.92	14.54

[a] These state averages were obtained by weighting area averages. The last item, net income per acre (cash basis), was weighted by the acres of land in farms in each area; all other items were weighted by the number of census farms in each area.
[b] Earnings include inventory changes and farm products used in household.
[c] Total expense includes unpaid labor charge.
[d] Cash balance less unpaid labor.

Depreciation and maintenance expenses for the residence are omitted on all owner-operated farms. Thus the accounting for farm buildings agrees with income tax rulings.

Cash income per farm. The average cash income and expenditures on Illinois farms again reached new highs in 1951 (Table 1). Total cash income in 1951 increased $3,115 per farm over 1950. Total cash expenditures increased $2,789 for the same years, resulting in an increase of $326 in the net cash balance per farm from 1950 to 1951.

The cash balance of $6,143 per farm in 1951 can be compared with the 1946-1950 average cash balance of $6,589 and the 1935-1939 average cash balance of $1,949. The 1951 cash balance per farm is more than three times the 1935-1939 average in terms of dollars. In terms of current purchasing power, the 1951 net cash balance is 41 percent above the 1935-1939 cash balance figure (see chart on cover).

Income tax payments, debt and interest payments must be deducted from the cash balance per farm to determine the amount available for farm family living and savings. Also, on a large number of farms, this cash income must be divided between the landlord and operator or between more than one farm family where profit sharing agreements are in effect.

Cash farm business expenditures. The cash expenditures of $19,682 per farm in 1951 exceeded the expenditures of all previous years. Cash expenditures in 1951 were $2,789 above the 1950 figure and more than double the cash expenditures of $9,080 in 1946.

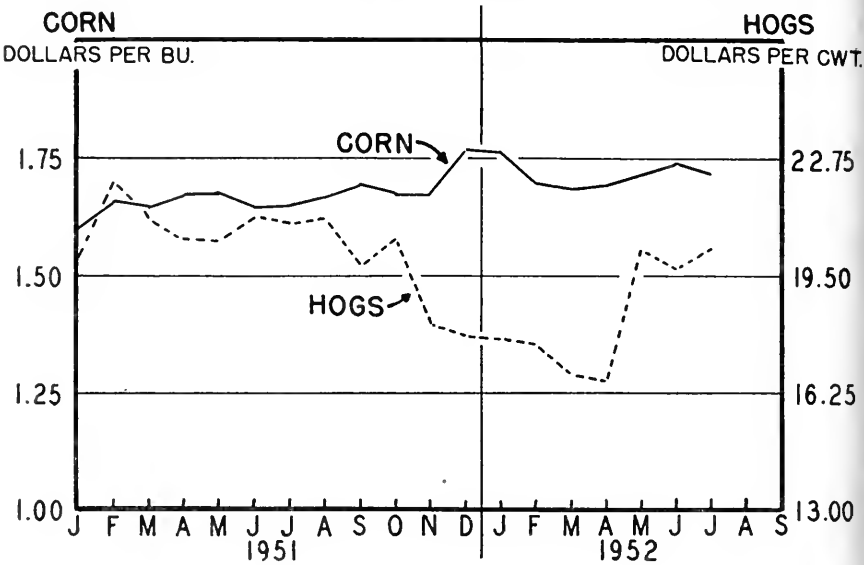


Fig. 2. — Average Monthly Illinois Farm Prices of Corn and Hogs for 1951 Through July, 1952

Illinois farmers spent more dollars for capital items in 1951 than in any previous year. Machinery purchases increased more than other capital items, probably because of higher price tags on machines purchased for replacement purposes.

During the past years, the proportion of cash expenditures to total cash income has been increasing. As this trend continues in the future, successful farm operations will be dependent on a stable and high-level cash income.

Inventory increases. Inventory values increased $4,891 on Illinois farms in 1951. This increase is slightly higher than the increase of $4,621 in 1950. With inventory changes included net farm earnings were $9,092 in 1951, an increase of $363 or four percent over the earnings of $8,729 in 1950. The increase in value of unpaid operator and family labor from 1950 to 1951 just about offset the 1950 to 1951 change in inventory increases. Thus the net change in per farm earnings in 1951 on either the cash or inventory basis was about the same.

The inventory change for a single year represents the change in the combined values of livestock, grain, improvements, and machinery from the beginning to the end of the year. Within a single year the beginning and ending inventories are for exactly the same farms. This may not be the case when comparisons are made from one year to the next.

Prices of farm products. Indicative of what happened to farm

TABLE 2. — NET INCOME AN ACRE (CASH BASIS) FOR ILLINOIS ACCOUNTING FARMS BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1950, 1951[a]

Farming-type areas	1925-1929	1930-1934	1935-1939	1940-1944	1945-1949	1950	1951
Area 1, Chicago Dairy	$9.59	$5.25	$5.61	$13.72	$20.45	$ 6.77	$13.69
Area 2, Northwestern Mixed Livestock	7.94	4.92	7.23	16.23	21.79	11.72	11.37
Area 3, Western Livestock and Grain	9.05	4.86	6.99	16.93	24.16	18.39	16.82
Area 4, East-Central Cash Grain	8.91	4.46	7.15	18.15	24.25	22.57	19.01
Area 5, West-Central General Farming	6.35	3.23	4.62	11.58	18.22	17.60	16.50
Area 6, St. Louis Dairy and Wheat	3.26	2.03	3.32	5.79	7.77	5.89	7.88
Area 7, South-Central Mixed Farming	2.21	.91	1.96	3.47	4.57	1.81	6.09
Area 8, Wabash Valley Grain and Livestock	4.57	1.73	3.96	6.58	7.89	4.08	9.17
State Average (weighted by acres in each area)	$7.13	$3.74	$5.70	$13.51	$17.68	$14.92	$14.54

[a] Includes records of the Farm Bureau Farm Management Service for 1938-1951.

prices in 1951 is Figure 2 which gives the average monthly price of corn and hogs from January 1951 through July 1952 (price lines for corn and hogs meet on Fig. 2 with a corn-hog ratio of 13). Average Illinois corn prices were at a low of $1.60 a bushel in January 1951 and changed very little during the year until December 1951 when the price rose to $1.77.

Hog prices recovered from the sharp drop in the fall of 1950 to prices above $20.00 per hundredweight during the first eight months of 1951. Hog prices dropped sharply again in the fall of 1951 and did not recover to above $20.00 a hundredweight until May 1952.

Crop yields in Illinois. Crop yields in 1951 were seven percent above the 1941-1950 average, and about three percent above the 1950 crop yields (Fig. 3). Three areas of the state had yields below the 1941-1950 average: two counties near Chicago; four counties in northwestern Illinois; and five counties in extreme southeastern Illinois. A belt of 12 counties, extending from Greene county on the west to Cumberland, Jasper, and Richland on the east, had yields 20 percent or more above the 1941-1950 average.

The state average corn yield of 55 bushels per acre was four bushels higher than the 1950 estimate. Except for some scattered flood damage in June and July, 1951 was a favorable corn growing year. Early frosts in northern Illinois caused some soft corn in that part of the state.

The 1951 soybean crop was nearly equal to the 1950 record production. The state average yield of 26.0 bushels per acre was a record high, but the acreage of beans planted was about nine percent less. The 1951 wheat acreage increased sharply, but yields were about average. Total oats production dropped in 1951, with harvested acreage and yield per acre below average.

Variations in net cash income an acre. The 1951 net cash income an acre varied from $6.09 in Area 7 to $19.01 in Area 4 (Table 2). This

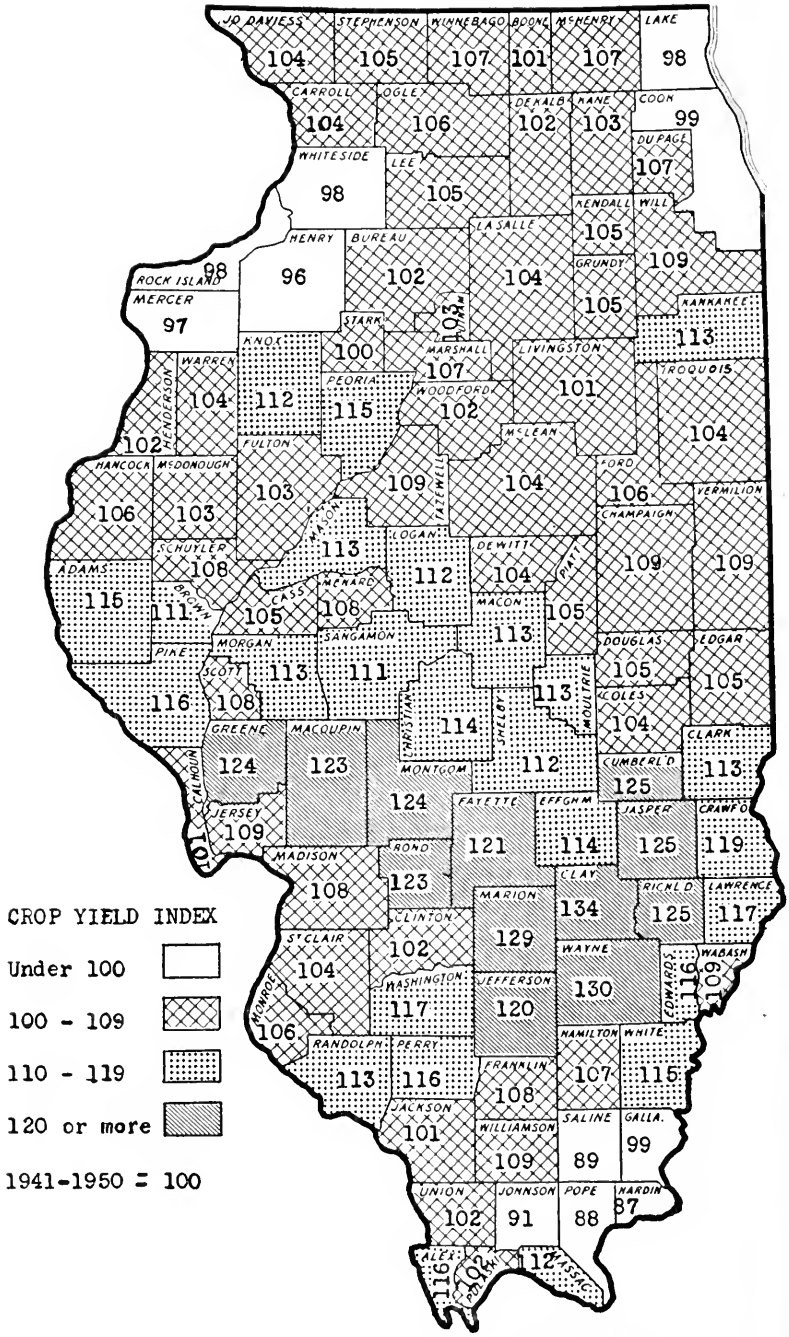


FIG. 3. — CROP YIELDS FOR 1951 COMPARED WITH 10-YEAR (1941-1950) AVERAGE YIELDS FOR THE SAME COUNTY. THE INDEXES ARE BASED ON COUNTY YIELDS OF CORN, OATS, WHEAT, AND SOYBEANS
(Data from Illinois Crop Reporting Service)

TABLE 3. — NET INCOME AN ACRE (INVENTORY BASIS) FOR ILLINOIS ACCOUNTING FARMS BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1950, 1951[a]

Farming-type areas	1925-1929	1930-1934	1935-1939	1940-1944	1945-1949	1950	1951
Area 1, Chicago Dairy	$11.04	$2.64	$10.03	$20.54	$28.89	$37.43	$35.63
Area 2, Northwestern Mixed Livestock	15.11	2.70	11.45	22.23	33.22	44.20	38.99
Area 3, Western Livestock and Grain	10.24	2.84	11.43	22.53	32.38	44.30	38.14
Area 4, East-Central Cash Grain	10.30	2.76	11.05	21.81	32.64	40.13	40.22
Area 5, West-Central General Farming	7.69	1.99	7.92	15.38	24.26	32.39	32.50
Area 6, St. Louis Dairy and Wheat	5.41	.92	5.55	8.37	13.01	13.35	20.04
Area 7, South-Central Mixed Farming	3.34	.55	3.76	5.46	8.80	8.33	16.52
Area 8, Wabash Valley Grain and Livestock	5.34	1.20	5.22	9.21	13.97	12.05	19.13
State Average (weighted by acres in each area)	$ 8.59	$2.20	$ 9.23	$17.56	$25.97	$33.04	$35.15

[a] Includes records of the Farm Bureau Farm Management Service for 1938-1951.

range in net cash income over the state is the smallest in the last 10 years. Net cash income increased in the southern areas of 6, 7, and 8 and decreased in the northern areas of 2, 3, 4, and 5.

Variations in net income with inventory change included. When inventory changes were included, the 1951 average net income an acre increased slightly. The range in net income an acre with inventory change included was from $40.22 in Area 4 to $16.52 in Area 7 (Table 3). The livestock producing areas in northern Illinois recorded decreases in net income an acre, the central Illinois grain producing areas of 4 and 5 showed little change and the three southern areas increased sharply.

Production per worker. High production per worker is one of the most important keys to higher net farm earnings and to increased total agricultural production.

Production per worker varies with the quality and productivity of the soil, with the size of farm, with the amount of capital invested per worker, and with the effectiveness of the farm organization.

In Table 4 we see variations by farming-type areas in the production per worker on account-keeping farms. Production per worker was highest

TABLE 4. — PRODUCTION, INVESTMENT, AND ACRES PER WORKER AND PRODUCTION PER $1,000 INVESTED BY FARMING-TYPE AREAS, 1951

Farming-type areas	Average soil rating	Average per worker			Production per $1,000 invested
		Production	Investment	Acres	
Area 1, Chicago Dairy	69	$11 178	$52 336	120	$214
Area 2, Northwestern Mixed Livestock	74	11 712	56 857	131	206
Area 3, Western Livestock and Grain	76	12 490	61 137	153	204
Area 4, East-Central Cash Grain	80	13 235	66 162	161	200
Area 5, West-Central General Farming	58	11 123	44 329	153	251
Area 6, St. Louis Dairy and Wheat	34	8 186	30 325	148	270
Area 7, South-Central Mixed Farming	..[a]	8 512	.....[a]	180	...[a]
Area 8, Wabash Valley Grain and Livestock	..[a]	8 842	.....[a]	185	...[a]

[a] Data not available.

TABLE 5. — PRODUCTION PER WORKER AND RELATED ITEMS ON GRAIN AND HOG FARMS UNDER 500 ACRES IN SIZE CLASSIFIED BY SOIL PRODUCTIVITY[a]

Items	Grain farms			Hog farms		
	Northern Illinois soils rating;		Southern Illinois	Northern Illinois soils rating;		Southern Illinois
	76-100	56-75		76-100	56-75	
Average size of farm	270	274	268	268	270	266
Average soil rating	86	70	42	83	68	39
Averages per worker[b]						
Production from crops	$11 912	$10 316	$ 8 719	$ 9 366	$ 7 943	$ 6 301
Production from livestock and miscellaneous	1 803	1 824	1 524	3 568	3 302	2 662
Production costs	9 451	8 828	7 301	9 195	8 544	7 002
Net management returns	4 264	3 312	2 942	3 739	2 701	1 970
Tillable acres	154	151	144	122	116	119
Total investment	$70 367	$58 806	$37 572	$63 278	$52 171	$34 308
Production per $1,000 invested	195	206	273	205	214	263

[a] The data are weighted averages of Farm Bureau Farm Management Service farms in 1951.
[b] Twelve months of labor.

in the cash grain area where each worker's labor was associated with the most land and the greatest total capital investment.

The differences in total production per worker between grain and hog farms shown in Figure 4 reflect the relatively unfavorable price relationships on hog farms in 1951 rather than any basic differences due to the type of farming. Differences in the capital per worker on farms of different productivity within each of these types are shown in Table 5. As long

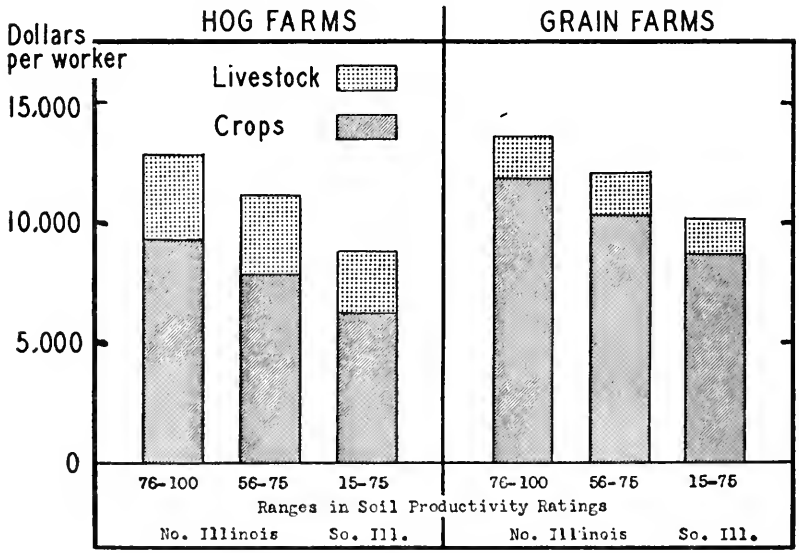


FIG. 4. — PRODUCTION PER WORKER FROM CROPS AND LIVESTOCK ON HOG AND GRAIN FARMS, 1951

as labor is scarce and relatively more costly than additional capital it would seem profitable to invest more capital on farms of low productivity. Such additional capital may well be invested in fertilizer and soil improvement, and in additional livestock and livestock equipment.

Increasing the size of farm seems to be a means of increasing the production per worker on the smaller farms. Data in Tables 12-18 indicate that increasing the size of farm beyond 240 acres adds very little to the net returns per worker.

LIVESTOCK ENTERPRISE ANALYSES

Livestock enterprise analyses were made on Farm Bureau Farm Management farms on which the enterprise record was complete and accurate and on which the enterprise was as large or larger than a given minimum size. These minimum size limits were six litters of pigs, five cows in beef and dairy herds, three animal units or about 15 head of sheep, and 100 hens. Minimum size limits were used because many of the records on smaller enterprises were incomplete or inaccurate in feed or production records.

Tables 6, 7, 8, and 9 present different levels in the returns per $100 feed fed and an average of all records. Comparison of groups of farms with high and low returns per $100 feed fed will indicate the phases of various enterprises that contribute to high or low returns in livestock production. For example, Table 7 indicates that the pounds of milk per milk cow and the feed cost per unit of production are related to returns per 100 dollars feed fed.

TABLE 6. — POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$150-179	$90-109
Number of farms	383	76	97
Weight of poultry produced	1 755	2 065	1 480
Total returns from poultry	$1 944	$2 873	$1 282
Total value of feed fed	1 417	1 791	1 191
Returns per $100 feed fed	137	160	108
Returns above feed cost per hen	2.12	3.26	.47
Average number of hens	248	332	193
Eggs produced per hen	180	199	164
Percent production	49	55	45
Hens in Oct., Nov., Dec.	272	378	235
Percent production in Oct., Nov., Dec.	49	54	41
Feed Req. Units (1 doz. eggs or 1.5 lbs. wt. produced)	4 896	6 895	3 630
Feed cost per unit	$ .29	$ .26	$ .33
Pounds concentrates per unit	7.6	6.9	8.8
Weight of poultry sold	1 315	1 504	1 057
Average price per pound	$ .37	$ .37	$ .35
Price per dozen eggs sold	.46	.48	.44

TABLE 7. — DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$220-269	$120-169
Number of farms	546	106	154
Number of cows in herd	15.4	15.6	15.0
Number of milk cows	14.9	15.1	14.3
Percent of milk cows dry	18	17	18
Total animal units in herd	23.4	22.6	23.0
Pounds of beef produced	7 776	7 662	6 833
Total returns from cattle	$6 889	$7 558	$5 994
Value of feed fed to cattle	3 688	3 188	3 987
Returns per $100 feed fed	187	237	150
Returns above feed per milk cow	215	289	140
Total pounds of milk produced	122 610	130 521	111 192
Pounds of milk per milk cow	8 229	8 644	7 776
Pounds of butterfat per milk cow	316	331	287
Pounds of beef per cow in herd	505	491	456
Weight of death loss: pounds	617	610	638
Percent death loss by weight	7.9	8.0	9.3
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.41	$15.39	$22.21
Prices received for each:			
100 lbs. milk produced	4.06	4.23	3.98
100 lbs. cattle sold	25.10	25.17	24.60
Lbs. feed per unit of milk and beef			
Grain	219	178	280
Protein and mineral feeds	52	44	63
Total concentrates	271	222	343
Hay and dry roughage	493	421	594
Hay silage	102	105	112
Corn and other silage	323	237	422
Pasture (pasture days)	20	18	22
Pasture days per animal unit	178	174	170

TABLE 8. — HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$150-169	$90-109
Number of farms	607	83	105
Pounds of pork produced	47 809	42 094	41 192
Total returns from hogs	$8 972	$8 194	$7 368
Total value of feed fed	7 087	5 248	7 270
Returns per $100 feed fed	127	156	101
Returns above feed per litter	57	102	3
Number of litters farrowed	33	29	30
Number of pigs weaned	212	188	191
Pigs weaned per litter	6.4	6.5	6.4
Number that died after weaning	13	9	16
Weight of death loss: pounds	994	664	1 271
Percent of weight produced	2.1	1.6	3.1
Average weight per hog sold	243	239	223
Average price received	$19.82	$20.19	$19.80
Feed cost per 100 lbs. produced	14.82	12.47	17.65
Lbs. feed per 100 lbs. produced			
Grain	401	329	495
Protein and mineral feeds	48	44	48
Total concentrates	449	373	543
Hay	3.4	3.0	3.4
Pasture (pasture days)	2.1	2.3	2.2

TABLE 9. — BEEF CATTLE ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$200-259	$100-139
Number of farms	279	38	44
Number of cows in herd	16.8	18.6	17.9
Number of milk cows	.9	1.1	1.2
Total animal units in herd	28.3	31.3	31.7
Pounds of beef produced	13 628	14 631	15 045
Total returns from cattle	$4 453	$5 393	$4 529
Value of feed fed to cattle	2 622	2 450	3 627
Returns per $100 feed fed	170	220	125
Total pounds of milk produced	5 106	6 495	6 196
Pounds of milk per milk cow	5 673	5 904	5 163
Pounds of beef per cow in herd	811	785	840
Weight of death loss: pounds	776	652	816
Percent of weight produced	5.7	4.5	5.4
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.54	$16.03	$23.15
Prices received for each:			
100 lbs. milk produced	3.30	3.26	3.37
100 lbs. cattle sold	32.80	32.56	33.00
Lbs. feed per unit of milk and beef			
Grain	228	157	365
Protein and mineral feeds	18	16	22
Total concentrates	236	173	387
Hay and dry roughage	591	541	655
Hay silage	26	11	..
Corn and other silage	123	65	115
Pasture (pasture days)	39	40	38
Pasture days per animal unit	194	193	190

TABLE 10. — SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms	238	39
Pounds wool and mutton produced	3 467	11 196
Total returns from sheep	$1 099	$2 584
Total value of feed fed	644	2 338
Returns per $100 feed fed	171	111
Weight of death loss: pounds	678	2 253
Percent of total production	19.6	20.1
Feed cost per cwt. produced	$18.58	$20.88
Price received per cwt.	35.70	31.76
Price paid for sheep bought	27.60	31.59
Lbs. feed per cwt. produced:		
Concentrates	238	422
Hay	598	330
Silage	44	94
Pasture (pasture days)	56	28

TABLE 11. — FACTORS HELPING TO ANALYZE THE FARM BUSINESS BY FARMING-TYPE AREAS, 1951

Items	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Number of farms	100	330	425	1 433	230	226	154	66
Size of farm, acres	213	228	276	282	266	258	303	326
Investment per farm								
Land[a]	$52 521	$57 089	$68 456	$78 749	$49 342	$32 102	$29 111	$24 363
Buildings	11 713	12 573	10 388	10 828	6 674	5 163	4 206	3 057
Soil improvement	443	495	759	867	585	623	813	678
Machinery and auto	7 480	7 296	7 219	7 081	6 736	6 296	5 767	5 681
Livestock	13 629	13 888	14 066	8 861	7 885	4 911	5 591	5 230
Feed and grain	7 111	8 158	9 158	9 397	5 981	3 973	3 798	4 230
Total investment per farm[a]	$92 897	$99 499	$110 046	$115 783	$77 203	$53 068	$49 286	$43 239
Total investment per acre[a]	435	435	399	410	291	205	163	133
Cash receipts, total	35 337	34 393	33 698	27 287	24 174	16 201	15 692	17 066
Cash expenditures, total	30 247	29 362	26 637	19 589	17 365	11 630	11 444	11 942
Cash balance	5 090	5 031	7 061	7 698	6 809	4 571	4 248	5 124
Inventory change	4 682	6 311	5 878	5 978	4 250	3 141	3 154	3 246
Farm products consumed	416	466	470	411	463	461	399	390
Less unpaid labor	2 168	2 433	2 424	2 321	2 424	2 536	2 404	2 134
Net farm earnings	8 020	9 375	10 985	11 766	9 098	5 637	5 397	6 626
Net earnings per acre	$ 37.58	$ 41.03	$ 39.84	$ 41.68	$ 34.24	$ 21.82	$ 17.84	$ 20.33
Cash basis								
Total cash income per acre	165.59	150.52	122.23	96.66	90.98	62.72	51.85	52.35
Total cash expenses per acre[b]	151.90	139.15	105.41	77.61	74.48	54.84	45.76	43.18
Net cash income per acre	$ 13.69	$ 11.37	$ 16.82	$ 19.05	$ 16.50	$ 7.88	$ 6.09	$ 9.17
Crop yields per acre								
Corn, bushels	63.4	64.7	66.9	65.0	65.1	46.7	49.5	51.6
Soybeans, bushels	22.3	28.1	31.1	29.8	29.4	24.0	21.7	21.6
Oats, bushels	60.9	54.8	44.1	43.8	37.5	26.6	17.4	20.6
Wheat, bushels	28.2	27.7	18.3	20.5	24.2	18.1	13.4	16.4

[a] Current values for bare land have been used in all areas except 7 and 8.
[b] Includes charge for unpaid labor.

Definitions of terms. Definitions of some of the more important terms used in this report are listed below.

Total cash income. Cash value of all sales of farm products, services, equipment, and other receipts from normal farm operations.

Total cash expenditures. Cash cost of all goods and services including capital items purchased for use in the farm business exclusive of interest.

Cash balance. Difference between total cash income and total cash expenditures. This item is sometimes called net cash income.

Inventory change. Change in combined values of livestock, grain, buildings, soil improvements, machinery, and farm share of auto from the beginning to the end of the year.

Farm products consumed. Farm market values of meat, animal products, orchard and garden products consumed by the farm family.

Net farm earnings. Cash balance plus inventory change plus value of farm products consumed less the value of unpaid family and operator's labor.

Net earnings per acre. Net farm earnings divided by total acres in the farm.

Net income an acre, cash basis. Cash balance less unpaid family and operator's labor divided by total acres in the farm.

Net income an acre, inventory basis. Cash balance plus inventory change less unpaid family and operator's labor divided by the total acres in the farm. This item differs from net earnings per acre in that value of farm products consumed is omitted.

Unpaid labor. Total months of family and operator's labor valued at average hired labor rates. The labor rates for 1951 were $165 per month in the northern 59 counties, $150 in 27 southern and southwestern counties, $130 per month in extreme southern and southeastern Illinois.

Capital purchases. Cash spent for new additions of machinery, auto, buildings, and soil improvement items that are depreciated over more than one year.

Total investment. Beginning of year inventory of land, feed and grain and livestock plus remaining capital cost of machinery, soil improvements, buildings, and farm share of auto. Bare land is inventoried at current values based on inherent productivity ratings.

Soil productivity rating. An average index representing the inherent productivity of all tillable land in the farm, calculated by

weighting the productivity index of each soil type by the acres of that type on the farm. The inherent productivity indexes, ranging from 100 on the best soils down to 5, are based on the relative yields of grain crops under an assumed level of management that assumes clearing and drainage but no application of limestone or fertilizers and less than 10 percent of the land in forage crops.

Net management returns. Cash balance plus inventory change plus farm products consumed less the value of unpaid family and operator's labor less an interest charge on total investment. The interest charge is 4% on bare land and 5% on all other investments.

Grouping of Farm Bureau Farm Management Service records. Data presented in the following tables (Tables 12-18) were taken from Farm Bureau Farm Management Service records. These records were grouped into two areas. Northern Illinois included Adams, Brown, Coles, Edgar, Macon, Morgan, Moultrie, Sangamon, and all counties to the north. Southern Illinois included Bond, Christian, Clark, Clay, Clinton, Crawford, Cumberland, Effingham, Fayette, Greene, Jackson, Jasper, Jersey, Lawrence, Macoupin, Madison, Marion, Monroe, Montgomery, Perry, Pike, Randolph, Richland, Scott, Shelby, St. Clair, Wabash, and Washington counties.

In each of these areas, records were grouped by size and type of farm. Adequate numbers of grain and hog farm records in northern Illinois were obtained to permit a further grouping by soil productivity rating.

The method of classifying farms by type was based on the value of feed fed and the feed and grain returns. Farms were classified as grain farms if the total feed input was less than one-half of the value of feed and grain returns. The livestock farms were classified as hog or beef cattle farms if those enterprises received one-half or more of the total feed input; as dairy or poultry farms if these enterprises received one-third or more of the total feed input; as mixed livestock farms if none of the requirements were met.

TABLE 12. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF BEEF CATTLE FARMS IN NORTHERN ILLINOIS, 1951

Range in size (total acres) Number of farms		Under 180 42	180-259 68	260-339 50	340-499 56
Average size of farm	1	147	226	300	404
Acres of tillable land	2	133	198	270	341
Soil rating on improved land	3	78	79	80	78
Dollar inputs per farm:					
Soil fertility	4	$ 449	$ 620	$ 890	$ 1 011
Buildings and fence	5	940	1 252	1 627	2 305
Machinery and equipment	6	2 932	3 901	5 113	6 190
Labor	7	2 720	3 157	4 518	5 455
Taxes	8	542	815	1 120	1 307
Seed and crop expense	9	459	608	960	922
Livestock and miscellaneous expense	10	318	362	493	746
Capital charge (4 and 5 percent)	11	3 459	4 889	6 734	8 132
Total non-feed input	12	(11 819)	(15 604)	(21 455)	(26 068)
Total feed input	13	12 895	16 556	25 915	27 616
Total farm inputs	14	$ 24 714	$ 32 160	$ 47 370	$ 53 684
Dollar returns per farm:					
Miscellaneous returns	15	$ 358	$ 474	$ 844	$ 613
Feed and grain returns	16	10 702	15 648	22 098	26 295
All livestock returns	17	17 831	21 620	34 702	36 780
Total farm returns	18	$ 28 891	$ 37 742	$ 57 644	$ 63 688
Net management returns	19	4 177	5 582	10 274	10 004
Net management returns per $100 non-feed input	20	35	36	48	38
Total returns per acre	21	196.54	167.00	192.15	157.64
Total inputs per acre	22	168.12	142.30	157.90	132.88
Net management returns per acre	23	28.42	24.70	34.25	24.76
Net cash income (cash balance)	24	2 251	4 413	2 749	4 270
Inventory and capital change	25	7 132	7 777	16 028	15 925
Farm products consumed	26	357	461	560	530
Less unpaid labor	27	2 104	2 180	2 328	2 588
Net farm earnings	28	7 636	10 471	17 008	18 137
Net earnings per acre	29	51.95	46.33	56.69	44.89
Rate earned on investment	30	9.89	9.49	11.19	9.86
Value of land (current basis)	31	$ 39 950	$ 62 533	$ 86 115	$106 340
Total capital investment	32	77 171	110 291	151 911	183 911
Total capital investment per acre	33	525	488	506	455
Physical inputs per farm:					
Animal units of sheep	34	2.0	1.1	1.1	3.5
Average number of hens	35	95	94	99	79
Average number of milk cows	36	.8	1.6	2.3	3.2
Animal units of "other" cattle	37	43.7	55.9	85.6	95.1
Number of litters farrowed	38	14	21	28	30
Total amounts of feed fed:					
Corn, bushels	39	4 840	6 077	10 072	10 081
Oats, bushels	40	903	1 658	2 004	2 363
Hay, tons	41	50.3	63.9	91.3	103.0
Pasture, days	42	5 961	6 882	9 821	14 375
Silage, tons	43	58.1	91.4	114.5	160.3
Supplement, pounds	44	37 443	39 422	65 160	70 276
Farm operating costs:					
Unpaid labor charge	45	$ 2 104	$ 2 180	$ 2 328	$ 2 588
Hired labor cost	46	616	976	2 190	2 867
Total months of labor	47	16.0	18.8	25.6	30.8
Labor cost per crop acre	48	25.21	19.42	20.18	19.70
Machinery repairs, supplies, etc.	49	587	875	1 287	1 620
Machinery hire	50	290	417	423	487
Gasoline and oil	51	557	731	999	1 255
Total auto cost (farm share)	52	378	396	447	476
Machinery and equipment cost per crop acre	53	27.17	23.99	22.85	22.35
Land-use and crop returns:					
Percent of tillable land in:					
Corn and corn silage	54	43.0	41.8	44.1	40.5
Soybeans	55	2.0	3.5	3.7	5.4
Small grains	56	24.7	25.3	24.1	22.4
All hay and pasture crops	57	30.4	29.4	28.0	30.6
Feed and grain returns per tillable acre	58	79.53	78.27	81.38	75.98
Feed fed per tillable acre	59	96.95	83.62	95.98	80.98
Corn yield, bushels per acre	60	70.2	68.6	69.6	68.3
Soybean yield, bushels per acre	61	24.4	30.4	30.6	29.2
Oats yield, bushels per acre	62	52.8	55.4	54.1	54.1
Wheat yield, bushels per acre	63	32.7	22.8	23.3	17.6

TABLE 13. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF HOG FARMS IN SOUTHERN ILLINOIS, 1951

Range in size (total acres) Number of farms		Under 180 23	180-259 27	260-339 25	340-499 14
Average size of farm	1	133	220	304	405
Acres of tillable land	2	111	164	232	279
Soil rating on improved land	3	46	35	41	35
Dollar inputs per farm:					
Soil fertility	4	$ 464	$ 661	$ 1 027	$ 1 090
Buildings and fence	5	557	576	653	1 069
Machinery and equipment	6	2 393	2 621	3 671	3 892
Labor	7	2 380	2 656	3 415	3 464
Taxes	8	331	397	597	644
Seed and crop expense	9	279	344	518	591
Livestock and miscellaneous expense	10	302	238	305	342
Capital charge (4 and 5 percent)	11	1 712	2 003	2 974	3 177
Total non-feed input	12	(8 418)	(9 496)	(13 160)	(14 269)
Total feed input	13	6 900	6 937	10 835	11 036
Total farm inputs	14	$15 318	$16 433	$23 995	$25 305
Dollar returns per farm:					
Miscellaneous returns	15	$ 322	$ 444	$ 575	$ 531
Feed and grain returns	16	7 194	8 445	12 605	12 786
All livestock returns	17	10 525	9 712	15 670	14 963
Total farm returns	18	$18 041	$18 601	$28 850	$28 280
Net management returns	19	2 723	2 168	4 855	2 975
Net management returns per $100 non-feed input	20	32	23	37	21
Total returns per acre	21	135.65	84.55	94.90	69.83
Total inputs per acre	22	115.18	74.70	78.93	62.48
Net management returns per acre	23	20.47	9.85	15.97	7.35
Net cash income (cash balance)	24	4 371	3 651	7 182	2 566
Inventory and capital change	25	1 544	2 369	2 822	5 822
Farm products consumed	26	432	487	503	447
Less unpaid labor	27	1 912	2 336	2 678	2 683
Net farm earnings	28	4 435	4 171	7 829	6 152
Net earnings per acre	29	33.35	18.96	25.75	15.19
Rate earned on investment	30	11.58	9.17	11.56	8.53
Value of land (current basis)	31	$20 280	$27 074	$41 089	$42 749
Total capital investment	32	38 292	45 469	67 702	72 089
Total capital investment per acre	33	287.91	206.68	222.70	178.00
Physical inputs per farm:					
Animal units of sheep	34	1.0	.2	2.8	1.3
Average number of hens	35	95	119	132	177
Average number of milk cows	36	2.2	3.5	2.9	3.3
Animal units of "other" cattle	37	7.9	11.2	21.4	18.5
Number of litters farrowed	38	25	21	29	30
Total amounts of feed fed:					
Corn, bushels	39	2 476	2 382	3 653	3 983
Oats, bushels	40	418	386	406	541
Hay, tons	41	22.4	28.5	42.5	34.1
Pasture, days	42	2 967	4 294	6 791	6 129
Silage, tons	43	9.7	18.0	14.9	17.8
Supplement, pounds	44	27 600	23 622	51 885	43 404
Farm operating costs:					
Unpaid labor charge	45	$ 1 912	$ 2 336	$ 2 678	$ 2 683
Hired labor cost	46	468	320	737	781
Total months of labor	47	15.9	17.0	21.5	22.5
Labor cost per crop acre	48	25.35	21.15	19.38	15.09
Machinery repairs, supplies, etc.	49	412	600	867	839
Machinery hire	50	254	169	220	276
Gasoline and oil	51	392	496	722	775
Total auto cost (farm share)	52	294	265	326	403
Machinery and equipment cost per crop acre	53	25.48	20.87	20.83	16.95
Land-use and crop returns:					
Percent of tillable land in:					
Corn and corn silage	54	35.4	26.5	25.5	33.0
Soybeans	55	15.2	15.4	17.1	13.7
Small grains	56	22.5	26.0	22.6	27.6
All hay and pasture crops	57	26.8	28.1	32.5	22.2
Feed and grain returns per tillable acre	58	63.72	50.30	53.19	44.39
Feed fed per tillable acre	59	62.16	42.30	46.70	39.56
Corn yield, bushels per acre	60	58.4	53.9	59.0	42.0
Soybean yield, bushels per acre	61	32.3	23.8	24.1	21.8
Oats yield, bushels per acre	62	31.5	25.3	11.1	16.2
Wheat yield, bushels per acre	63	18.5	17.9	17.9	14.4

TABLE 14. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF HOG FARMS IN NORTHERN ILLINOIS, 1951

	Soils rated 76 to 100				Soils rated 56 to 75			
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339	340-499
	89	87	56	48	62	69	36	43
1	146	219	307	398	143	222	297	416
2	134	197	270	333	122	180	226	324
3	83	83	83	82	67	68	69	68
4	$ 382	$ 454	$ 752	$ 852	$ 362	$ 451	$ 649	$ 1 200
5	940	1 177	1 236	1 774	738	916	1 166	1 560
6	2 905	3 902	4 472	5 582	2 656	3 507	4 300	5 604
7	2 675	3 351	4 105	4 986	2 435	3 062	3 735	5 127
8	568	791	1 018	1 351	464	658	840	1 160
9	434	579	803	990	368	452	625	854
10	457	541	638	664	437	453	656	713
11	3 173	4 626	5 874	7 379	2 485	3 502	4 512	6 234
12	11 534	15 421	18 898	23 578	9 945	13 001	16 483	22 452
13	11 641	15 737	19 075	20 911	10 774	12 628	15 785	23 771
14	$23 175	$31 158	$37 973	$44 489	$20 719	$25 629	$32 268	$46 223
15	$ 348	$ 496	$ 555	$ 645	$ 348	$ 421	$ 537	$ 700
16	10 344	15 339	20 278	25 858	8 357	12 855	15 699	20 901
17	16 348	21 084	26 064	28 316	14 524	16 684	22 099	31 497
18	$27 040	$36 919	$46 897	$54 819	$23 229	$29 960	$38 335	$53 098
19	3 865	5 761	8 924	10 330	2 510	4 331	6 067	6 875
20	34	37	47	44	25	33	37	31
21	185.20	168.58	152.76	137.74	162.44	134.95	129.07	127.64
22	158.73	142.27	123.69	111.78	144.89	115.44	108.65	111.11
23	26.47	26.30	29.07	25.95	17.55	19.51	20.43	16.53
24	5 395	6 947	8 568	10 014	3 940	4 487	6 873	9 998
25	3 423	5 336	8 212	9 984	2 799	5 272	5 654	5 254
26	456	491	460	554	389	470	513	424
27	2 236	2 387	2 442	2 843	2 133	2 396	2 461	2 567
28	7 038	10 387	14 798	17 709	4 995	7 833	10 579	13 109
29	48.20	47.43	48.20	44.49	34.93	35.28	35.62	31.51
30	9.75	9.83	10.94	10.45	8.90	9.82	10.28	9.22
31	$21 680	$31 343	$36 742	$46 539	$18 926	$22 617	$29 686	$46 010
32	16 285	24 396	28 174	36 525	14 987	18 130	22 813	36 012
33	494.64	482.59	440.54	425.91	392.64	359.49	346.59	341.89
34	1.4	1.0	2.2	2.4	1.5	1.0	1.4	2.5
35	118	113	103	92	103	107	88	55
36	3.1	2.9	3.1	4.0	4.1	5.0	5.3	4.2
37	13.4	24.8	27.9	41.5	9.3	18.1	23.7	39.7
38	37	48	63	62	34	39	49	69
39	4 214	5 901	7 456	7 962	3 927	4 597	5 877	8 710
40	1 466	1 598	1 788	2 043	1 280	1 309	1 642	2 405
41	37.5	48.0	47.6	72.9	34.9	43.5	51.4	75.6
42	4 177	6 049	7 642	9 618	4 001	5 956	6 808	10 383
43	7.6	18.6	19.0	29.4	3.5	16.2	10.0	46.0
44	35 376	48 276	54 600	55 525	33 890	37 036	45 292	70 626
45	$ 2 236	$ 2 387	$ 2 442	$ 2 843	$ 2 133	$ 2 396	$ 2 461	$ 2 567
46	439	964	1 663	2 143	302	666	1 274	2 560
47	16.1	20.1	24.3	29.3	15.2	18.8	22.8	28.8
48	24.72	20.71	18.84	18.32	25.34	20.45	19.72	20.46
49	655	884	1 017	1 478	576	862	1 090	1 467
50	312	393	444	429	309	333	451	504
51	510	709	859	1 154	432	631	742	1 041
52	334	391	443	450	334	361	392	462
53	26.85	24.12	20.52	20.51	27.64	23.43	22.70	22.36
54	43.4	44.1	43.2	43.3	39.8	40.4	41.0	40.4
55	3.3	4.4	4.4	5.5	3.2	6.9	8.0	4.8
56	23.2	24.7	25.2	23.2	24.1	24.0	24.2	22.6
57	29.5	26.4	26.9	27.3	32.1	28.3	26.6	31.7
58	76.88	77.45	74.53	76.61	67.61	70.17	67.89	63.03
59	86.87	79.88	70.65	62.80	88.31	70.16	69.84	73.37
60	70.0	69.2	67.6	68.0	63.5	65.2	63.1	61.1
61	29.0	30.6	32.2	36.2	26.4	28.3	29.6	29.3
62	51.6	49.0	45.4	46.5	45.5	42.6	38.6	42.4
63	21.5	21.4	16.9	18.9	24.6	18.7	22.1	18.4

TABLE 15. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF GRAIN FARMS IN SOUTHERN ILLINOIS, 1951

Range in size (total acres)		Under 180	180-259	260-339	340-499
Number of farms		20	40	33	29
Average size of farm	1	149	217	302	403
Acres of tillable land	2	136	188	256	323
Soil rating on improved land	3	45	43	40	38
Dollar inputs per farm:					
Soil fertility	4	$ 519	$ 710	$ 846	$ 1 244
Buildings and fence	5	483	557	612	658
Machinery and equipment	6	2 367	2 822	3 707	4 200
Labor	7	1 979	2 550	2 963	3 537
Taxes	8	380	454	642	745
Seed and crop expense	9	450	401	474	627
Livestock and miscellaneous expense	10	137	218	224	242
Capital charge (4 and 5 percent)	11	1 621	2 222	2 853	3 459
Total non-feed input	12	(7 936)	(9 934)	(12 321)	(14 712)
Total feed input	13	2 425	3 748	5 111	5 925
Total farm inputs	14	$10 361	$13 682	$17 432	$20 637
Dollar returns per farm:					
Miscellaneous returns	15	$ 420	$ 396	$ 519	$ 586
Feed and grain returns	16	8 357	11 990	15 705	18 249
All livestock returns	17	3 527	5 485	6 941	8 829
Total farm returns	18	$12 304	$17 871	$23 165	$27 664
Net management returns	19	1 943	4 189	5 733	7 027
Net management returns per $100 non-feed input	20	24	42	47	48
Total returns per acre	21	82.58	82.35	76.71	68.65
Total inputs per acre	22	69.54	63.05	57.72	51.21
Net management returns per acre	23	13.04	19.30	18.98	17.44
Net cash income (cash balance)	24	3 107	5 264	5 150	8 362
Inventory and capital change	25	2 003	2 963	5 317	4 383
Farm products consumed	26	234	340	434	412
Less unpaid labor	27	1 780	2 156	2 315	2 670
Net farm earnings	28	3 564	6 411	8 586	10 487
Net earnings per acre	29	23.92	29.54	28.43	26.02
Rate earned on investment	30	9.63	12.55	13.07	13.11
Value of land (current basis)	31	$22 950	$33 114	$43 223	$54 064
Total capital investment	32	37 013	51 066	65 699	80 002
Total capital investment per acre	33	248.41	235.33	217.55	198.52
Physical inputs per farm:					
Animal units of sheep	34	3.3	.6	1.2	.9
Average number of hens	35	64	113	123	109
Average number of milk cows	36	1.4	2.5	2.8	2.7
Animal units of "other" cattle	37	2.9	7.4	10.7	15.3
Number of litters farrowed	38	6	9	12	16
Total amounts of feed fed:					
Corn, bushels	39	789	1 174	1 695	2 011
Oats, bushels	40	165	265	323	430
Hay, tons	41	10.4	21.2	29.3	32.9
Pasture, days	42	1 948	2 584	3 268	4 472
Silage, tons	43	3.2	3.0	7.2	8.4
Supplement, pounds	44	9 075	12 920	17 540	18 337
Farm operating costs:					
Unpaid labor charge	45	$ 1 780	$ 2 156	$ 2 315	$ 2 670
Hired labor cost	46	199	394	648	867
Total months of labor	47	13.1	16.8	20.1	23.6
Labor cost per crop acre	48	16.17	15.49	13.09	12.89
Machinery repairs, supplies, etc.	49	484	540	762	889
Machinery hire	50	334	314	316	216
Gasoline and oil	51	397	562	820	904
Total auto cost (farm share)	52	229	305	335	364
Machinery and equipment cost per crop acre	53	19.34	17.14	16.37	15.30
Land-use and crop returns:					
Percent of tillable land in:					
Corn and corn silage	54	32.5	31.2	30.0	26.6
Soybeans	55	26.6	24.4	23.7	23.6
Small grains	56	25.7	25.6	28.6	27.4
All hay and pasture crops	57	15.1	17.3	16.6	20.2
Feed and grain returns per tillable acre	58	61.03	63.39	60.91	55.74
Feed fed per tillable acre	59	17.83	19.94	19.96	18.34
Corn yield, bushels per acre	60	48.8	57.0	55.0	53.8
Soybean yield, bushels per acre	61	24.8	25.4	25.8	25.7
Oats yield, bushels per acre	62	31.3	30.9	27.1	36.0
Wheat yield, bushels per acre	63	19.1	22.0	20.1	19.0

TABLE 16. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF GRAIN FARMS IN NORTHERN ILLINOIS, 1951

	Soils rated 76 to 100				Soils rated 56 to 75			
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339	340-499
	54	85	83	86	15	28	26	26
1	152	222	302	406	156	224	307	410
2	141	206	282	372	142	200	270	340
3	87	85	85	86	70	70	68	70
4	$ 378	$ 603	$ 819	$ 1 069	$ 363	$ 599	$ 795	$ 996
5	661	720	887	1 254	769	804	951	1 006
6	2 418	3 175	4 008	5 260	2 453	3 221	3 676	4 794
7	2 232	2 690	3 386	4 191	2 254	2 665	3 212	4 042
8	568	795	1 064	1 400	500	646	837	1 180
9	318	527	626	946	414	449	619	704
10	194	249	316	343	229	263	262	313
11	2 857	4 048	5 416	7 096	2 607	3 435	4 265	5 565
12	9 626	12 807	16 522	21 559	9 589	12 082	14 617	18 600
13	3 428	4 399	5 290	6 314	3 039	3 747	5 074	6 453
14	$13 054	$17 206	$ 21 812	$ 27 873	$12 628	$15 829	$19 691	$ 25 053
15	$ 330	$ 464	$ 608	$ 713	$ 348	$ 507	$ 618	$ 1 100
16	10 886	16 666	21 227	28 179	9 738	14 316	18 328	22 533
17	5 006	6 659	7 785	9 217	4 614	5 716	7 543	9 246
18	$16 222	$23 789	$ 29 620	$ 38 109	$14 700	$20 539	$26 489	$ 32 879
19	3 168	6 583	7 808	10 236	2 072	4 710	6 798	7 826
20	33	51	47	47	22	39	46	42
21	106.72	107.16	98.08	93.86	94.23	91.69	86.28	80.19
22	85.88	77.50	72.22	68.65	80.95	70.66	64.14	61.10
23	20.84	29.65	25.85	25.21	13.28	21.03	22.14	19.09
24	4 779	7 842	9 365	11 986	3 247	5 935	7 625	9 936
25	2 995	4 575	5 737	7 266	3 297	4 235	5 556	5 966
26	329	344	429	459	263	353	414	354
27	2 078	2 130	2 307	2 379	2 128	2 378	2 532	2 865
28	6 025	10 631	13 224	17 332	4 679	8 145	11 063	13 391
29	39.64	47.89	43.79	42.69	29.99	36.36	36.03	32.66
30	9.07	11.23	10.43	10.40	7.81	10.22	11.17	10.28
31	$46 658	$68 384	$ 92 087	$123 377	$38 848	$54 877	$68 785	$ 94 609
32	66 463	94 640	126 728	166 586	59 913	79 676	99 053	130 217
33	437.26	426.31	419.63	410.31	384.06	355.70	322.65	317.60
34	1.8	.6	.4	1.1	.1	1.3	1.1	1.9
35	81	94	90	77	128	120	115	79
36	2.0	2.8	3.2	2.7	1.2	3.0	3.1	2.9
37	6.5	10.2	15.9	19.7	5.4	8.5	12.0	18.4
38	9	12	14	15	8	6	11	19
39	1 058	1 337	1 604	2 018	910	959	1 603	2 102
40	476	550	641	690	429	590	534	671
41	17.0	24.9	32.9	34.2	13.1	22.8	31.0	38.9
42	2 654	3 014	4 483	5 237	1 695	3 219	3 576	5 078
43	2.0	3.9	.9	5.0	.....	2.8	7.8	3.8
44	11 209	14 168	14 728	18 405	11 359	13 841	15 046	18 952
45	$ 2 078	$ 2 130	$ 2 307	$ 2 379	$ 2 128	$ 2 378	$ 2 532	$ 2 865
46	154	560	1 079	1 812	126	287	680	1 177
47	13.6	16.4	20.5	25.2	13.6	16.2	19.7	24.8
48	18.34	14.88	13.74	12.68	18.94	15.57	13.69	13.76
49	429	662	916	1 289	482	697	850	1 116
50	266	378	386	481	292	279	224	434
51	465	614	843	1 118	401	662	813	971
52	370	352	392	432	301	376	421	376
53	19.87	17.56	16.26	15.92	20.61	18.81	15.67	16.32
54	41.6	41.8	39.4	39.5	40.7	44.1	39.2	39.0
55	14.4	17.2	17.9	19.4	13.3	12.7	12.3	14.1
56	24.1	23.0	24.0	23.4	22.5	22.5	26.4	26.1
57	19.3	17.7	18.4	16.4	23.4	20.4	21.4	19.9
58	76.98	80.64	75.01	75.37	68.34	71.10	67.52	65.50
59	24.31	21.35	18.76	16.97	21.40	18.74	18.79	18.98
60	66.7	70.4	66.1	64.1	60.2	59.7	59.9	58.4
61	31.1	30.0	30.2	29.7	30.2	27.9	30.1	28.5
62	47.9	43.9	43.3	43.3	46.0	43.6	43.3	38.2
63	18.0	22.6	23.8	17.1	23.2	24.0	18.5	17.9

TABLE 17. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF DAIRY FARMS IN SOUTHERN ILLINOIS, 1951

Range in size (total acres) Number of farms		Under 180 49	180-259 43	260-339 16
Average size of farm	1	135	213	287
Acres of tillable land	2	110	171	235
Soil rating on improved land	3	37	33	32
Dollar inputs per farm:				
Soil fertility	4	$ 381	$ 644	$ 967
Buildings and fence	5	529	559	642
Machinery and equipment	6	2 192	3 047	3 454
Labor	7	2 550	3 201	3 291
Taxes	8	293	385	469
Seed and crop expense	9	251	336	447
Livestock and miscellaneous expense	10	307	394	389
Capital charge (4 and 5 percent)	11	1 466	2 060	2 624
Total non-feed input	12	(7 969)	(10 626)	(12 283)
Total feed input	13	5 403	6 980	8 012
Total farm inputs	14	$13 372	$17 606	$20 295
Dollar returns per farm:				
Miscellaneous returns	15	$ 282	$ 379	$ 374
Feed and grain returns	16	5 654	8 509	10 865
All livestock returns	17	9 313	11 375	12 603
Total farm returns	18	$15 249	$20 263	$23 842
Net management returns	19	1 877	2 657	3 547
Net management returns per $100 non-feed input	20	24	25	29
Total returns per acre	21	112.95	95.13	83.07
Total inputs per acre	22	99.05	82.66	70.71
Net management returns per acre	23	13.90	12.47	12.36
Net cash income (cash balance)	24	3 791	4 419	5 805
Inventory and capital change	25	1 373	2 625	2 511
Farm products consumed	26	382	477	582
Less unpaid labor	27	2 203	2 802	2 727
Net farm earnings	28	3 343	4 717	6 171
Net farm earnings per acre	29	24.76	22.15	21.50
Rate earned on investment	30	10.19	10.15	10.36
Value of land (current basis)	31	$17 447	$26 457	$35 403
Total capital investment	32	32 803	46 499	59 566
Total capital investment per acre	33	242.99	218.31	207.55
Physical inputs per farm:				
Animal units of sheep	34	.2	.6	.2
Average number of hens	35	140	169	145
Average number of milk cows	36	14.1	16.9	16.9
Animal units of "other" cattle	37	.5	.4	2.1
Number of litters farrowed	38	5	6	9
Total amounts of feed fed:				
Corn, bushels	39	1 187	1 481	1 831
Oats, bushels	40	426	598	738
Hay, tons	41	46.7	55.2	64.7
Pasture, days	42	3 802	5 274	6 084
Silage, tons	43	44.1	54.8	82.8
Supplement, pounds	44	23 015	34 241	29 793
Farm operating costs:				
Unpaid labor charge	45	$ 2 203	$ 2 802	$ 2 727
Hired labor cost	46	347	399	564
Total months of labor	47	16.9	21.5	22.9
Labor cost per crop acre	48	29.62	24.00	17.56
Machinery repairs, supplies, etc.	49	429	605	608
Machinery hire	50	225	320	319
Gasoline and oil	51	375	535	655
Total auto cost (farm share)	52	244	311	324
Machinery and equipment cost per crop acre	53	25.46	22.91	18.43
Land-use and crop returns:				
Percent of tillable land in:				
Corn and corn silage	54	26.6	23.9	24.1
Soybeans	55	9.3	14.3	11.6
Small grains	56	25.3	25.5	31.3
All hay and pasture crops	57	37.5	34.0	31.2
Feed and grain returns per tillable acre	58	50.41	48.65	45.54
Feed fed per tillable acre	59	49.12	40.82	34.09
Corn yield, bushels per acre	60	49.1	47.6	50.3
Soybean yield, bushels per acre	61	24.8	23.2	24.0
Oats yield, bushels per acre	62	27.6	29.4	27.9
Wheat yield, bushels per acre	63	18.8	18.2	18.3

TABLE 18. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF DAIRY AND DAIRY-GRAIN FARMS IN NORTHERN ILLINOIS, 1951

	Dairy farms				Dairy-grain farms		
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339
	77	40	15	9	24	30	17
1	141	219	295	419	149	226	299
2	119	174	247	302	141	203	272
3	70	64	67	68	80	79	74
4	$ 357	$ 465	$ 637	$ 715	$ 377	$ 591	$ 551
5	874	1 124	1 582	1 797	658	715	718
6	2 958	3 880	4 399	6 034	2 481	3 291	4 170
7	3 015	3 501	3 998	5 710	2 364	2 969	3 585
8	543	706	773	1 026	589	767	985
9	390	526	553	795	350	489	662
10	495	775	641	915	325	335	377
11	2 546	3 457	4 597	6 322	2 861	3 930	4 823
12	11 178	14 434	17 180	23 314	10 005	13 087	15 871
13	7 773	10 395	11 922	17 460	3 714	5 145	6 621
14	$18 951	$24 829	$29 102	$40 774	$13 719	$18 232	$22 492
15	$ 396	$ 434	$ 606	$ 526	$ 250	$ 412	$ 513
16	8 231	10 812	13 966	19 696	10 457	15 088	18 732
17	12 599	17 947	18 759	24 702	7 290	8 666	10 954
18	$21 226	$29 193	$33 331	$44 924	$17 997	$24 166	$30 199
19	2 275	4 364	4 229	4 150	4 278	5 934	7 707
20	20	30	25	18	43	45	49
21	150.54	133.30	112.99	107.22	120.79	106.93	101.00
22	134.40	113.37	98.65	97.31	92.07	80.67	75.22
23	16.13	19.93	14.34	9.90	28.71	26.26	25.78
24	4 938	7 339	6 678	5 191	5 873	7 771	10 558
25	1 769	2 367	4 437	7 299	3 051	4 001	4 170
26	416	474	549	457	341	418	481
27	2 302	2 359	2 838	2 475	2 126	2 326	2 679
28	4 821	7 821	8 826	10 472	7 139	9 864	12 530
29	34.20	35.71	29.92	24.99	47.91	43.65	41.90
30	8.37	10.02	8.44	7.21	10.82	10.81	11.17
31	$33 516	$46 400	$63 200	$93 751	$43 790	$63 354	$ 78 825
32	57 630	78 038	104 578	145 183	65 794	91 264	112 221
33	408.72	356.34	354.50	346.50	442.78	403.82	375.32
34	.5	.2	.1	1.0	.5	.3	.4
35	137	114	154	89	98	137	102
36	19.6	25.1	25.3	33.1	11.3	14.1	14.4
37	1.3	1.1	3.4	9.3	.4	.7	....
38	8	12	19	22	1	4	11
39	1 481	2 138	2 600	3 705	586	974	1 570
40	1 171	1 786	1 876	2 884	726	914	1 033
41	65.6	94.6	84.6	125.0	38.6	45.3	58.4
42	5 693	7 282	8 128	11 970	3 148	4 735	4 817
43	83.8	120.0	95.5	189.4	17.0	18.0	16.6
44	27 900	30 373	39 030	55 294	12 452	17 118	20 836
45	$ 2 302	$ 2 359	$ 2 838	$ 2 475	$ 2 126	$ 2 326	$ 2 679
46	713	1 142	1 160	3 235	238	643	906
47	18.2	20.6	23.8	33.4	14.5	18.3	21.7
48	33.06	25.74	22.04	23.89	19.95	17.62	15.31
49	675	953	1 084	1 410	436	681	870
50	310	327	375	455	291	348	338
51	504	643	773	1 000	428	657	916
52	339	369	430	569	341	364	409
53	32.43	28.53	24.25	25.25	20.94	19.53	17.81
54	35.4	33.8	35.4	30.1	43.7	40.7	37.1
55	1.9	3.2	1.3	7.2	8.1	9.5	15.5
56	22.0	24.8	23.6	25.7	22.5	22.9	23.6
57	40.2	37.9	39.1	36.1	25.0	25.5	22.7
58	68.04	60.87	55.74	64.21	73.93	74.03	68.59
59	65.32	59.74	48.27	57.81	26.34	25.34	24.34
60	61.9	56.5	60.6	63.3	64.2	64.9	63.4
61	26.8	24.0	24.5	24.1	29.9	28.6	29.4
62	53.3	49.2	41.4	54.5	46.1	45.5	39.5
63	18.1	17.0	22.4	19.1	14.8	20.9	20.4

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert W. Hudelson
Acting Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 9-52—12,000
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-3
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1951 June...	220	272	270	225	323	348	155	378	290	221
July....	218	265	269	225	398	497	221	376	286	212
Aug....	217	263	271	225	450	393	174	378	287	217
Sept....	217	262	270	225	511	394	175	380	292	218
Oct.....	217	266	272	226	655	662	293	384	292	218
Nov....	217	267	267	227	541	492	217	385	293	219
Dec....	217	266	267	227	467	383	169	387	300	218
1952 Jan....	216	262	265	229	395	404	176	388	298	221
Feb....	215	257	261	230	303	325	141	391	298	222
Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	354	342	150	394	299[11]	203[12]

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[13]

Product	Calendar year average			Aug.	Current months, 1952		
	1933-39	1950	1951	1951	June	July	Aug.
Corn, bu.....	$ .66	$1.35	$1.67	$1.67	$1.73	$1.71	$1.69
Oats, bu.....	.31	.76	.87	.76	.76	.74	.79
Wheat, bu.....	.86	2.02	2.24	2.19	2.11	2.06	2.11
Barley, bu.....	.62	1.20	1.36	1.30	1.25	1.30	1.35
Soybeans, bu.....	.90	2.49	2.95	2.77	3.13	3.11	3.14
Hogs, cwt.....	8.52	18.19	20.30	20.80	19.70	20.30	21.00
Beef cattle, cwt.....	7.88	24.54	30.85	31.70	28.20	28.70	28.00
Lambs, cwt.....	8.36	25.12	31.66	29.30	26.10	26.10	27.40
Milk cows, head....	58.00	216.67	267.50	270.00	270.00	255.00	265.00
Veal calves, cwt.....	8.66	27.73	33.57	32.50	31.30	29.70	29.00
Sheep, cwt.....	3.58	10.52	16.07	14.00	11.00	9.50	10.00
Butterfat, lb.....	.27	.58	.66	.64	.65	.67	.68
Milk, cwt.....	1.68	3.45	4.16	4.00	3.90	4.25	4.40
Eggs, doz.....	.19	.31	.42	.40	.31	.33	.40
Chickens, lb.....	.15	.23	.27	.26	.25	.25	.24
Wool, lb.....	.25	.53	.83	.85	.46	.46	.46
Apples, bu.....	1.08	2.24	2.04	2.00	2.50	2.50	2.40
Hay, ton[13].....	9.39	20.77	21.08	19.40	19.90	20.40	23.50

[1-13] For sources of data in tables see the May-June issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Acting Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | October-November, 1952 | Numbers 208 and 209

Articles in This Issue

ILLINOIS FARMERS NEED BETTER MARKET REPORTS

Many advances have been made in livestock market news; but further improvements are possible. Buyers and sellers use market reports to be better informed. Price times weight gives value. Grade is closely associated with price. Weighing conditions, fill, and shrink are all factors affecting weight.

If the market report is to be used by farmers and others as a means of being informed as to value the user must be able to interpret quoted prices in terms of livestock appearance on the farm. This implies he must be a good judge of both weight and grade to estimate price.

In many areas there are alternative markets. Many Illinois farmers can choose between any one of two or three local markets, one or two auctions, and possibly two or three terminal markets. If prices at each of these markets were known farmers could better choose their market. Many market reports cover only one market; if anyone is interested in comparing alternative markets he must obtain reports from several sources. This is often impractical.

The farmer is interested in marketing a specific lot of livestock at a given time. Often the price at one market will be sufficiently higher than at an alternative market so that livestock moves from the low to the high market for final sale. A given market may have the best net price on a given day for 200-pound hogs; but another market may have the best

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 1. — PERCENT OF FARMERS MISSING PRICE, WEIGHT, AND VALUE OF LIVESTOCK BY SPECIFIED AMOUNTS

Range in estimates percent	Percent of Estimates on Basis of Price	Weight	Value
Overestimated			
Over 15	6.2	....	6.2
11–15	8.3	4.2	14.7
6–10	18.8	14.6	16.7
1–5	27.2	20.8	12.5
0±1	10.4	16.7	8.3
Underestimated			
1–5	14.6	12.5	8.3
6–10	6.2	6.2	12.5
11–15	6.2	8.3	10.4
Over 15	2.1	16.7	10.4

price for 270-pound hogs. The farmer is primarily interested in the price for the weight and grade of livestock he has to sell. This minimizes the value of top or average prices in helping him interpret the market for his livestock. Price relationships between markets change. Although a given market may be the best place to sell hogs in June, it does not necessarily follow that it will be the best market in October. Therefore, for each sale a study of alternative market prices is desirable.

Pilot study.[1] A pilot study was made to ascertain the value of market reports to Illinois farmers. Farmers estimated weight, grade, and price when livestock was shipped to market; then actual weight, price, and buyers' estimate of grade were obtained. Data on 48 shipments of livestock were summarized.

Over half the farmers estimated either weight or price within five percent of actual; but because many were nearly correct on one but missed the other by a large amount, less than one-third estimated value within this range (Table 1). The following summarizes the estimates for various species and classes of livestock:

Species and class	Weight	Price	Value
Bulls	underestimate	overestimate	underestimate
Steers and heifers	accurate	overestimate	overestimate
Hogs (barrows and gilts)	overestimate	overestimate	overestimate
Sows	underestimate	overestimate	overestimate
Veal calves	underestimate	underestimate	underestimate
Cows	overestimate	overestimate	overestimate

Implications of these data. Many shippers become dissatisfied with a market and blame either the trucker or the market because the livestock did not weigh as much or sell as high as they thought it would. This study

[1] This data was collected by three students working on a special problem: W. B. Eich, J. E. Henneberry, and A. W. Schade.

indicates additional work is needed to demonstrate market grades and ways of estimating price from available market reports. Farmers, truckers, market agencies, and markets are interested in a better understanding of market prices. Unless a farmer is well acquainted with prices at alternative markets, market grades, etc., he has a difficult problem in choosing his place and type of market.

Good market reports properly interpreted would permit a better understanding of price. The time now used in analyzing these conditions could be used in studying fundamental marketing problems.

Suggested improvements. Market reports in many daily papers could be improved by printing in larger type that can be read more easily. Brief summaries showing top and average prices with bulk of sales at a wide range are of little value to farmers. Many radio reports that give weight and price with no mention of grade are practically useless.

Market reports should be accurate and timely. If possible they should include information from alternative markets. They should be understandable. This involves an understanding of market grades and an interpretation of market news.

A good market report, in addition to including prices at which animals sold, also includes information as to the type of buyers (big packers, order buyers, small butchers, etc.), will describe the tone of the market (active, dull, etc.), and will often contain a brief statement as to the reason for market action. A summary of the fresh meat market would strengthen many market reports, as livestock and meat prices tend to move in the same direction.

W. J. Wills

ESTIMATED TRENDS IN NON-FEED CORN USE TO 1956

Though small as compared with feed uses (about ten percent), the nonfeed uses of corn are an important factor in the cash corn market, especially for the central Illinois and eastern Iowa areas. An attempt is made here to predict the trend for the various nonfeed demands for corn, except for export, for the

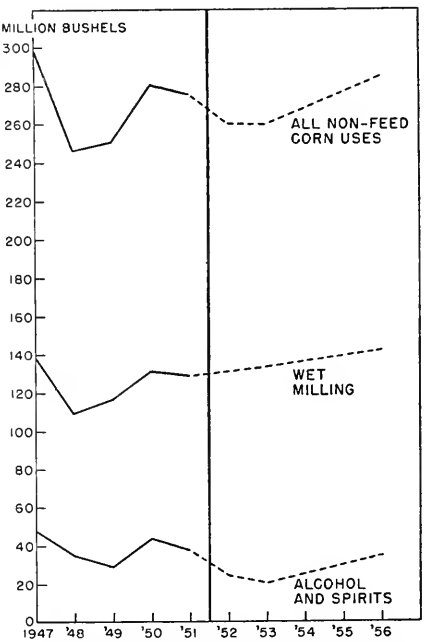


Fig. 1. Non-feed Corn Uses, 1947-1951 and Estimates for 1952-1956

TABLE 1. — WET MILLING CORN GRIND FOR VARIOUS PRODUCTS, 1947-1951, AND ESTIMATES FOR 1952-1956

	Calendar Years '47	'48	'49	'50	'51	'52	'53	'54	'55	'56
Production of:										
Starch	1,608	1,491	1,579	1,903	1,778	1,835	1,886	1,937	1,989	2,040
Syrup	1,983	1,333	1,418	1,533	1,549	1,535	1,537	1,538	1,541	1,543
Dextrin	162	158	159	207	188	185	192	198	204	211
Sugar	785	712	738	829	767	800	825	850	874	899
Miscellaneous Refinery Products	121	71	99	114	114	130	144	157	170	184
TOTAL (Millions of pounds)	4,659	3,765	3,993	4,585	4,396	4,485	4,584	4,680	4,778	4,877
TOTAL CORN GRIND (Million of bushels)	139.3	109.9	116.1	131.4	129.0	130.6	133.6	136.6	139.6	142.7

NOTE: The actual wet milling grind for 1952 may be slightly below the trend since in 1950 and early 1951 grind was very much above the trend and probably resulted in inventory buildup, especially in syrup and starch.

years 1952 through 1956 (Fig. 1). The demand of the corn wet millers is by far the most important of these demands and its prediction is subject to the greatest uncertainties, so its analysis has been much more detailed than that for the other groups. For such a look into the future only the simplest techniques of trend extrapolation have been applied, but with considerable care and at a level which separated the different contributions to demand into as fine categories as seemed possible with published data.

In the case of wet milling, demand for corn was separated into demands for starch, syrup, dextrin, sugar, and miscellaneous refinery products. (The sum in pounds of these products provides an excellent index of corn ground, the sum and the grind figures having a 0.997 coefficient of correlation.) The various food and industrial demands for starch and syrup are so many and their trends differ so much that each was examined separately. Part of the detailed estimates for the wet milling demand are shown in Table 1.

Estimates for 1956 for corn use by distillers and fermented malt beverage makers were made on the basis of per capita consumption and

TABLE 2. — NONFEED USES OF CORN, 1947-1951, AND ESTIMATES FOR 1952-1956
Millions of bushels

	Calendar Years '47	'48	'49	'50	'51	'52	'53	'54	'55	'56
Corn ground for:										
Wet milling	139.3	109.8	116.2	131.5	129.1	130.6	133.6	136.6	139.6	142.7
Alcohol and distilled spirits	47.8	34.3	28.6	43.4	37.9	24.0	20.0	25.0	30.0	35.0
Fermented malt liquors	72.0	63.0	68.0	68.0	70.0	16.1	16.4	16.7	17.0	17.5
Corn meal, flour, hominy, etc.						53.0	53.3	53.5	53.8	54.0
Farm household use	17.2	17.1	17.2	16.7	17.0	15.0	15.0	15.0	15.0	15.0
Breakfast foods	10.6	10.5	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0
Seed	11.8	11.9	11.6	11.1	11.2	11.1	10.9	10.7	10.5	10.3
TOTAL	298.7	246.6	251.6	280.7	276.2	260.8	260.2	268.5	276.9	285.5

population trends. The 1952 and 1953 estimates were adjusted to include effects of the special incidence of new taxes on consumption of distilled beverages, and the assumption was made that this tax would be lightened and production would return to normal per capita levels by 1956. No detailed consideration was given the predictions for the very stable uses at the lower end of Table 2. These were included chiefly to complete the nonfeed demand picture.

An implicit assumption behind all of these guesses is that our economy will move along at about its present level for the next five years, in semi-mobilization without all-out war.

KIRK FOX

THE REVOLVING METHOD OF FINANCING COOPERATIVES

What Is the Revolving Method of Financing

Cooperatives using the revolving method of financing secure current contributions from each patron exactly in proportion to the amount of business he does with the cooperative. Some evidence of ownership is given to patrons for these contributions, which may arise from withheld earnings or from a deduction per unit of product handled. The funds may be used to pay the costs of operating the business, for expansion of facilities, or to provide reserves. After these needs are adequately met, the contributions of the earliest patrons are repaid with the funds obtained from subsequent patrons of the organization.

The Revolving Method of Financing in Practice

Table 1 shows an active member's equity account in a cooperative grain company in Illinois which uses the revolving plan in rudimentary form.

TABLE 1. — A MEMBER'S CAPITAL EQUITY ACCOUNT IN A NONSTOCK COOPERATIVE

Year	Balance at beginning of year	Amount withheld	Amount paid back	Balance at end of year
1936	.....	$ 10.33	.....	$ 10.33
1937	$ 10.33	19.53	.....	29.86
1938	29.86	18.17	.....	48.03
1939	48.03	16.28	.....	64.31
1940	64.31	41.85	.....	106.16
1941	106.16	39.35	.....	145.51
1942	145.51	115.11	$ 27.80	232.82
1943	232.82	98.24	33.30	297.76
1944	297.76	72.00	.....	369.76
1945	369.76	108.06	.....	477.83
1946	477.82	92.43	.....	570.25
1947	570.25	179.86	84.84	665.27
1948	665.27	466.14	410.23	721.18
1949	721.18	205.20	173.01	753.37
1950	753.37	120.46	.....	873.83

This patron received a patronage refund credit of $10.33 at the end of the fiscal year 1936. Since this was the first year of operation his balance was also $10.33. The following year his patronage refund credit was $19.53, which increased his balance to $29.86. Note that this patron has received a patronage refund credit every year since 1936 ("Amount withheld" column) and has received cash patronage refund payments at the end of fiscal years 1942, 1943, 1947, 1948, and 1949 ("Amount paid back" column). The amount in the right hand column represents this patron's equity in the capital funds of the cooperative. At the end of fiscal 1950 this figure was $873.83.

Eventually, barring unforeseen circumstances, this entire amount will be revolved back to him in cash. *The principal considerations in determining the amount and time of revolving are the amount of funds available, and the extent to which capital can be revolved without jeopardizing the capital requirements of the association.*

How the Revolving Method of Financing Adapts Itself to Principles of Cooperation

Control by members. The revolving capital plan offers an automatic way to keep the voting control of the organization in the hands of those who use it. Membership and the right to vote is rescinded when a member ceases to patronize the association and his contributions are entirely revolved back to him.

Payment for capital limited. Returns on the stock or membership capital of cooperatives are limited by both federal and state laws. The limit in Illinois is eight percent per year. In the example shown, no interest was paid on the individual's capital equity account. Limited returns on capital are recognized as a sound business procedure if the cooperative form of organization is to be perpetuated. Farmers' associations in which no limit was placed on returns to capital or on amount of stock that one person could own, in many instances have gradually drifted into control by a few individuals, some of whom are no longer agricultural producers.

Sharing the benefits and responsibilities of cooperation in direct proportion to the patronage of the individual member. Since the revolving method of financing involves contributions of patrons exactly in proportion to the extent of patronage, the plan obviously closely follows a third important principle of cooperation, namely the sharing of benefits and responsibilities of cooperation in direct proportion to the patronage of the individual member.

It is possible that patrons of an association with a revolving plan may patronize the association more regularly than in other associations, be-

cause they recognize that the size of their future patronage refund credits (as well as the revolving of credits) is dependent upon the financial success of the association.

Difficulties Encountered in the Revolving Plan of Financing

Some of the problems which face cooperatives considering the adoption of a revolving plan of financing are:

1. Making the capital actually revolve.
2. Extra amount of bookkeeping necessary.
3. Replacement of cash patronage refunds with noncash credits.
4. Reluctance of old patrons to give voting rights to new patrons.

Making the capital funds actually revolve. Cooperatives, along with other businesses, have experienced a need for more capital funds to meet higher costs of operation and to provide for expansion of needed facilities. It is natural that the management of a cooperative may hesitate to use current earnings to repay past contributions when such funds could be profitably used in the business. Withheld earnings have been the easiest capital funds to secure and have nearly always been the cheapest (especially when no interest is paid for their use).

In the example shown the withheld earnings have not been regularly revolved; in effect the contributions of the earliest patrons (many of whom are still patrons) of the cooperative have been used to construct facilities used by present patrons.

Furthermore a cooperative may not secure adequate current contributions to repay those made in a previous year. If contributions are secured only from withheld earnings, there are obviously no funds to revolve in a year of a loss (or even of low earnings). Even among associations which withhold a certain amount per unit of product handled, there will be year to year variations in amounts withheld — both because of changes in the number of patrons and in the amount of product handled.

What may be done to meet these problems? Revolving of funds should be delayed until adequate reserves have been accumulated to take care of fluctuations in withholdings; if the evidence of ownership issued patrons carries a due date, this date may be set far ahead (perhaps 10 years) with the option of repaying sooner if the management so decides. In the financing of large physical plant additions it may be both necessary and desirable to sell additional capital stock, thereby using stock to finance the fixed assets and revolving capital to finance current operations.

Extra amount of bookkeeping necessary. Complete records of the equity accounts of each patron to the extent necessary in a revolving financing plan entail some additional book work which cannot be avoided.

However, all cooperatives which exclude patronage refunds (either cash or book credits) from taxable income must report each individual amount withheld, so the only additional work involved is that of recording withdrawals and making payments to each patron.

Replacement of cash patronage refunds with noncash credits. Patrons in many associations have become accustomed to receiving cash patronage refunds each year; some patrons who are unwilling to wait until their book credits are repaid in cash might cease to patronize the association.

The size of the surplus accounts of a large number of cooperatives, however, serves as evidence that most patrons have not only been willing to let the cooperative retain some of the earnings in the past, but also to use these contributions without payment of interest.

Earnings withheld under a revolving plan would be larger than those under the usual practice where a part of earnings may be paid out as cash patronage refunds and the remainder retained in the business. Therefore some opposition to the adoption of a revolving plan might be lessened by providing for payment of a competitive rate of interest on amounts withheld. Both current patrons and persons who were no longer patrons would receive some recognition for the value of their past contributions while they were awaiting repayment. After funds begin to revolve, continuing patrons would be in a comparable position to patrons of an association distributing earnings currently.

Reluctance of some of the older patrons to give voting rights to new patrons. For many cooperatives this difficulty may be the greatest stumbling block in utilizing the revolving method of financing. And yet, participation by new patrons is essential if the original aims and goals of the cooperative association are to be continually realized.

In some cases all patrons are not given voting rights. There may be a strong sentiment on the part of some of the original patrons to retain the balance of voting power as long as they continue to patronize. Sometimes these earlier patrons feel they should retain voting power even after they have stopped patronizing and their contributions have been revolved back to them, because of the planning, effort, and money they provided in getting the association established on a sound basis.

As a cooperative business has extended its trade area, the problem of securing acceptance of the responsibilities of membership has been intensified. Members most distant from the cooperative's place of business have usually participated less in meetings and committee assignments; the earlier patrons living closer may then feel that they should have a greater voice in policy matters of the association than patrons who participate less.

Conclusion

The revolving method of financing has been adopted by 45 percent of the cooperatives in Minnesota, and in part by an increasing number in Illinois. This growing importance of the revolving plan suggests that it merits a thorough study by many cooperatives not now using it. The revolving plan may not work successfully for all cooperatives, for all methods of cooperative financing have some strong features and some shortcomings. Each cooperative needs to define clearly its objectives, determine its financial requirements, and adopt that financial plan which is most consistent with these objectives and requirements.

L. T. Witherspoon and R. J. Mutti

OWNERSHIP AND DISTRIBUTION OF CAPITAL RESERVES IN A COOPERATIVE

Funds to operate cooperatives may be secured by sales of capital stock, by membership fees or deductions per unit of product handled, by borrowing, or by the retention of earnings either as allocated capital reserves or as unallocated capital reserves. The identity of the owner in all cases except the last is a matter of record.

In this article the legal provisions found in state and national laws and in tax regulations which govern the accumulation of reserves by Illinois cooperatives are reviewed, and the findings in a study of surplus accumulation in a cooperative grain company are presented.

The unallocated surplus of a grain cooperative accumulated over a 15-year period was distributed and the equities analyzed to obtain information on the method of allocation, number of equity holders, size of individual equities, and the length and continuity of patronage. Fifteen other cooperatives were visited to learn if, and how, they allocated withheld earnings and whether they had any specific plans for returning such earnings to their patrons.

Provisions Referring to Surplus in the Illinois Agricultural Cooperative Act (1923)

The Agricultural Cooperative Act of 1923 begins: "An act authorizing the formation of nonprofit cooperative associations. . . ." Nonprofit associations are defined as "not organized to make a profit for themselves as such, or for their members, as such, but only for their members as producers" (Section 2e). Section 15 of the act provides that: "The association by vote of its directors, may establish and accumulate reserves out of earnings including a permanent surplus as an addition to capital.

. . . Any distribution of reserves and surpluses at any time shall be made to members at the time such distribution is ordered, on the basis of patronage."

Internal Revenue Code Regulations on Cooperative Reserves

Cooperatives which qualify for income tax exemption do so on the grounds that their income is the property of the members and not the property of the association. Section 101 (12) of the Internal Revenue Code which grants the exemption reads in part: ". . . Nor shall exemption be denied any such association because there is accumulated and maintained by it a reserve required by state law or a reasonable reserve for any necessary purpose."

The above provisions in federal and state laws are the legal basis on which Illinois cooperatives are permitted to accumulate a capital reserve or surplus.

Method of Allocating an Unallocated Reserve

The cooperative whose surplus was reviewed in detail had a net worth of $147,788 on December 31, 1950, represented by $33,250 of capital stock and $114,538 surplus. From 1936, when the first surplus appeared on the balance sheet, until 1939, the cooperative retained all of its net earnings. After 1939 the cooperative annually retained from 18 to 40 percent of its net earnings.

Allocation of the surplus was a simple mathematical operation. The surplus was divided in proportion to patronage for each of the years in which all earnings were retained. For the years in which patronage refunds were paid, patronage refund checks were used as the basis of division. Total patronage refunds for a given year were divided into the surplus retained that year; each individual refund check was then multiplied by the figure obtained to determine each patron's share of the surplus equity for that year. Finally a card was prepared for each individual patron, listing his patronage refund and surplus equity record from the first year of his patronage up to the present (or the time he ceased to patronize).

This firm had 2,516 patrons during the 15-year period. The findings in an analysis of a sample of 250 records (obtained by selecting every tenth card from the alphabetical file of patrons) follow:

Findings in the Study of the Patronage Records of One Company

Length of patronage. The average length of patronage was 4.1 years for patrons who sold grain to the cooperative but only 1.8 years for patrons who only bought merchandise. About six out of ten patrons had

patronized the cooperative in only one or two of the 15 years. The number of patrons had doubled between 1946 and 1950; therefore the average length of patronage should increase somewhat in the future unless the cooperative continues to expand its operations to bring in new patrons.

Year	Number of patrons	Year	Number of patrons	Year	Number of patrons
1936	330	1941	490	1946	590
1937	300	1942	650	1947	890
1938	300	1943	460	1948	1,030
1939	310	1944	480	1949	1,310
1940	270	1945	540	1950	1,140

Continuity of patronage. In every year at least half the patrons had been patrons the preceding year (Table 1). In seven out of 13 years more than 50 percent of the patrons had been patrons continuously for three or more consecutive years, and in five out of 11 years 35 percent or more of the patrons had been patrons for five or more consecutive years.

About half patronized continuously for three years. The large increases in patrons in 1941, 1942, 1947, 1948, and 1949 resulted in a smaller percent of patrons in these years who had been patrons for three or more consecutive years.

Table 1. — Percent of Patrons With Continuous Patronage, by Years

	'36	'37	'38	'39	'40	'41	'42	'43	'44	'45	'46	'47	'48	'49	'50
Five or more years...	..	..	..	..	48	27	22	35	35	37	42	27	23	20	28
Four or more years..	..	..	..	58	52	29	26	46	48	48	46	33	28	28	38
Three or more years..	..	..	63	68	56	35	38	61	65	54	54	44	41	40	46
Two or more years...	..	73	80	71	67	51	66	83	73	67	72	56	61	58	77

In a revolving fund financial plan, losses must be deducted from patron equities. In this cooperative losses carried back two or three years would have fallen largely on those who incurred them, while losses carried further back might have fallen on patrons no longer active. The largest patrons tended to be the most continuous patrons, and the smallest patrons the least continuous. Therefore, the turnover in the number of patrons exceeded that in volume of products supplied by these patrons.

Surplus equities of patrons. The computed surplus equities of patrons in the cooperative studied ranged from $.06 to $1,202.96. The average surplus equity per patron was $127.68, but the median equity per patron was only $6.54. One-fourth of the patrons had equities below $1.50; one-fourth had equities above $28.00.

The ten percent of the patrons with the greatest patronage accounted for 69.4 percent of the total surplus. By contrast, the lower half accounted

for only 2.1 percent, and the lower one-fourth for only 0.3 percent. A large majority of the patrons of this cooperative had very small accounts.

Some cooperatives have considerably reduced the number of small surplus accounts by requiring a patron to accumulate one share of common stock (par value, $5 to $25) before paying patronage refunds in cash. If a patron fails to patronize for two or three consecutive years and has not accumulated a share of stock, he forfeits the credit in his share reserve. This policy keeps the cooperative's patron list free of inactive members and terminates their surplus equity interest in the cooperative promptly. Patronage refunds placed in share reserves are not taxable to the cooperative, but share reserve credits forfeited to the cooperative's general fund would be taxable in the year forfeited.

The percent of patrons in 1948, 1949, and 1950 who were stockholders in 1951 was 13.6, 16.3, and 12.5 percent respectively. These stockholders accounted for 40 percent of the total business of the company in the 15-year period, 1936-50, but represented only 6.3 percent of the company's 2,516 patrons. Therefore, 60 percent of the surplus equity was contributed by non-stockholder patrons of the company.

The average surplus equity of stockholders was $287.35; their median of $220.57 fell well within the upper ten percent of all patron equities in surplus reserves. The average surplus equity of stockholders was $35.35 per share of stock, or greater than the $25.00 par value.

For each $1.00 of capital stock outstanding, the cooperative had over $3.00 of unallocated surplus retained from earnings of the last 15 years. Essentially it has followed the policy of having patrons finance their cooperative according to use, because the largest patrons have of necessity made the largest contributions to surplus. It is reasonable to assume, however, that the rapid expansion of the cooperative's facilities will not continue indefinitely. Therefore, *as the length of the period over which the surplus accumulates grows, less and less of the capital in use in the cooperative will be furnished by current patrons, unless some plan is adopted to replace the surplus equities of the oldest patrons with equities earned by current patrons.*

Income Tax Status of Capital Reserves or Surplus in Federal Income Tax-Exempt Cooperatives

The Treasury Department has been liberal in the past in its interpretation of the part of Section 101 (12) of the Internal Revenue Code cited earlier. In a California case[1] the judge ruled: "The amounts

[1] Milk Producers of Central California vs. Commissioner, Tax Memo Decision, July 14, 1944, Prentice-Hall, 1944, Tax Memo Decisions Section 44227, pages 732-744.

[retained earnings] in question were credited to the general retains account in terms of dollars and cents, and accurate records were kept for each member showing the amount of butterfat delivered by each member to the corporation. Therefore, it required only a mathematical computation to determine at any time the interests of each individual member in the retains account.

"The liability to members was present and existing, and the method adopted by the petitioner to show that liability on its books could in no way, nor in fact did it in any way, lessen the amount of that liability."

However, in another case the eighth circuit court of appeals upheld lower court denial of exemption for a dairy cooperative on the ground that the cooperative did not provide for equal treatment of members and nonmembers in case of dissolution.[2] The effect of this ruling prior to the adoption of the 1951 Revenue Act was to make the principal difference between unallocated reserves and noncash patronage refunds that of the degree to which patron ownership had been identified; the corporation liability was essentially the same in both cases.

The Revenue Act of 1951 makes all earnings placed in reserve or surplus and not paid out in some manner or disclosed to patrons taxable to the cooperative as income.

Thus, before the 1951 Revenue Act became effective the courts required tax-exempt cooperatives to be able to establish the identity of patron's equity in reserves, but the Treasury Department continued to distinguish between allocated or allocatable reserves and noncash patronage refunds, taxing only the latter to patrons. Henceforth, cooperatives must actually allocate reserves and notify their patrons, preferably in writing, of their individual equities (which are now considered noncash patronage refunds taxable to the patron) or pay taxes on the reserves retained.

Income Tax Status of Capital Reserves of Nonexempt Cooperatives

Nonexempt cooperatives are taxed on reserves and surpluses not allocated to patrons in the same manner as proprietary corporations. They also have the same loss carry-back and carry-forward privileges against reserves as ordinary business corporations. Nonexempt cooperatives are not required to treat members and nonmembers alike, or past and present patrons alike.

[2] Fertile Cooperative Dairy Association vs. Huston, Collector of Internal Revenue, District of Iowa, 33F Supp. 712, Affirm 119F, Second 274, 1941.

Surplus Allocation by 15 Other Illinois Cooperatives

Only two of 15 other Illinois cooperatives visited had allocated their surplus; one was in the process of making the allocation, and one followed the practice of paying out its entire net earnings in patronage refunds. None of the remaining 11 cooperatives' boards had even discussed allocation of the surplus.

Most of the cooperatives had some general provisions in their by-laws requiring that records be kept in such a way that reserves and surpluses can be allocated, and that any distribution be made on the basis of patronage.

Applications of This Study for Illinois Cooperatives

This study has pointed out:

1. The Agricultural Cooperative Act of 1923 authorizes the formation of *nonprofit* corporations, yet the provisions with respect to reserve accumulation permit the corporation as such, and members as such, to secure the use of earnings (and the earnings themselves in case of losses or upon dissolution) which in reality were contributed by previous members.

2. Federal income tax statutes and court interpretations require tax-exempt cooperatives to provide for equal treatment of all patrons, both members and nonmembers, and past and present patrons. The unallocated surplus of tax-exempt cooperatives is the property of all patrons, past and present, who earned it.

3. The Revenue Act of 1951 requires tax-exempt cooperatives either to allocate reserves which are taxable to each patron as a noncash patronage refund, or to pay taxes on reserves retained.

4. In nonexempt cooperatives, the unallocated surplus is not necessarily the property of all patrons as in tax-exempt cooperatives; contractual obligations in the corporation by-laws or statutory provisions in the state cooperative act govern.

5. The number of members with very small accounts who have a claim on the surplus tends to be large unless adequate provisions are made for payment and/or cancellation, because there are many short-time small-volume patrons, especially when merchandise is sold.

Suggested Policies for Identifying Surplus Ownership

Illinois cooperatives could clarify and simplify the ownership of unallocated reserves and surpluses by the following actions:

1. At the earliest opportunity all accumulated reserves in tax-exempt cooperatives should be allocated to previous patrons in the manner suggested earlier in this study. While there is no requirement that reserve equities be paid off prior to dissolution, the financial and legal structure of the cooperative would be simplified and financing shifted to current members by adopting some plan to retire the oldest equities in order.

2. If it is the policy of the nonexempt cooperative to operate as a *nonprofit* organization, some policy for surplus allocation similar to that recommended for tax-exempt cooperatives should be adopted.

3. Cooperatives can simplify the problem of keeping membership lists current and free of inactive members, and limit the number of small surplus accounts, by providing for forfeiture of credits in such accounts if the person fails to patronize for two or three consecutive years and his credits do not equal the par value of a share of common stock. This plan, by eliminating small surplus accounts promptly, would make bookkeeping simpler and more economical.

C. P. SCHUMAIER and R. J. MUTTI

Footnotes for the last page:

[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.

[1] Survey of Current Business, U. S. Department of Commerce; Monthly issues. Converted from 1947-49 = 100 by multiplying by 1.9098549 for Col. 1, and 2.3854962 for Col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); Monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-14 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Survey of Current Business, average weekly earnings (U. S. Department of Labor) converted to index (1935-39 = 100) by multiplying by 4.4595077. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] All hay prices except those for 1933-39 refer to baled hay.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert R. Hudelson

Acting Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension
Work. Acts of May 8 and June 30, 1914

Ill. 8900, 11-52—10,300
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1951 Sept....	217	262	270	225	511	394	175	380	292	218
Oct.....	217	266	272	226	655	662	293	384	292	218
Nov....	217	267	267	227	541	492	217	385	293	219
Dec....	217	266	267	227	467	383	169	387	300	218
1952 Jan.....	216	262	265	229	395	404	176	388	298	221
Feb....	215	257	261	230	303	325	141	391	298	222
Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	298	214
Sept....	213	254	261	228	550	...	...	406[11]	...	225[11]

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Oct. 1951	Current months, 1952		
	1933-39	1950	1951		Aug.	Sept.	Oct.
Corn, bu.....	$ .66	$1.35	$1.67	$1.67	$1.69	$1.67	$1.50
Oats, bu.....	.31	.76	.87	.82	.79	.83	.82
Wheat, bu.....	.86	2.02	2.24	2.21	2.11	2.13	2.13
Barley, bu.....	.62	1.20	1.36	1.32	1.35	1.40	1.35
Soybeans, bu.....	.90	2.49	2.95	2.68	3.14	2.85	2.76
Hogs, cwt.....	8.52	18.19	20.30	20.60	21.00	19.00	19.00
Beef cattle, cwt.....	7.88	24.54	30.85	31.00	28.00	27.50	26.50
Lambs, cwt.....	8.36	25.12	31.66	29.10	27.40	25.70	23.20
Milk cows, head....	58.00	216.67	267.50	280.00	265.00	260.00	250.00
Veal calves, cwt.....	8.66	27.73	33.57	33.30	29.00	28.00	27.50
Sheep, cwt.....	3.58	10.52	16.07	14.00	10.00	8.50	7.70
Butterfat, lb.....	.27	.58	.66	.66	.68	.69	.67
Milk, cwt.....	1.68	3.45	4.16	4.30	4.40	4.60	4.85
Eggs, doz.....	.19	.31	.42	.49	.40	.41	.43
Chickens, lb.....	.15	.23	.27	.24	.24	.25	.24
Wool, lb.....	.25	.53	.83	.56	.46	.45	.45
Apples, bu.....	1.08	2.24	2.04	1.80	2.40	2.55	2.50
Hay, ton[13].....	9.39	20.77	21.08	19.60	23.50	24.50	24.00

[1-13] For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Acting Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics
R. C. Ross, Editor | December, 1952-January, 1953 | Numbers 210 and 211

Articles in This Issue

GRAIN PRICE TRENDS IN 1953[1]

Illinois farmers annually market about 40 percent of their corn or around 200 million bushels. Sale of corn is the third largest source of farmers' income, earning 17 to 18 percent of the total from 1949-51.

A year ago on this program I said I thought the trend in corn prices would be down during 1952. The high price for the 1951 crop actually came in December 1951. Factors which caused my prediction to be correct were:

1. The high price came early because people thought corn would become scarce. Actually we carried out 480 million bushels into the present marketing year.
2. The reduction in the size of the 1952 pig crop caused in part by the high level of corn prices.
3. Sale by the CCC of government-owned corn that was either out-of-condition or going out of condition.
4. A general decline in the level of agricultural prices. This was part of a world-wide drop in prices of raw products which reflected the end of the long inflationary period from 1940-1951. U. S. farm prices declined by 12 percent during 1952.

How about 1953? So far we have had a good rise after harvest until early December, then a fairly sharp down turn which has continued into February. I expect: (1) the price to average lower than in 1952; (2) no

[1] Adapted from a talk given at the Farm and Home Week, University of Illinois, February 3, 1953.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

great strength to develop in the market unless we have bad weather and a short crop in 1953. My reasons:

1. The 1952 crop was larger than the 1951 crop and was more concentrated in the corn belt. Our crop was 3,300 million and we had a 480 million carryover. This total exceeds our consumption of corn even at the high level of recent years.

2. The 1952 crop was fairly large following a fairly short one in 1951 when we allow for the quality of the 1951 crop. Under such conditions we have usually had a slow draggy market with little increase in price. The reason is that the shorter crop has usually caused a decline in number of hogs, as in 1952. In 1949-50 when a large crop followed a short crop the price increased very little.

3. The estimates are for a further cut in the pig crop. The government reported in December a probable 13 percent reduction. If such a reduction is made and next summer's pig crop is the same size as in 1952, we will have only 83 million pigs or about the same as in 1946-47-48 when the pig crop was at its lowest postwar level. In 1951 it was 102 million.

4. The general trend in wholesale prices still seems to be downward.

5. The CCC will likely be a persistent seller as it has been during recent months. It has on hand over 250 million bushels of old 1948 and 1949 crop corn. Its officials have at last learned that corn is a perishable commodity and have decided to turn over its stocks. Cash-grain farmers might well ponder on this effect of supporting corn prices. Here in a year of large supplies the government finds it necessary to sell corn from the 1948 and 1949 crops. The point is: *what is bought eventually has to be sold.* Sooner or later the price effects of one transaction offsets the other.

6. The export market for corn which has been fairly active in recent months may weaken when new crop Argentine corn comes on the market. Our sales have largely been to the United Kingdom (England). They buy what they need for feed and think they can afford. The Argentine crop will be available by next May and June but the forecasts are for another short crop.

These are my reasons why I do not think we will have a very strong market for corn in 1953. Now let us take a look at the other side.

1. A large quantity of corn will go into the loan. This may tighten up the marketable supply and so cause an advance in price.

But note three things:

a. The government has no responsibility for establishing the market price of corn at the loan level. It merely is required to offer loans to farmers who have corn stored in acceptable cribs.

b. I consider any price over $1.50 roughly equivalent to the loan when due allowance is made for fees, interest, taxes and shrinkage. Many, probably most, farmers do not agree.

c. I remind you that the price of corn was below the loan level for 18 months from October 1948 to May 1950. The supply (crop plus carryover) is not quite so large as in that period but it is large.

2. Supplies of feed grains other than corn — oats, barley, grain sorghums — are lower than last year. Also the South is short of corn and hay is high in price.

These two factors have tended to offset in part the larger supply of corn in the Corn Belt and the reduced number of hogs. But on balance I do not look for much increase in the price of corn unless we have bad weather next summer.

I should like to comment on our present loan program for corn: Corn is worth only what it can sell for in its marginal uses, i.e., the uses which just pay under current conditions. These are chiefly in feeding livestock and poultry. The prices of these products are all set in free competitive markets. An arbitrary loan figure will in the long run be a seriously disturbing factor in the real market for corn. Cash-grain farmers might well take a hard look at the real workings of the loan program.

Soybeans. These are the fourth largest source of cash income to Illinois farmers, earning about 12 percent of our income in 1949-51. Except for seed uses they are all sold. There are only two major outlets: (1) U. S. mills to make soybean oil and meal and (2) exports to foreign countries. The price of soybeans is what the prices of oil and meal make it. How farmers sell the crop has little or nothing to do with it. At times, particularly in late spring and summer, the supply available for sale may be so short as to force the mill margins to a low point and so raise the price of soybeans. Foreigners will buy what they need and can pay for at whatever the U. S. price is. And prices of Brazilian and Manchurian soybeans, two other sources of supply, will follow U. S. prices.

Last fall it seemed to me that oil was cheap and would go up and that meal was too high and would go down. When people asked me about soybean prices I merely said, "They are high."

The price of oil worked up from 11 to 13 cents and is now 12½ cents. This two-cent advance added about 22 cents a bushel to the price of soybeans. A factor in the market for soybean oil is the effect of the government purchases of cottonseed oil under its cottonseed program. The sales policy of the CCC will affect the prices of soybean oil. I do not know what its policy will be.

We have large supplies of oils and fats. There is no likelihood of any

real shortage during the coming year. We will produce less lard. Use of margarine has been increasing but with higher milk production supplies of butter have recently been larger. Will exports of fats and oils pick up and so reduce our supplies? These have been very large since the war. They are chiefly in three forms: inedible tallow and grease — exports of these run at a high level but at very low prices; (2) lard; and (3) soybean oil either as soybeans or oil. Last year I said exports of soybean oil, either as beans or oil, would not be over 60 percent as large from the 1951 crop as from the 1950 crop. The actual figure was 55 percent. This year they will probably be smaller than last year. The Mediterranean countries had their off-year for olive oil production and so a smaller crop. But they had a big carryover. Any increase in exports will likely come late in the year. The 13-cent figure may prove to be a reasonable guess as to the top on soybean oil. This is only about 150 percent of the prewar average price but fats and oils prices are now among our lower-priced commodities.

Soybean meal dropped from around $100 a ton for the phony OPS compliance mixture to about $63 early in January. This drop is equivalent to $1.10 a bushel of soybeans, and explains the decline in price of soybeans from the high level in the early part of the harvest season. With abundant corn, shrinking hog numbers and a probable decline in farm flocks of poultry because of lower egg prices, I see no reason for high-priced soybean meal. A rise of $10 a ton from the low of $63 would seem to be liberal. This might be to say $72 a ton. Now what happens next summer is another story. What will the weather and the pastures be?

Wheat is a minor crop in Illinois but is becoming of increasing importance. Few Illinois farmers have any left for sale as they sold at harvest or put it in the loan. Aside from the advance in cash price immediately after harvest, wheat has done nothing this year. I have not seen how it could. The world has a big supply of wheat; our exports are running well under last year; Canada had a big crop of good quality wheat and is pushing its sale. There was no shortage to cause a price advance.

We now have a two price system for wheat. The loan tends to maintain a domestic price. The export subsidy paid on wheat moving under the International Wheat Agreement establishes a lower price on exports. This subsidy runs between 50 and 60 cents a bushel and costs the taxpayers about $170-180 million. There is a question as to whether the IWA will be renewed. The price on new crop futures is now about 12 cents under the price at this time a year ago.

The best adjustment many Illinois farmers can make in selling wheat, if they do not want to store and most of them do not store, would be to arrange for temporary storage and avoid sale during the harvest-time low.

In recent years most of the seasonal rise has come within a few weeks after harvest. Long storage on farms involves the risk of contamination of wheat with various materials, which makes it unfit for sale as human food. This reduces its price substantially.

Oats. Supplies of oats are lower than a year ago. Canadian oats are not likely to be imported in volume until the Great Lakes are again open. The price will likely follow the price of corn. Again the best thing Illinois farmers can do in selling oats is to arrange temporary storage and to get the benefit of the rise which has typcially come from the harvest-time low.

General. This discussion assumes that inflationary pressures have ended. The record of commodity price trends over the last two years indicates this to be true. This is a world-wide trend. It has been deflation on the installment plan. The first declines were chiefly in raw materials such as hides, wool, fats, and oils, etc. Then in 1952 it spread to meat animals. It has now affected grain prices. The trend may still be down. But it will bottom out at a high level by historical standards. Any talk of 40-50 cent corn is simply unwarranted. The price level both in this country and in world markets is too high to permit this. L. J. NORTON

MARKETING CHARGES IN THE LIVESTOCK INDUSTRY

During 1952 prices of livestock and retail prices of meats declined (Table 1). Farmers feel their prices have declined too much in relation to decline of steak prices and consumers are unable to see where these declines occur. There are many factors related to these charges.

What is marketing. In this discussion marketing is interpreted as all those processes from the time the livestock leaves the farm until it arrives at the consumer's household. This includes the various cost items involved in moving livestock from the farm to the slaughter plant, slaughtering and processing, wholesaling and retailing. The difference

TABLE 1. — LIVESTOCK AND COMPOSITE MEAT PRICE CHARGES, 1952

	Steers		Lambs		Hogs	
	Dec. 1951	Dec. 1952	Dec. 1951	Dec. 1952	Dec. 1951	Dec. 1952
Live price[a] Chicago	$35.87	33.51	$30.57	22.07	$18.31	17.20
Wholesale[b] New York	35.15	32.20	30.70	21.56	23.18	21.92
Retail[b] New York	42.78	38.79	37.29	29.50	28.66	27.08
Farm to retail margin	6.91	5.28	6.72	7.43	10.35	9.88
Wholesale to retail margin	7.63	6.59	6.59	7.94	5.48	5.16

Source: Market News.

[a] Average choice and prime steers 900-1,100 pounds, choice and prime lambs and choice hogs 220-240 pounds.

[b] Value of meat from 100 pounds live animal.

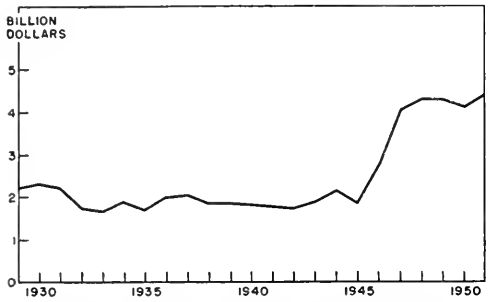


FIG. 1. MARKETING CHARGES FOR MEAT AND LIVESTOCK

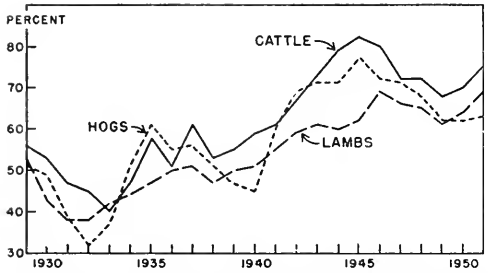


FIG. 2. PERCENT OF CONSUMERS' MEAT DOLLAR RECEIVED BY FARMERS FOR CHOICE AND PRIME CATTLE, CHOICE 200-240 POUND HOGS, AND PRIME LAMBS

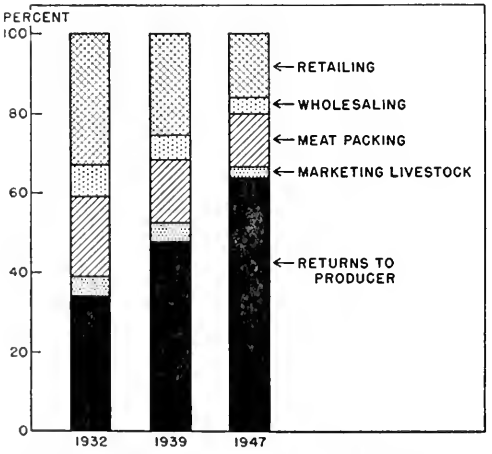


FIG. 3. PERCENT OF CONSUMERS' MEAT DOLLAR RECEIVED BY SPECIFIED GROUPS IN 1932, 1939, 1947

Source: Parr, Kathryn, "Farm to Retail Margins for Livestock and Meat," U.S.D.A., B.A.E.

between the amount paid by the consumer for meat and the amount received by the farmer represents marketing charges. The gross amount of this marketing bill represents a substantial expenditure each year (Fig. 1).

Another method of looking at marketing charges is the percent of the consumer's meat dollar received by the farmer. Generally, livestock prices rise more rapidly than do charges for labor and other expense items incurred in marketing. Therefore, during periods of rising prices, the farmer's portion of the consumer's meat dollar increases, but during periods of falling prices this portion declines, because farm prices adjust more rapidly than do marketing charges (Fig. 2).

Allocation of these costs. Frequently discussion of livestock marketing costs refer almost exclusively to costs of moving livestock from farm to slaughter plant. This is the part of the operation over which the farmer has some control. But the larger amounts of marketing charges occur at the packer and retail level (Fig. 3). Therefore, if a better knowledge of marketing charges is

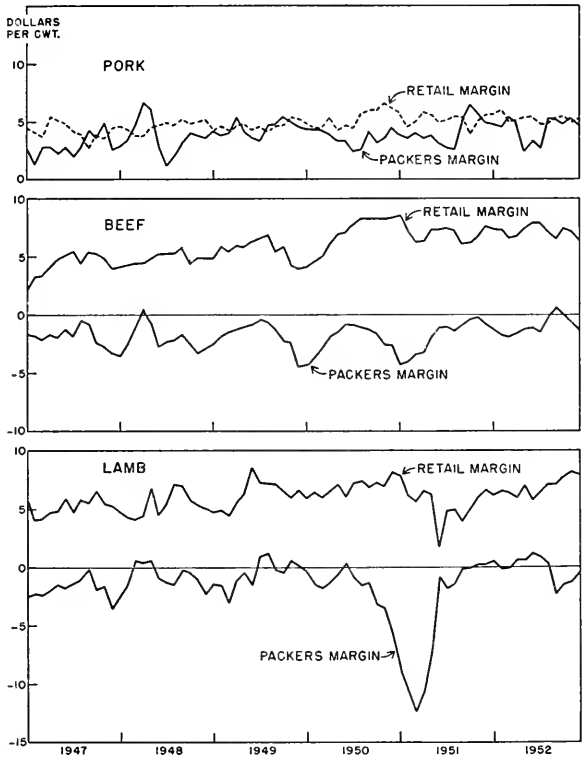


FIG. 4. MONTHLY PACKER AND RETAIL MARGINS FOR PORK, BEEF, AND LAMB

Source: Livestock Market News Statistics and Related Data. 1950. U.S.D.A., P.M.A. p. 52-53.

desired there is need for a better understanding of services and costs at these two levels.

Profits as a cost factor. Many farmers and consumers have felt that if profits were reduced in the various segments of the industry the spread from producer to consumer could be materially reduced. A review of packer and retailer earnings indicates that these food industries make only nominal profits. In 1951 eleven meat packers had .8 cent profit per dollar sales, eight retail food chains .9 cent whereas other food processing firms averaged two cents or more.

Possibly more emphasis should be given in future studies to an analysis of efficiency. Unless it is assumed that firms are already operating at or near maximum efficiency, it is probable that more improvements can be made in reducing marketing charges through increased efficiency, rather than through reduced profits.

By-product allowance. Oftentimes packers are able to operate almost entirely on the value of the by-products from cattle and sheep, wholesale carcass values being below the value of the live animals. But as these by-product prices decline the need for relatively higher packer prices become more pronounced (Fig. 4).

What can be done about marketing charges. Marketing charges are payments for a varied number of marketing services. One way to reduce costs would be to reduce the amount of services provided. For example, canned meat and ready-to-serve meat production has expanded rapidly since 1937. Nearly one-fourth of the meat production in the United States is now included in canned meats and sausage. Thus, a large amount of meat preparation is taken from the consumer's kitchen to the packing plant. But, apparently consumers prefer this and are willing to pay for this added service.

As has already been mentioned, there may be room for added efficiencies in performing the various marketing functions. This means a greater output with existing labor and facilities, or for the same output a smaller expenditure for labor and facilities. New techniques are constantly being developed to permit more efficiency. These are two offsetting characteristics to consider.

Livestock is marketed seasonally. This is a result of production patterns that cannot, in many cases, be changed. Nonetheless, if facilities and labor are available to handle these seasonal peaks, the result is that during large portions of the year they are used at less than full capacity unless they can be shifted to other uses when not needed by the livestock industry.

In addition, because of livestock production cycles, there are large fluctuations in slaughter numbers from year to year. These fluctuations present the same problems as the seasonal changes.

At the retail level, consumers do much of their meat buying on Friday and Saturday. This gives rise to the problem of how to use meat department personnel effectively the rest of the week.

There are a number of rigidities in the marketing system that make change difficult. Commission and yardage charges at terminal markets are approved by the Secretary of Agriculture. They can be changed only through hearings. Railroad transportation rates can be changed only through approval of the State or Interstate Commerce Commission. Labor rates are fixed by contract for one or more years. Therefore, the marketing system consists of a rather rigid cost structure that resists changes, especially downward.

This article is intended only to raise some of the questions regarding marketing charges. It is not a complete discussion of the problem. Future articles will further discuss margins at the packer level and at the retail level.

W. J. Wills

THE LEGAL NATURE OF AGRICULTURAL ORGANIZATIONS AND AGENCIES OPERATING IN ILLINOIS COUNTIES

Both within and without agriculture, much discussion takes place about alignments and relationships between farm agencies and farm organizations and the ends they are trying to gain. Some of this discussion centers on relationships at the county level. Needless to say, all the thoughts expressed by people about such relationships are not based on understanding. For example, many people believe that soil conservation districts are agencies of the federal government; that power cooperatives are agencies of the Rural Electrification Administration; and that the farm adviser is an agent of the farm bureau. We will not for one moment argue that there are not reasons — and in some instances rather compelling ones — why these beliefs should arise. But the precise turn one's thinking is likely to take, and more important the soundness of any proposals he may have for improvement, will be conditioned by what he knows about the legal base on which each agency rests and the legal limitations which control its ability to function. Directors, officers, and others charged with responsibility should be particularly eager to improve their knowledge on this score.

It is possible to group agricultural agencies operating at the county level in Illinois into eight legal categories. Each of these categories will be briefly described.

1. *Unincorporated clubs, associations, units or other groups.* These partake of the legal incidents usual in unincorporated societies. They generally — though not always — have limited membership, no property, no sizable treasury, and few of the problems and liabilities which make it desirable to incorporate. Furthermore, these organizations, though sometimes encouraged by a higher organization with a stake in their existence, come into being because of local interest, and not because of legal requirement. Farm bureau township units, home bureau units, rural youth groups, Future Farmer and Future Homemaker Chapters, 4-H Clubs, and community and county Grange units are examples. Included also would be the agriculture, agricultural-industry or similar committees of local service groups such as Rotary, Kiwanis, or Chamber of Commerce.

Organizations, however, as commercial in nature as livestock shipping associations have existed as unincorporated societies, and even today there are associations in Illinois handling fairly large sums of money and engaging in activities which may create liability in its members which are not — but should be — incorporated. Unincorporated county fair associations are another example.

Organizations under this category may differ markedly in the degree of autonomy possessed by them. An unincorporated shippers association or a threshing ring (with a bow to the past) would be answerable only to its own members. A 4-H Club or a Future Farmers Chapter, on the other hand, must meet certain standards imposed from above. The difference is not so much one of law as one of purpose and relationship. The same may be said of farm and home bureau units. They are media through which the county organization can spread a program and they are units of representation in the election of members to the board of the county organization, but they are not its subsidiaries.

In a sense the relationship of most of the agencies in this category with their "fostering" agency is contractual, hence, if for any reason the "fostering" agency withdrew recognition, the agency would not for that reason lose its identity. It might have to change its name and it might be deprived of certain benefits, but it could remain an organized group entitled to carry on a program of its own and entitled to full cooperation from the farm or home adviser and Extension Service, so long as it desired to be a medium for educational work in agriculture or home economics. It is not surprising that great variation exists in quality of program among units related to a "fostering" agency. Some emphasize the local program and regard their relationship to the larger agency as secondary — others have a very ineffective local program and assume that their only function is to fulfill the organizational requirements of the larger unit.

2. *Unincorporated local administrative units of a federal agency.* This includes the so-called "line-agencies" which have a direct "echelon of command" reaching from Washington to the county, sometimes through both regional and state offices; as with the SCS, sometimes through state committees; as with the PMA and sometimes with no intervening unit; as with REA. PMA has a "unit" or "agency" at the county level in the form of the county PMA committee and at the township level in the township committees. They are integral parts of the PMA administrative organization, provided for by law and charged with definite responsibilities in the administration of the PMA program. Township committees are elected by cooperating farmers in the township, county committees are elected by the township chairmen from among their number. The county

agent may be asked to serve as secretary of the county committee. If he does not act as secretary he becomes an ex officio member of the committee with no voting privilege. State committees are appointed by the Secretary of Agriculture.

The SCS has only individual personnel in counties, and they work with soil conservation districts pursuant to an agreement between the district and the SCS. The smallest unit is the "area" comprising about nine counties. REA and Forest Service have no personnel assigned on a county or local basis. FHA maintains county offices, but not in all counties, with administrative personnel in such offices. Loans are first processed through a county committee of three, two of whom must be farmers. This committee is appointed by the Secretary of Agriculture.

These agencies differ markedly from those in the first category. They are created by law to discharge specific responsibilities under the law. In a sense they are administrative in nature rather than educational or economic. They are answerable to an administrative superior and not directly to their membership.

When a local unincorporated society fails to function, any interested member can exert pressure directly on those in charge. If he is persistent something is bound to happen. Agencies of government are more imponderable. Local officials (including farmer committeemen) can — and frequently do — enjoy complete insulation from local pressures simply because they discharge the minimum of responsibility demanded by the law. Beyond this they cannot be budged; pressure other than local must then be generated to secure changes which the farmer-public feel are needed. Of course, the legal actions of injunction and mandamus are available if officers disregard the law, but the institution of these actions will not serve to make the agency more responsive to farmers.

3. *Unincorporated local administrative units of a state agency.* These are virtually non-existent. Individual inspectors, however, may come into a county to see if certain laws which the State Department of Agriculture or of Public Health must enforce are not being violated — veterinarians carrying on testing and quarantine as agents of the state, and the county veterinarian, for example.

4. *Unincorporated local units of a public corporation created by the state.* This may seem like an unusual way of referring to the University of Illinois — and farm and home advisers may not care to be called "unincorporated local units" but this language is a fair legal description of both. Farm and home advisers are employees of the University of Ilinois, hired to do educational work in a county. The University of Illinois, acting through an appropriate officer of the University — the Director of

the Agricultural Extension Service — cooperates with the Federal Extension Service and accounts to it for federal extension funds used in Illinois. The University, acting through the Director of Extension, also contracts with county farm bureaus for sharing the cost of the farm adviser's salary and office and travel expense. This sponsorship by a local farm organization was contemplated by the law and encouraged by the United States Department of Agriculture. As a matter of fact it has greatly implemented the programs of county agents in Illinois and other states. The extension service is not limited by law in its selection of a local sponsoring group. In Illinois and in many other states farm and home bureaus were organized largely for this purpose.

The nature of the farm and home adviser's legal responsibility to carry on an educational program for people in the county cannot be altered by contractual arrangements between the University of Illinois and a county farm or home bureau. This is true not only because of the county agent's function as defined by federal law and memoranda, but in the opinion of the writer also because as employees of the University, the farm or home adviser's service cannot be legally encumbered by any local organization. As a matter of fact, the contract between the University and the county farm bureau specifies that the farm adviser will engage only in educational work and that his services shall be available to all people in the county, regardless of organizational affiliation.

However, criticism has been directed at this close working relationship. The principal claim is that the farm adviser becomes identified with the county farm bureau, and that non-members therefore hesitate to seek his services. Another claim, pressed with equal vigor, is that farm advisers tend to become agents and promoters for the farm bureau. These criticisms are sound in theory and no doubt have some support in fact. They can be answered at the policy level only by appraising the whole agricultural extension program and concluding that this program is more successful than it would have been with less direct and more disinterested sponsorship. This, of course, does not excuse individual abuse of the contractual obligations of a farm or home adviser, but it argues for a continuation of the pattern, with close scrutiny of "suspect" activities. The general employment of county organization directors, however, to look after the farm bureau's membership dues and similar affairs has removed the basis for some criticism.

5. *Public corporations organized under specific state enabling acts.* There are a number of laws in Illinois — and in other states — making it possible for farmers to organize corporate agencies of a public nature for particular purposes. Outstanding examples are the drainage law permitting the organization of drainage districts; and the soil conservation

districts law permitting the organization of soil conservation districts. These are designated as public agencies because their activities are regarded as being in the public interest. They are not organized for profit, they frequently have the power to levy special assessments and they have the right to acquire such private property as is necessary to carry out their functions. Soil conservation districts in Illinois may not levy assessments, but all other public corporations of this nature may. This includes drainage and levee districts, fire protection districts, and wildlife districts. There are others but these seem to bear a more substantial relation to agriculture than mosquito abatement, park or even river conservancy districts, for example.

All of these districts may be organized across county lines. Drainage and levee districts cannot be organized to correspond with township or county lines, because they must include only lands benefited by their activity. The original soil conservation districts law contemplated organization on a watershed basis, but since such districts are in reality a medium for channeling federal and other aid to farmers who are interested, it became more expedient to organize on a county basis. This represented a distinct departure from the original concept of a district as a watershed problem area to be dealt with as a whole, but is probably justified since districts have no taxing power. With a few exceptions, all Illinois counties now constitute the boundary for a soil conservation district bearing the name of the county, but entirely independent of the county government. They differ from the other public corporations mentioned, none of which even comes close to "blanketing" the state: Soil conservation districts cover nearly all of the state.

All of these public corporations, including soil conservation districts, are managed by directors or commissioners appointed or elected under provisions in the law, and answerable to no authority in the execution of their functions so long as they operate within the terms of the law. These agencies are not political subdivisions of the state or the county, but are completely autonomous. They may contract with any agency or individual, purchase or lease land and equipment essential to their functioning, sue and be sued, hire and fire, and except for soil conservation districts, levy assessments and raise money against such assessments.

6. *Not-for-profit corporations under Illinois law.* All sorts of local agricultural associations such as 4-H Clubs, township farm and home bureau units, FFA chapters or Grange units may incorporate under the not-for-profit corporation law if they so desire. Most of them do not, unless they own property, handle sizable funds, or engage in activities that may create liability. The most frequent example of such corporations at the county level are the county farm bureau, county home bureau, and

county fairs. Organization under the not-for-profit act presupposes some educational, religious, or charitable purpose. The organizations mentioned have as their goal the improvement of farm and home conditions in the county. The fact that they are organized "not-for-profit" does not mean that they cannot charge fees and dues, sell and buy, own and rent property, and handle sizable amounts of money — it only means that they cannot do these things for the primary purpose of making a profit for the corporation. The object must be service to the membership, else the corporate charter will be violated. These corporations are distinct entities — "legal persons" — with the power to contract and enter into agreements with other persons or organizations. Two important contractual relationships of the county farm bureau are with the Illinois Agricultural Extension Service and the Illinois Agricultural Association (also a not-for-profit corporation under Illinois law). It should be pointed out that county farm bureaus are not "subsidiaries" of the Illinois Agricultural Association. Each is a distinct corporate entity and their relation is wholly contractual.

7. *Agricultural cooperative corporations under Illinois law.* These are the local organizations through which farmers carry on their cooperative buying and selling. Organized for the most part under the Illinois Cooperative Act of 1923, the most usual companies or associations are farm supply, service (petroleum products), grain marketing, livestock marketing, locker, milk or creamery, and power. Though these corporations may secure loans from the Farm Credit Administration's Bank for Cooperatives, or from the Rural Electrification Administration (power cooperatives or rural telephone cooperatives only) they are not subject to the directional or administrative control of any superior agency, either state or federal. However, both REA and the FCA (the latter through its cooperative research and service division), together with the State Agricultural Extension Service, have an educational obligation to those cooperatives requesting such assistance.

When REA approves a project for a loan it means that some planning and survey work has been done by REA and that the loan will be "supervised" as required by law. This leads many to believe therefore that a local power cooperative is an agency of the REA. This is not legally true, though some boards of directors, by "abdicating" their responsibilities — except for the formalities required — may create that impression.

By taking advantage of provisions in the cooperative law, and of the "legal person" theory which clothes all corporations, the Illinois Agricultural Association has been able to effect certain controls over those local cooperatives that choose to accept such control. This voluntary

yielding of authority — mainly through the issuance of voting stock to another corporation — is made for the purpose of receiving financial and organizational assistance from the "parent" organization. There is nothing in the cooperative law requiring such an arrangement. It was created voluntarily — and presumably could be dispensed with in the same manner, assuming that any financial or contractual agreements contingent upon such arrangement could be satisfactorily met. Cooperatives organized with this relationship to the Illinois Agricultural Association are commonly called "Farm Bureau Type Cooperatives." They are not a distinct type so far as the law is concerned.

8. *Agricultural cooperative corporations under federal law.* Production credit associations and national farm loan associations are created under provisions of federal law establishing the Farm Credit Administration and spelling out its power and functions. They are not created under the Illinois Cooperative Act of 1923. Nevertheless, they are true cooperatives with farmer boards of directors. However, the law places certain controls in the District Federal Land Bank and in the District Production Credit Corporation. By comparison, the State of Illinois reserves no such controls over a cooperative organized under the State Cooperative Act. Hence there is a fundamental difference in the legal base on which the two types rest — a difference which persists, even after a PCA or NFLA has paid back in full the capital initially supplied by the Farm Credit Administration.

Summary. The foregoing discussion does not pretend to describe the real differences that may exist between local agricultural agencies from county to county — it is only an attempt to correct certain impressions and perhaps create a more complete understanding by delineating some of the legal differences. For example, while it is true that farm bureau boards and farm advisers are legally independent of each other, it is inconceivable that in at least some of the 102 counties of the state the farm adviser should not strongly influence the board — and that in some other counties the board should not exert a strong directive influence on the farm adviser — with all shades and degrees of relationship in between. It is simply in the nature of human beings for these differences to arise, and frequently for one to emerge as dominant to the others. The process through which this comes about is difficult to describe — particularly since many times those involved are not aware that anything is evolving. Sometimes the best way to relieve an undesirable case of domination — or of apathy — is for the membership to insist that its officers discharge the legal functions of the organization!

H. W. Hannah

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert B. Hudelson
Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 1-53—9700
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1951 Oct.....	217	266	272	226	655	662	293	384	292	218
Nov....	217	267	267	227	541	492	217	385	293	219
Dec....	217	266	267	227	467	383	169	387	300	218
1952 Jan.....	216	262	265	229	395	404	176	388	298	221
Feb....	215	257	261	230	303	325	141	391	298	222
Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	302	214
Sept....	214	254	261	228	544	402	177	407	312	226
Oct.....	212	250	254	225	618	610	271	410	316[11]	227
Nov....	211	248	244	224	...	...	...	...	...	...

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Dec. 1951	Current months, 1952		
	1933-39	1950	1951		Oct.	Nov.	Dec.
Corn, bu.....	$ .66	$1.35	$1.67	$1.77	$1.50	$1.45	$1.52
Oats, bu.....	.31	.76	.87	.96	.82	.84	.84
Wheat, bu.....	.86	2.02	2.24	2.35	2.13	2.15	2.13
Barley, bu.....	.62	1.20	1.36	1.39	1.35	1.35	1.35
Soybeans, bu.....	.90	2.49	2.95	2.87	2.76	2.80	2.82
Hogs, cwt.....	8.52	18.19	20.30	17.80	19.00	17.00	16.30
Beef cattle, cwt.....	7.88	24.54	30.85	26.00	26.50	24.50	22.50
Lambs, cwt.....	8.36	25.12	31.66	28.70	23.20	21.70	20.60
Milk cows, head....	58.00	216.67	267.50	275.00	250.00	260.00	250.00
Veal calves, cwt.....	8.66	27.73	33.57	32.00	27.50	27.00	26.00
Sheep, cwt.....	3.58	10.52	16.07	13.30	7.70	7.00	7.00
Butterfat, lb.....	.27	.58	.66	.72	.67	.66	.64
Milk, cwt.....	1.68	3.45	4.16	4.60	4.80	4.95	4.70
Eggs, doz.....	.19	.31	.42	.43	.43	.46	.40
Chickens, lb.....	.15	.23	.27	.23	.24	.24	.26
Wool, lb.....	.25	.53	.83	.54	.45	.46	.45
Apples, bu.....	1.08	2.24	2.04	2.10	2.50	2.85	3.00
Hay, ton[13].....	9.39	20.77	21.08	21.70	24.00	24.30	25.20

[1-13] For sources of data in tables see previous issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Acting Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics
R. C. Ross, Editor | February-March, 1953 | Numbers 212 and 213

Articles in This Issue

IS A 90 PERCENT PARITY PRICE FOR BUTTER DESIRABLE FOR DAIRY FARMERS?

With some reluctance Secretary of Agriculture Benson has extended the 90 percent parity price for dairy products to March 31, 1954. With facts now available one may well raise the question: Is a 90 percent parity price for butter desirable either from the immediate or the long-run viewpoint of dairy farmers? Specific facts which may well be considered in answering this question are: (1) Per capita sales of butter in the United States in 1952 were only 49 percent of those of 1922-26; (2) Scientific studies have shown that, at a given level of income, consumers will pay less for butter than formerly; (3) during the past 30 years, retail butter prices have become increasingly higher as compared with margarine; (4) Scientific studies summarized by Professor Childs of the Home Economics Department of the University of Illinois have shown that "vegetable fats when supplemented with the fat soluble vitamins and when fed with the mixed diet commonly consumed by men, are nutritionally equivalent to butterfat."[1]

[1] Talk before the Dairy Store Conference, University of Illinois, December 10, 1952. Includes a summary of nineteen scientific studies dealing with fats as related to nutrition. A copy may be obtained upon request to the Department of Agricultural Economics.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

Per Capita Sales of Butter Have Declined

Per capita sales of butter declined slowly from 1922 to 1942. Since 1943 they declined rapidly. During the period 1937-41, sales of butter averaged 16.6 pounds annually per person, or seven percent less than for 1922-26 (17.8 pounds). During World War II, milk formerly used in butter, was diverted to whole milk uses with the result that for 1943-45, per capita sales fell to 11.3 pounds, or about two-thirds of those of 1922-26. With the end of World War II, the downward trend in butter sales continued. In 1952, estimated sales were 8.7 pounds per person, or 49 percent of those in 1922-26. Why have butter sales declined?

The Market Demand for Butter Has Decreased

A recent study indicates that at a given level of consumer income, consumers now are not willing to pay as much for butter as formerly. This study, by Professor Geoffrey S. Shepherd of Iowa State College, stated:[1] ". . . The price of butter was held down during the war as much as the price of meat was. However, when controls were ended butter prices remained relatively low. The dots (Fig. 1) for 1947 and 1948 lie below the income line — not above as with meat. This is even more surprising since butter consumption and supply was almost the smallest in history — about a third smaller than prewar. If butter supplies had been just average, butter prices would have been 15 or 20 cents lower. So, the demand for butter has dropped from pre-war levels in relation to consumer in-

[1] Farm Science, Iowa State College, August 1949, p. 13.

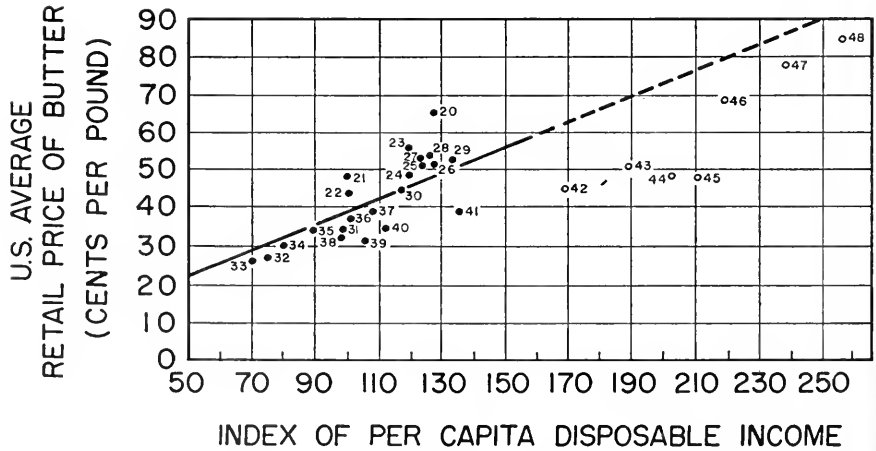


Fig. 1. Relation of Retail Price of Butter to Per Capita Disposable Income, 1920-1948, United States. Source, Iowa Farm Science, Vol. 4, No. 2, p. 14-30, August, 1949.

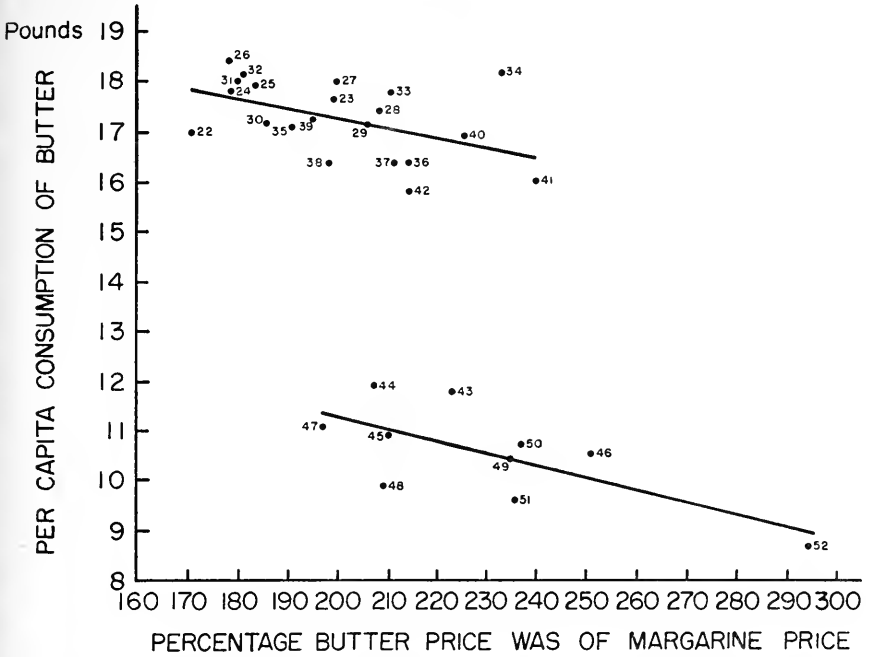


FIG. 2. CHANGES IN THE BUTTER-MARGARINE RETAIL PRICE RATIO (BUREAU OF LABOR STATISTICS), AND PER CAPITA CONSUMPTION OF BUTTER. (U.S.D.A.)

come. This decline started in the 1920's. It has been more marked in the past few years . . . "

The Ratio of Butter-Margarine Prices Has Widened

Retail prices are now higher relative to margarine prices than formerly (Table 1 and Fig. 2). This is one cause of lower per capita sales of butter.

TABLE 1. — AVERAGE RETAIL PRICE OF BUTTER AND MARGARINE, RELATIONSHIP BETWEEN THEM, AND PER CAPITA CONSUMPTION OF BUTTER, UNITED STATES, 1922-1952

Years	Average retail price			Per capita consumption of butter[b]
	Butter[a]	Margarine[a]	Percentage butter was of margarine	
	(Cents/pound)			(Pounds)
1922-26	52.9	29.1	182	17.8
1927-31	50.2	25.5	197	17.6
1932-36	32.5	15.9	205	17.5
1937-41	37.0	17.3	214	16.6
1942-46	54.3	24.4	222	12.2
1947-51	78.9	35.7	221	10.3
1952[c]	86.1[c]	29.3	294	8.7

[a] Retail Food Prices in Leading Cities of the United States, U. S. Department of Labor, Bureau of Labor Statistics.

[b] United States Department of Agriculture, Bureau of Agricultural Economics. Data for 1951 were preliminary and for 1952 were partly forecast.

[c] January through October.

From 1922 to 1926 the retail price of butter averaged 52.9 cents per pound or 82 percent more than the price of margarine (29.1 cents). During 1937 to 1941 the butter price averaged 114 percent above that of margarine.

From 1943 to 1952 the butter-margarine ratio widened even faster. Thus, from 1947 to 1951, the retail price of butter averaged 78.9 cents per pound, or 121 percent more than retail price of margarine (35.7 cents).

In 1952 butter prices averaged 86.1 cents or 194 percent higher than margarine (29.3 cents),[1] while per capita sales of butter were the lowest on record (Fig. 2).

Another cause of low butter sales in 1951 and 1952 was repeal of taxes and license fees on margarine. In 1950, all federal taxes of this type were removed. At that time sixteen states with about two-fifths of the nation's population also taxed the sale of colored margarine. Thirteen states have repealed these taxes. Iowa,[2] Minnesota and Wisconsin, with about six percent of the nation's population, are the only states which retain them.

How Can the Government Dispose of Large Quantities of Butter?

High production of milk in the past four months[3] has forced the government purchase of an unusually large volume of butter to sustain the wholesale price at 67.75 cents per pound. During this period the government purchased 95 million pounds of butter of which 69 million was purchased in January and February 1953. This volume compares with 114 million pounds purchased in the 12 months of 1938-39, 114 million pounds in 1949, and 128 million pounds purchased in 1950, the three years when government purchases were the highest.

How much butter the government will have to purchase to support the price at 90 percent of parity during the surplus months of April, May and June is a matter of opinion. In its February 26, 1953 issue, the Wall Street Journal quoted an estimate of 500 million pounds. Whether this estimate is too high or too low, everyone familiar with the dairy industry is agreed that the government is likely to be in the butter business in a big way during the next few months.

---

[1] The margarine price does not reflect the numerous bargain prices which have been offered widely. In March, 1953, in Champaign-Urbana for example, one could buy 2 pounds of a nationally advertized brand of margarine for the price of one pound plus one cent.

[2] A bill to repeal margarine taxes is before the Iowa legislature.

[3] Milk production in 26 federal order markets in December, 1952, averaged 16 percent larger than December a year ago. Milk production in the Chicago milkshed in December, 1952, and January, 1953, was 19 percent above that of a year earlier. For the same periods production in the St. Louis market was up 22 percent, and in the Davenport-Rock Island milkshed, 48 percent.

How can the government dispose of such large quantities of butter before it becomes rancid? In July, 1950, the government had 200 million pounds of butter in storage. A small part was given to school lunch programs and relief agencies. In 1950 some was sold abroad at about one-fourth the purchase price. The Korean War beginning in June, 1950, resulted in higher prices and enabled the government to sell the remainder to dealers on the open market.

Substitution of butter for margarine by the military forces is one possible outlet. In 1952, the Army Quartermaster Corps purchased 38 million pounds. Assuming that each of some 4 million in the military forces consumes 25 pounds, this would use a total of 100 million pounds or about the amount now in storage.

Another suggestion for using surplus butter is the initiation of one cent sales in which a pound of government butter be given to American consumers with the sale of each pound of commercial butter plus a cent. Summed up, the potential outlets for government butter, whether through school lunch programs, relief, disposal to armed forces, exports, or as gifts to American consumers, means a costly program of governmental subsidization.

What About Future Policy Relative to Parity Prices of Butter?

Questions which might well be raised are: In view of relatively high retail prices of butter, decreased demand, and powerful competition of vegetable fat substitutes, is it either to the immediate or long-run interest of the dairy industry to maintain 90 percent of parity prices, or is such a policy likely to result in further loss of the butter market to margarine? Will the present butter program prove to be another fiasco like potatoes which cost the government about $450 million, resulted in a huge overproduction, and finally in requests from potato growers to discontinue the program?

While confronted with serious problems of adjustment the present situation is not critical for dairy farmers. In the first place consumer income in the United States is at a very high level, averaging $1494 per person, or nearly three times that for 1935-39 ($513). When corrected for changes in purchasing power American consumers in 1952 had $1.53 for each dollar in the pre-war years. In the second place, butter is no longer as dominant a price-making force as formerly. In 1952, only 25 percent of the milk produced in the country was manufactured into butter, as compared with 41 percent in 1939. Finally, probable increases in population combined with higher per capita sales of market milk, cheese, and dried whole milk, are likely to more than offset losses in per capita sales of butter. In a recent paper the writer estimated that a production of

134.7 billion pounds of milk will be needed to supply the needs of American consumers in 1960, or nine percent more than the 1950 production.[1] The dairy industry is a going concern and likely to continue so for a long time.

R. W. Bartlett

DOLLARS AND CENTS IN LAND USE[2]

The most rapidly changing major technology in Illinois agriculture is fertilization. Illinois farmers used more than three times as much nitrogen and potash in the year beginning July 1, 1951 as in 1947 (Table 1). During the same period, the use of phosphorus in soluble forms increased by 72 percent while there was a slight increase in use of rock phosphate. Pre-World War II uses of fertilizers seem rather insignificant in comparison with present uses.

Table 1. — Plant Food Sold in Illinois, 1940, 1947 and Year Beginning July 1, 1951[a]

	1940 (tons)	1947 (tons)	1951-52[b] (tons)	Percent 1951-52 of 1947
Nitrogen	1,790	12,640	41,785	331
Phosphoric acid (P_2O_5):				
Soluble	5,437	48,411	83,189	172
Rock and colloidal	17,738	189,267	198,924	105
Potash (K_2O)	4,137	30,939	113,152	366

[a] From reports by L. T. Kurtz and others, University of Illinois Department of Agronomy.
[b] Last six months of 1951 and first six months of 1952.

Increased fertilization, large acreages of grain crops, and changing price-cost relationships are focusing attention on the dollar and cent, as well as the agronomic, aspects of land use. Two main economic reasons account for the rapid change in fertilizer use. First, favorable grain prices have encouraged farmers to grow large acreages of grain crops. More Illinois land has been planted to grain crops in the past five years than during World War II. Illinois farmers had a million acres more of grain crops in 1952 than they had in each of the war years 1943-1945. These high acreages of depleting grain crops have called for a greater return of fertility to the soil. Second, fertilizer costs have not increased as much as farm product prices and costs of most other things farmers use in production (Table 2).

Farm product prices and costs of "all production items" are more than two and one-half times their 1910-14 level. But there are differences in the

[1] Paper before the Dairy Marketing Conference, University of Illinois February 3, 1953. A copy may be obtained upon request.

[2] Adapted from a talk given at Farm and Home Week, University of Illinois, February 4, 1953.

TABLE 2. — INDEXES OF FARM PRICES AND SELECTED FARM COSTS, UNITED STATES, JANUARY 15, 1953[a] (1910-14 = 100)

	Index		*Index*
Prices:		Costs:	
All farm products	267	All production items	265
Crops	251	Farm machinery[b]	310
Livestock and products	281	Motor vehicles	359
		Motor supplies[b]	157
		Building and fencing materials[b]	350
		Fertilizer[b]	157
		Taxes	344
		Wage rates	514

[a] From "Agricultural Prices," January 30, 1953, Bureau of Agricultural Economics.
[b] Index as of December 15, 1952.

level of costs among the various cost items. Farm machinery, motor vehicles, building and fencing materials, and taxes are more than three times their 1910-14 cost and wages are more than five times. But fertilizers and motor supplies are only 57 percent above 1910-14 costs. Therefore fertilizers, properly used, are cheap in relation to prices of farm products and costs of most other things farmers use in production.

Will a high-level balanced fertility program pay off in 1953 and later years? Yes, provided the fertility program is adapted to the particular farm and field. Illinois soil experiment fields and farmer experience have demonstrated that good land use pays for itself in addition to keeping the land in a highly productive condition. But there is no one recipe that every farmer can follow.

Even though we have made great strides in Illinois in using limestone, phosphate, and other fertilizers, we have a long way to go in building up our soils. With prices slacking off while costs remain high, more and more farmers are feeling the "squeeze" on their pocketbooks. Those with low crop production are in a very vulnerable position. Many may be tempted to delay the buildup of their soils until crop prices rise or costs fall faster than prices. Delay in building up depleted soils appears to be an unwise course.

The history of land use in Illinois clearly indicates that a soil improvement program that does not pay off year by year (at least over a short period) will have little appeal for most farmers. Most farmers can follow a land use program that will pay for itself with present price-cost relationships and even with crop prices considerably lower than at present. One of the best ways for many farmers to lessen the "squeeze" of lowering prices with high costs is to adopt a "pay-as-you-go" fertility buildup program that will increase production more rapidly than it increases costs.

Each farmer must work out the details of a soil fertility buildup and maintenance program for his own situation. But there are four general ideas to consider in making fertility buildup pay as you go.

First, choose a high-profit rotation — one that will give a high return

from every acre in the rotation. For most Illinois farms the high-profit grain crops are corn and soybeans. Forage crops fed to livestock in an efficient livestock system are also high-profit crops.

Second, use fertilization and the companion practices necessary to increase yields rapidly. This can be done on many soils (it may not be possible where there are very serious drainage problems). A pay-as-you-go fertility buildup program calls for getting balanced fertility immediately instead of thinking of it as a long-time goal. It is the "tool" that makes it possible to reach the goal of a built-up farm without sacrificing net income during the buildup period.

Third, spread costs over a buildup period of, say, three to five years. Costs for such things as limestone and rock phosphate can be spread over a period of years. Most farms can increase yields the first year without spreading limestone and rock phosphate on the entire farm. This will call for the use of commercial nitrogen, readily available phosphorus in such fertilizers as superphosphate, and mixed fertilizers for many farms.

Fourth, spend money for soil improvement in ways that pay off best. The idea involved can be illustrated by an example. A field that needs 1000 pounds of rock phosphate per acre to correct the deficiency will require about $11.00 per acre for phosphorus. But in the first year of a buildup program the same result, *in terms of yields,* may be obtained from a 200 pound application of superphosphate, which costs about $4.00. This application of superphosphate will not build up the farm as the rock phosphate will, but it will get increases in yields the first year that will help in "paying as you go."

A pound of phosphorus costs about one-third as much in rock phosphate as in superphosphate. But this does not mean that the farmer will always want to use rock in preference to super. The farmer with limited capital can get increased yields on nearly three acres by using superphosphate, whereas he could get his yields up on only one acre by using rock phosphate. From this angle, superphosphate may really be "cheaper" than rock phosphate, as the farmer with limited capital looks at it, even though a pound of phosphorus costs three times as much in that form.

This example illustrates how both rock and superphosphate fit into a pay-as-you-go fertility buildup program. Each has a definite place. The rock is used on part of the farm during each year of a buildup period to correct the basic deficiency. The readily available phosphorus in superphosphate is used as a part of the "annual feeding" program to get yields up immediately.

The question of legume and commercial nitrogen has some similar aspects. A standover legume is an economical source of nitrogen on farms needing legumes and grasses for erosion control or for livestock feed. The

grain farmer on well drained, highly productive level land will find the catch crop legume an economical source of nitrogen as well as the other things the legume supplies. But the farmer who is short on capital cannot start a pay-as-you-go fertility buildup program by putting the whole farm in oats and a legume seeding. To provide enough nitrogen for high production from all the crops in a high profit rotation, he will want to use a combination of legume and commercial nitrogen.

A high level, balanced fertility program makes both horse sense and dollars and cents because it puts the farmer into a position to get the highest production our very favorable climate will permit. It also puts him in a more favorable position if less favorable price-cost relationships occur. He has his farm built up; if he has done it properly, he has made money while doing so. He is in a better position to "ride out" a period of lower prices than he would be with a run-down, low-yielding farm. And in addition to helping himself and his family to live better now, by building up his land he will be helping to provide the extra food that will be needed in the United States in 25 years to feed the five mouths we will have for every four we now have.

W. N. Thompson

EXPERIENCES IN MARKETING HOGS ON A LIVE QUALITY BASIS

Marketing hogs on the basis of carcass grade and weight is being considered as an alternative to the long established system of marketing largely on a live weight basis.

Nature of the problem. During the past 30 years the price of lard has dropped from $5 per hundred pounds above the price of live hogs to $8 to $10 a hundred below it. Although many reasons account for this decline in fat prices, this price relationship calls for a re-examination of our hog marketing mechanism. Can the existing system be changed satisfactorily before studying the possibilities of changing the system?

Two types of problems are involved in the question of a quality hog program. The first is producing more pounds of lean pork in relation to lard. One way to do this is to market hogs at lighter weights, since lard production increases very rapidly as weight increases above 225 to 240 pounds. Weight is now largely recognized in pricing, but market weight is beyond the scope of this discussion.

The second is that of built-in quality. For hogs of the same weight, some are worth more to packers than others because they cut out a larger percentage of the more valuable lean cuts. Thus a hog cutting out 51 percent in the four lean cuts is worth at least 50 to 75 cents a hundred more than hogs producing 44 percent of lean cuts.

Since World War II consumers have been spending relatively less of

their meat dollar for pork and more for beef. This may indicate that pork is desired less than beef. Farmers have often felt their primary responsibility is to produce; the market would absorb the product. Since price is related to demand, if the farmer can produce a product that is more in demand, a higher price should be secured. Thus the farmer has an interest in the type of product the consumer wants.

Land marks in quality marketing. Progress has been made in the last two years in learning the characteristics that are associated with quality hogs, and some local markets have attempted to buy live hogs on a quality basis. In one case these markets sell through a sales organization. The market personnel recognized a difference in hogs and after various attempts have developed a system that is giving some results. At certain designated markets hogs are sold on a graded basis one day a week. Certain packers buy all the top grade hogs at a 50 cents per hundred price differential above the market. For the producer of meat-type hogs, this extra 50 cents provides additional income; in recent months it would often mean the difference between profit and loss in the enterprise.

This marketing program is related to a production program that considers breeding, feeding, and management practices involved in producing and marketing quality hogs.

In Nebraska large numbers of hogs are sold through auctions. A price differential is paid using two grades of hogs — meat type and fat back — the differences often ranging up to 50 to 75 cents a hundred. Many of these hogs are shipped to West Coast packers who apparently find such differentials satisfactory.

Some local Illinois markets sell some hogs on a quality basis for a 25 to 50 cent differential on certain days when they have preferred orders to fill.

One packer pays a 25 cent differential for "specials" at certain buying stations; other packers have been buying some hogs on a graded basis for more than a year, paying differentials above and below "the market" for meat-type and lard-type hogs. The terminal markets are also working on this problem. The National Livestock Exchange has a committee to see how they can further improve hog marketing. More hogs apparently are being sold on a live quality basis than 4 or 5 years ago.

Factors to Consider

Marketing hogs on a live quality basis involves many problems. Among these are:

Price differentials. Premiums for meat-type hogs have received more attention than discounts; any system of quality differentiation should consider both. Because of the connotation of discounts and premiums I

prefer to use the term differential. With cattle where pricing is on the basis of built-in quality, premiums and discounts are not mentioned; the price differentials are taken for granted.

Better pork. Meat-type hogs are said to produce better quality pork because of less internal fat, and a larger loin eye muscle which means more meat and less bone in the pork chop. More research is needed on this question. If true, the meat-type hog should be worth more because of better quality lean meat.

Long-time differentials. As the wholesale and retail price relationships for various pork cuts change from month to month and year to year, the type of hog most in demand by the market changes. Area differences appear also in the type of hog wanted. Probably no one type of hog will best suit all markets in the United States.

Short-time differentials. Prices are generally considered to be a means of reflecting to the producer what the consumer wants. Does the present marketing system provide this? During a given day a price range may appear, for example, on 180- to 230-pound hogs of $18.50 to $19.10. There are various reasons for these price spreads:

1. During the day demand and supply conditions may change.
2. Within a wide weight range price differences may occur because of weight.
3. Differences in quality for various lots of hogs may be reflected in price.

Marketing hogs on a live quality basis is an industry-wide problem. Cooperation of producers, markets and market agencies and processors is essential.

W. J. Wills

TRANSFER OF FARM PROPERTY INHERITANCE AND RELATED TAX PROBLEMS

There is a maxim originating in modern tax laws: "You may own something which you may not have." Unexpected heirs, the most notable of which is Uncle Sam, tend to shrink large estates from 40 to 50%. For many people, each additional dollar that can be successfully transmitted to members of the family is equal to two additional dollars earned. But tax savings are net; that is, a man may have to earn $10,000 in order to add $5,000 to his estate, but a saving of $5,000 in taxes increases the total of the property he transfers by $5,000, without any work on his part.

Tax savings do not come automatically. It takes thoughtful planning, usually with professional advice, to arrive at a property transfer plan that meets the desires of the transferor and at the same time minimizes taxes.

There are two times at which property may be transferred: during life; and at death.

Transfers While Living

During life, there are ways to hold property that effect a partial transfer of property. Each is discussed briefly below, with tax considerations:

1. Family partnerships. Prior to 1951, the Commissioner of Internal Revenue labeled many family partnerships a device to evade taxes. In 1951, Congress tried to eliminate this jockeying between tax payers and commissioner. The new law makes it easier to create a valid family partnership by requiring only two things: (1) ownership of a capital interest by each partner, regardless of how acquired, and (2) if an interest is created by gift from a partner, payment of reasonable compensation to the donor for his services before the income is distributed. For example, Dad, sole owner of a farm, might give ¼ interest to a son and ¼ interest to a daughter. Assuming that the partnership has a net income of $30,000 in 1952 and reasonable compensation for Dad's services is $6,000, Dad would get $18,000 ($6,000 plus ½ of the remaining $24,000) and son and daughter would each receive $6,000 (¼ of the $24,000).

Tax savings can be substantial under a family partnership, since Dad and Mother can make a gift to the two children up to $72,000 in one year without incurring gift tax liability. Also, the parents pay income tax on a lower amount, and at death of the parents, the estate is much smaller. Contributions to the partnership are not taxable, and receipts from the sale of a partnership interest are considered capital gains.

2. Joint tenancy. From a tax viewpoint, joint tenancy is rarely advisable except between husband and wife. And it may not be very attractive taxwise to a surviving spouse if the estate is fairly large, say over $150,000.

Joint tenancies are eligible for the marital deduction (up to ½ of the adjusted gross estate given to a spouse), but the surviving spouse cannot take such deduction. On estates over $120,000, there may be two death taxes, depending on who dies first and how much property each contributed. Creating a joint tenancy may involve a gift tax and use up the gift tax exemption, without saving on the federal estate tax.

The basis of joint property carries over to the survivor and a substantial capital gains tax may be incurred when the survivor sells.

The same principle applies to depreciation. Property taken by a surviving joint tenant continues to be depreciated at the same rate.

These points are made merely to point out that joint tenancy can create serious tax problems, and good counsel should be obtained before using it.

3. Tenancy in common. This way of holding property usually presents more economic than tax problems. If a farm is large enough to be partitioned, or if more than one farm is owned, transferring a part to a spouse or children as tenants in common may have tax advantages: Only the ownership interest is taxable in the estate, the transferor reverts to a lower tax bracket, and probate expense is reduced upon death. However, as is true with joint tenancy, a gift tax may be involved when the property is transferred.

4. Life estate. It is common for man to give property with income for life to one person (the wife, for example) and the remainder to another (child or children). If a complete gift is made with no possibility of revertor (property coming back to the grantor), skipping a life for tax purposes may result in a sizable tax saving. Also, a generation may be skipped if the life estate is given to children and the remainder to grandchildren.

However, a transfer reserving income to the grantor for life, is subject to the federal estate tax on the grantor's death, as well as to a gift tax at the time of transfer. The same is true of the Illinois Inheritance Tax: Future interests are included in the estate of the grantor.

A transfer of some or all of one's property during life also may be made *without sharing* the title:

1. Gift. In addition to the fact that gift tax rates are only ¾ as high as estate tax rates, the gift reduces the estate, thereby reducing the estate tax and expenses of administration. Also, the donor is allowed a lifetime exemption of $30,000 with exclusions of $3,000 per donee per year. The significance of using gifts in estate planning can best be illustrated by an example:

With an estate of $150,000 owned by a husband, the following federal and state taxes would be due at his death:

a. All property to the wife.....$5,254
b. ½ to wife and ½ to two children..... 2,960
c. All to children.....19,980
d. Gift during lifetime of $60,000.
½ of remaining $90,000 to wife and ½ to children..... 600

2. Trust. Trusts are simple devices when understood and should be used in many plans to conserve assets. A trust can be set up to transfer property to successive beneficiaries with only one reduction due to taxes. If property is transferred to children and they in turn transfer it to their children, death taxes will be assessed twice. But if the transfer is made to a trust, while living, with income to the children for life and the property

(remainder) to the grandchildren, death taxes may be avoided both at the death of the transferor and at the death of the children.

The insurance trust seems to be gaining favor as a flexible device to carry out a person's wishes with respect to the use of insurance proceeds.

3. Sale. If a farm is transferred at fair market value, the amount received above the adjusted basis (cost plus improvements) is reportable as capital gain. To keep this gain to a minimum, an installment contract should be made — not over 30% of the sale price paid in the year of sale. If the transferor can make sound investments with the money at a 3% return, a principal of $100,000 would last 31 years if $5,000 were used each year, or 23 years at $6,000 per year.

When a farm is sold for less than fair market value (say to a son), the difference between the sale price and market value is a gift. If this difference is more than $6,000, a gift tax return must be made.

One disadvantage of selling at a reduced price is that depreciation must be set up on a basis of the reduced price. In family transfers, this may be avoided by making a sale of the improvements and a portion of the farm at market value, and making a sale at another time of the balance of the farm at a much lower figure.

Transfers at Death

A common method of transferring property is by dying, and this method has some advantages.

1. Persons accumulating property remain in control and receive all of the income during their life.

2. If property has increased in value, those who inherit it will have a new basis for sale and depreciation purposes, which is the fair market value at the date of the owner's death.

3. By using a will, the property may be distributed in any manner desired, except for dower interests.

4. If maximum use is made of the marital deduction, an adjusted gross estate up to $120,000 may be distributed without Federal estate tax liability.

5. If the immediate family is large, some tax saving may result, since each member has a $20,000 exemption for Illinois inheritance tax purposes.

A successful accumulation of farm property demands a successful plan for its transfer. The best tax formula will be different for each family and frequently will not and should not equal the greatest savings. A transfer which is in accord with the owners' desires in an over-all distribution plan, should get first priority.

N. G. P. Krausz

Footnotes for the last page:

[1-12] The first source is for annual data; the second is for current data from which tables may be brought to date.

[1] Survey of Current Business, U. S. Department of Commerce; Monthly issues. Converted from 1947-49 = 100 by multiplying by 1.9098549 for Col. 1, and 2.3854962 for Col. 2. [2] Same as footnote 1. [3] Illinois Crop and Livestock Statistics, Circular 444 (1945); Monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-14 = 100 to 1935-39 = 100 by multiplying by .8834. [4] New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. [5] Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. [6] Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. [7] Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). [8] Same as footnote 5. [9] Survey of Current Business, average weekly earnings (U. S. Department of Labor) converted to index (1935-39 = 100) by multiplying by 4.4595077. [10] Federal Reserve Bulletin of Federal Reserve Board. [11] Preliminary estimate. [12] Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. [13] All hay prices except those for 1933-39 refer to baled hay. [14] Simple calendar year average, not weighted.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Ill. 8900, 3-53—10,700
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1952[14].....	213	256	257	228	416	501	183	399	304	219
1951 Dec....	217	266	267	227	467	383	169	387	300	218
1952 Jan....	216	262	265	229	395	404	176	388	298	221
Feb....	215	257	261	230	303	325	141	391	298	222
Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	302	214
Sept....	214	254	261	228	544	402	177	407	312	226
Oct.....	212	250	254	225	618	610	271	410	315	227
Nov....	211	248	244	224	532	476	213	411	316	234
Dec....	209	238	235	224	461	466	200	415	323	235[11]
1953 Jan....	210	238	237	225	...	...	...	...	...	...

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			Feb. 1952	Current months, 1953		
	1933-39	1951	1952[14]		Dec.	Jan.	Feb.
Corn, bu.....	$ .66	$1.67	$1.65	$1.69	$1.52	$1.48	$1.41
Oats, bu.....	.31	.87	.83	.88	.84	.81	.74
Wheat, bu.....	.86	2.24	2.19	2.31	2.13	2.10	2.05
Barley, bu.....	.62	1.36	1.35	1.37	1.35	1.35	1.30
Soybeans, bu.....	.90	2.95	2.89	2.85	2.82	2.78	2.68
Hogs, cwt.....	8.52	20.30	18.45	17.70	16.30	18.30	19.40
Beef cattle, cwt.....	7.88	30.85	27.53	29.00	22.50	22.00	20.00
Lambs, cwt.....	8.36	31.66	25.45	26.90	20.60	21.00	21.60
Milk cows, head....	58.00	267.50	265.00	280.00	250.00	240.00	225.00
Veal calves, cwt.....	8.66	33.57	30.10	32.80	26.00	28.00	27.00
Sheep, cwt.....	3.58	16.07	10.46	13.30	7.00	7.60	8.00
Butterfat, lb.....	.27	.66	.69	.80	.64	.63	.62
Milk, cwt.....	1.68	4.16	4.44	4.55	4.70	4.25	4.05
Eggs, doz.....	.19	.42	.36	.30	.40	.39	.38
Chickens, lb.....	.15	.27	.25	.26	.26	.27	.27
Wool, lb.....	.25	.83	.47	.50	.45	.47	.47
Apples, bu.....	1.08	2.04	2.53	2.40	3.00	3.00	3.00
Hay, ton[13].....	9.39	21.08	22.48	22.30	25.20	24.80	24.50

[1-14] For sources of data in tables see preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | April-May, 1953 | Numbers 214 and 215

Articles in This Issue

SO YOU WANT TO FARM!

So you want to farm! This title was chosen because it is the first of four major items that will determine who is going to become established in farming. These four items are:

1. The direction and intensity of your interest and motivation. Is farming a goal you really want to reach?
2. Your ability as a manager and a farmer.
3. Your financial position; that is, your net worth.
4. The effectiveness of the arrangements you are able to make to obtain possession and use of land and operating capital.

Of these four items you may quickly pick out No. 3, your financial position, as being the most important in the sense that if you have enough money, you can get established in farming with a minimum of concern about the other three. Many well qualified people, however, are not in that enviable position, because a farm business just large enough to employ one man's labor efficiently may represent a total investment of more than $50,000.

Excluding those fortunate enough to have ample family assistance, only those with a real interest in farming will be most successful. In a recent study on the personal characteristics of farmers, it was found that the items, "Takes pride in his farm and his work" and "Has a love for

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

farm work and farm life," ranked second and fourth respectively, among 257 items descriptive of Illinois farmers, when these items were applied to better-than-average farmers. On the other hand, they ranked 75th and 123rd when these same 257 items were applied to poorer-than-average farmers.

A question for you to answer is this, "Is your desire to become a farmer great enough to make up for the possible sacrifices you may have to make in your level of living while you are accumulating the capital necessary to make a start?" This is a problem faced by any individual who seeks to enter into a business for himself. Training for professional work requires the same kind of personal discipline and sacrifice as does the saving and preparation to be a farmer.

It may be well to ask yourself if your desire to farm represents a positive choice, or whether you are merely following the line of least resistance. A number of Illinois farmers were asked why they became farmers. The most common answer was that farming was the only thing they really knew how to do. This does not mean that these men made the wrong decisions. There is, however, a real difference between knowing that you have a certain ability to do a superior job and going ahead and making the most of that ability — and, on the other hand, a passive acceptance of what chance has laid out for you regardless of your abilities.

This comment leads up to the second point. Have you developed any ability as a farm manager? You would not think of starting to farm without machinery and equipment — without operating capital! But how well are you supplied with managerial capital — with the knowledge, the information and facts which are the management tools you need in order to make the organizational and operational decisions that will be required of you? Have you had the experience needed to give you skill and confidence in the use of these tools? In answer to these questions most of you will point to twenty or more years of farm experience. But has it been a learning experience? Has it taught you how to make decisions wisely and well? Have you ever asked your father to explain why he decided one way rather than another? Are you aware of the basic principles which govern the combination of enterprises and input factors in any productive organization?

A story is told about an employee who went to his boss because another man was given the promotion he thought should have been his. "I have twenty years' experience on this job," he announced, "but you promoted this fellow who has been here only five years. How come?" The boss looked at him and said, "I am going to give it to you straight, Bill. Your argument is good, except for one point. Instead of twenty years' experience, you have had only one year's experience, twenty times." "The beaten man is the man who follows the beaten path."

The study of personal characteristics of farm operators yields plenty of evidence to support these observations. Two hundred and thirty-six farmers were rated on 85 items, and these item ratings were then correlated with net farm earnings. Fourth highest, of the 85 items, was this one, "He is well informed about farming." Third highest, with a negative correlation, was one that said, "He had poor training as a boy." Second highest was, "He uses limestone when needed," and at the top, again with a negative correlation, was the first point expressed in this item, "He is not interested in farming."

It is evident that in farming, a combination of keen interest, good training and ample information is a winning combination. But even these are not enough if you cannot find a farm or have nothing with which to farm. This brings up the third point, the necessity for accumulating a substantial net worth, preferably before starting, but certainly before you may be considered established. If this problem is solved for you by family gifts or by inheritance, you are indeed fortunate. Most beginning farmers, however, do not find themselves so favored. For them there is no easy way out — the answer is savings. A young man can get started in farming without owning any capital, but ultimately he will have to accumulate some savings if he is to climb above the status of a hired manager.

Why is a substantial equity in the farm business so desirable? The answer lies in two cold, hard facts: (1) the opportunities to start farming without it are very few, and (2) the financial progress following a start with insufficient capital is usually painfully slow. In the long run under normal conditions you cannot expect capital invested in farming to do more than earn the going rate of interest. If you *borrow* all the capital invested, then these earnings *have to be paid* to the lenders. All you have left to provide for your family living will be the earnings of your labor and management, and these are likely to be low if the farm you were able to get is small or poor. *Installments on the principal* that you have borrowed would have first claim *even here*. Therefore, it is extremely important that you own an equity in the business on which you do not need to meet an interest payment, and the earnings from which can be used in meeting the payments on the balance, or to provide a cushion against unforeseen losses and downward variations in income.

Buying a farm may not be wise unless you have enough money to finance a suitable acreage and improvements, with possibilities for expansion, without tying up money that should be invested in operating capital.

If you own or can obtain the use of enough machinery and equipment, you may be able to rent a farm on a crop-share or a cash lease. Unless you have earned a reputation as a promising young farmer or have some personal connections you may not have much chance of renting a desirable

farm. Be sure to carefully appraise your chances of making financial progress before committing yourself to a lease dictated solely by custom, on a farm that may be too small and too run-down for profitable tenant operation under an uncooperative landlord. If such farms rent for a half-share of the crops *with no compensating adjustments,* simply because that is the way other farms in the community are renting, then it is quite possible that you may have similar costs, but, on a crop like corn, you may receive five to ten bushels an acre less than the average tenant for your share of the returns.

If you are unable to finance a tenant operation on your own, perhaps your best opportunity to get started and to make satisfactory financial progress is through an operating agreement with an established farmer or with a landlord who is interested and willing to finance your operation. What is recommended here is a father-son type of farm business agreement. It is not necessary, however, that it be between father and son. The principle behind such an arrangement is a sound one, and should receive much wider application.

Father-son business agreements should be used more frequently on rented farms. Why should a successful tenant-farmer face the prospect of having to give up his farm as he comes to advanced years when it is possible to maintain a high level of efficiency and production for the landlord by providing a continuity in management and labor through bringing a young man into the business? The young man need not be a son; he may be a son-in-law, an ambitious and capable young man working as a hired man, or an interested student of agriculture with the promise of becoming a successful farmer.

If you have superior ability to organize and direct a farm business, but do not have the farm, then you have a problem of finding employment for your ability. On the other hand, there are numerous farms owned by people who must depend on capable operators to direct and operate them. Production efficiency will be increased and society will gain from giving young men who are best qualified an opportunity to find employment where their ability is greatest.

Does your banker, farm adviser, vocational agriculture teacher, 4-H Club leader, or any of a dozen other individuals know that you would like to start farming, or that you need help in getting started, or that you are ready to start but have not found a farm? You do not need to ask for a loan to talk to your banker. In fact, he might welcome the chance to talk to someone who is not asking for money. Tell him about your plans, tactfully of course, and ask him to keep you in mind if he learns about an opportunity to rent a farm or to work into a farm business.

On the other side is the question, have you ever done anything for which people should remember you? Have you participated in F.F.A.,

4-H Club, church and community programs in a commendable way? Have you done anything to earn a reputation as an up and coming young man? I know one young man who is a successful tenant on a good 240-acre farm because his banker was impressed with the drive, energy and ambition he displayed while doing custom work and odd jobs in the community. His banker had confidence in him because of what he *was* and *not* because of what he *owned* — which was very little at that time.

A number of points which should be observed in setting up father-son-type operating agreements are discussed in University of Illinois Circular 587 entitled "Father-Son Farm Business Agreements." This circular which contains forms that can be used in setting up such an agreement, may be obtained from your farm adviser or the College of Agriculture, Department of Agricultural Economics, University of Illinois. Copies of profit-sharing plans may be purchased from the same sources.

F. J. Reiss

SOME WAYS TO IMPROVE MARKETS FOR ILLINOIS FARM PRODUCTS

Discussion concerning markets centers on prices. But action of farmers emphasizes the necessity of selling large volumes. Illinois agriculture is based on high volume production of a few products. Five products — hogs, cattle, corn, soybeans, and dairy products earn 80 percent of our farm income. A satisfactory market must consider not only price but also the ability to absorb large volumes.

The importance of price supports. The value of Illinois farm products that are not supported by the government is larger than that of those products that are supported. In view of current comment this may seem strange. But it is true. On the basis of 1951 sales the division was 42.5 percent from supported products and 57.5 percent from non-supported. The latter includes hogs, cattle, sheep, poultry and eggs, horticultural products, and hay.

For other products the supports may not be an active factor. The market may put the price above the support level or a farmer may not use the support device. The former is illustrated by soybeans which in 1951 earned 12.9 percent of our farm income. Most of the time soybeans sell above the support price. Many farmers who raise corn, which in 1951 earned 15.1 percent of our income, do not use loans or purchase agreements. They feed their corn or sell in the open market. So the 42.5 percent figure overstates the importance of the support arrangements as a factor in the Illinois farmers' market.

Why do not all farmers use price supports? Many people assume that the price of a supported commodity cannot fall below the support.

Yet this is not the case. The prices of both wheat and corn have been below the support level since the 1952 harvests. When the government enters the market and buys all that is offered, the support price becomes the market price. Currently this is illustrated by butter. But when the government attempts to support the price by offering loans or purchase agreements, the farmer must provide satisfactory storage. A farmer may not have storage or be unable to find it in an elevator. Or he may calculate that the cost of storage is too high to make the loan attractive. Few Illinois farmers obtained loans on wheat from the 1952 crop. This means that they did not have satisfactory storage space and/or that elevators — either local or terminal — did not have such space or did not care to make it available at the price offered. More Illinois corn than wheat enters the loan, but since January 1, 1953, many farmers have been free sellers of corn at 10 to 14 cents under the loan price. This indicates that they did not have satisfactory storage space or that considering all costs it would not pay to use the loan. For corn off-farm storage does not enter the situation because corn must be dried out before it is suitable for tight-bin storage. If storage is not available why is it not provided? This is an individual matter but the answer boils down to costs. To build storage — either on or off the farm — costs money. So the individual farmer asks, will the possibility of getting the high loan price pay returns on money invested in construction of added storage space?

Quality considerations. One way to get more income from a product is to sell higher quality. Consumers now have higher incomes than before the war and spend a sizeable proportion of them for food. This means that they seek higher quality or more expensive types of food. Have Illinois farmers taken full advantage of this altered situation?

Some current examples. Hogs. The largest source of farm income in Illinois is the sale of hogs (23.3 percent in 1951). The most important marketing problem in connection with hogs today is quality. The primary product of hogs is meat; lard is produced as a by-product. The latter has become a very cheap product because of the growth of other sources of food fats. There is very little possibility of lard becoming much more valuable. Consumers want a leaner type of pork than they commonly find in retail shops. They want pork that comes from what is called "the meat-type hog." These hogs are worth more money than fat-type hogs because they have higher "built-in" value.

They have higher "built-in" value because: (a) meat-type hogs yield a higher percentage of salable product per 100 pounds of live weight; (b) they yield a lower percentage of the cheap lard; (c) they yield a higher percentage of the cuts for which consumers pay the higher price; (d) they may yield a type of meat which consumers prefer and for which they will pay higher prices.

How can Illinois farmers be influenced to produce more of this type of hogs? Higher prices must be paid than for "fat-type" hogs. This can be done because they carry more "built-in" value. The pricing systems in effect at central stock yards, at local markets, at auctions, at local packing plants should meet this test. Some progress is being made. It is sound because it represents payments for higher built-in value and will lead to an increased output of the kind and quality of product which consumers value more highly. This development, of course, involves production problems but these present no special difficulties. Over the years type of hogs and methods of production have often been changed.

Cattle. Our common marketing systems for cattle (which in 1951 accounted for 23.2 percent of Illinois farm sales) have long valued quality in cattle as suggested above for hogs. Most of our market cattle in Illinois are sold in central stock yards by commission men. To be good salesmen these men must be experts on cattle quality. The buyers know that there are large differences in the value of beef from cattle of different qualities. So the market largely turns on the question of valuing quality in live animals. A test of the efficiency of our marketing system for cattle is, how accurately is this job done? The producer of cattle is guided by the values which the market puts on different degrees of finish.

Eggs. Research studies and experience indicate that consumers will pay higher prices for eggs of high and dependable quality. The problem is, how to reflect this quality back to the producers so that they are led to market eggs of high quality. In the last five years much progress has been made in Illinois in organizing a market which pays producers different prices for eggs according to size and inferior quality. This system should be extended so as to be available to every producer who wishes to sell on this basis.

The quality premiums will vary with the season; they will be higher in the summer and fall months when both supplies and average quality are lower than at other seasons. To obtain the full benefit from the grade-buying of eggs farmers may need to alter production practices. No one can expect a premium price for eggs unless they have higher "built-in" quality, i.e., are really better than ordinary eggs.

These three examples of improving markets through better valuation of quality have certain things in common: (1) the products must have "built-in" differences in quality; (2) quality production involves improved production practices; (3) the improvement of markets involves action by buyers who alter methods because it pays them to do so; (4) markets must reflect demands of consumers. With high incomes, consumers are willing to pay for higher quality. These demands do not cheapen costs; they often increase them. But many consumers are more concerned about quality than costs.

Soybeans. The quality of this commodity is measured by the yields of salable products which processors can get from different lots. Based on average farm prices the quality of Illinois soybeans averages higher than in other areas of production in the United States. But soybeans are bought under a loose system of grades which reflect very little differences among different lots. Soybeans are priced on the basis of government grades. The maximum moisture content for No. 2 soybeans is 14 percent. Most Illinois soybeans are drier than this, hence are worth more because they yield more product and are easier to store. The No. 2 grade also permits up to three percent of foreign material and dockage. Most soybeans are cleaner than this. The effect of these low standards is to make very few differences possible among prices of different lots. The high average quality is probably reflected in the average price but the drier, cleaner lots tend to maintain the price of the wetter, dirtier ones. It would be an improvement if these standards were tightened up. This change would require governmental action.

Effective purchasing power makes the market. Every market day a large volume of farm products is sold. The value of products sold by Illinois farmers in 1951 equalled nearly seven million dollars a day (assuming 300 marketing days in a year). Who absorbs these products in such volume? Many Illinois products are bought by dealers and processors who may buy for storage but in the end the demands of final consumers — either in the U. S. or abroad — sustain the market. Our population numbers nearly 160 million. On the average the level of income is the highest in the world. This situation creates a large and broad market which absorbs the beef, pork, milk and dairy products, eggs and poultry, cereals, and fats and oils produced by the farmers of Illinois. In the last 12 years Illinois farmers have had favorable markets for their products. This is because the incomes of our customers have been high and not because the government has supported the prices of some farm products.

But prices are also important. What people buy is influenced by relative prices. Some basic quantity of food is essential, and if necessary a very high price will be paid to get it. But foods are sufficiently abundant that extreme prices ordinarily are not necessary. Most people are particularly careful about paying a high price for a product for which a close substitute is available at a lower price. A good illustration is provided by butter and oleomargarine. Since vegetable oils are cheaper than butterfat and are available in large quantities because of the rapid increase in the output of soybean oil, margarine is available in large quantities and at lower prices than butter. In economic value butter ranks above margarine, and all over the western world sells at a higher price. In fact butter is the largest individual source of food fat in the world. But margarine is a close substitute and at the price ratio between the two now

prevailing in the U. S., many people use margarine and let the government buy the surplus butter at the support price. The basic problem in our butter market is incorrect pricing.

Some people seem to think that advertising can correct this situation. Advertising plays an important role in the use of certain food fats, particularly branded products. But advertising cannot offset bad pricing.

Better pricing may be the outstanding current need in marketing milk and its products which earned 8.9 percent of Illinois farm income in 1951. Butter has been discussed. Our systems of buying milk from farmers recognize that milk, when put to different uses, will return different values. Milk sold to consumers ordinarily yields the highest returns; milk used in butter, the lowest returns. Smart marketing would price milk so as to maximize sales. It would also price other high-value uses, such as table cream, so as to maximize sales. To keep prices to consumers as low as possible, widespread use should be made of the more economical systems of distribution. Here is a case where, with quality rather well standardized, anything that cuts marketing costs is highly important. The key question is, are the high-value dairy products priced so as to maximize sales?

The export market. By far the largest part of Illinois farm products are sold in the U. S. market. But Illinois corn, wheat, soybeans, soybean oil, and lard and tallow go to foreign countries in important quantities. These foreign markets are important in making it possible to sell more and at higher prices than if sales were limited to the U. S. market. The only Illinois farm product imported in important quantities is oats from Canada.

The volume of exports of any product depends on foreign needs, the ability of foreigners to pay, availability of supplies in competing areas, and correct pricing. Foreign countries do not buy such staple products as the export items listed above unless they need them. They cannot pay unless they can acquire dollars with which to pay, and they will not buy here if they can buy cheaper elsewhere. They may even prefer to buy from a competing supplier if it is easier to sell that country goods with which to earn the means of payment. Of the above list the only ones for which the U. S. tends to be the major supplier at prevailing prices are the animal by-products — lard and tallow.

In recent years as a means of payment foreign countries have been aided in acquiring U. S. dollars by our gifts and loans. In the long run, however, they cannot pay dollars unless they sell us goods or services for dollars. The idea that we should sell our surplus abroad and exclude what others may wish to sell is sheer nonsense. How can they buy our surpluses if we do not buy things we need from them? We have made much progress in reducing our import duties over the last twenty years. This helps us sell our surpluses. Recently we have fallen into the bad practice of

setting up embargoes against certain foreign goods. This makes it more difficult for us to sell and causes ill will.

But we should not overlook the importance of correct pricing. A basic reason why we sell abroad large quantities of lard and tallow is that it is sold at the market price with no effort to support such price. Currently these are low prices. Foreign prices of agricultural products are not necessarily low; in some cases they are higher than ours. To analyze these price relationships in detail cannot be done here for lack of space. But it should be borne in mind that arbitrary pricing may interfere with foreign sales just as it does with domestic sales.

Conclusion. To improve markets involves many detailed changes. We have emphasized three points at which improvements are being or could be made: (1) systems of buying which emphasize payment for higher "built-in" quality; (2) reductions in costs which do not sacrifice quality and so make prices more attractive to consumers; (3) correct pricing so as to keep prices in correct relationship to those of competing products or in competing supply areas. Illinois agriculture is geared to high level output. Our volume is likely to increase in the future as the trend toward yield-increasing practices continues. Intelligent action is necessary to maintain the largest and widest possible markets.

L. J. Norton

LIVESTOCK AUCTIONS IN ILLINOIS

The auction method of selling livestock is often considered as a new development in livestock marketing. Historically, auction selling has long been important in other countries. The livestock auction is a new development in Illinois, starting in the early thirties. Numbers of auctions increased rapidly until 1940, then declined sharply with another gradual increase after 1944; in 1953 more than 80 auctions are operating in the state. (Fig. 1).

Extent of auctions in Illinois. Auctions sell all species of livestock (cattle, calves, hogs, sheep and lambs, and horses). A survey made in 1952 of operations in 1951 indicated that they handled more than 66 million dollars worth of livestock; total sales of livestock by Illinois producers other than interfarm transfers, amounted to 946 million dollars. The proportion of total livestock sold through auctions was seven percent, but this proportion varied by species. (Table 1).

In 1951, 866 thousand cattle and calves, 52 thousand hogs, and 417 thousand sheep and lambs were shipped into Illinois for further feeding or to add to breeding herds and flocks. Many of these animals are sold through auctions. This survey indicated that farmers purchased nearly

half the cattle and calves sold at auction and about two-thirds of the hogs, sheep and lambs.

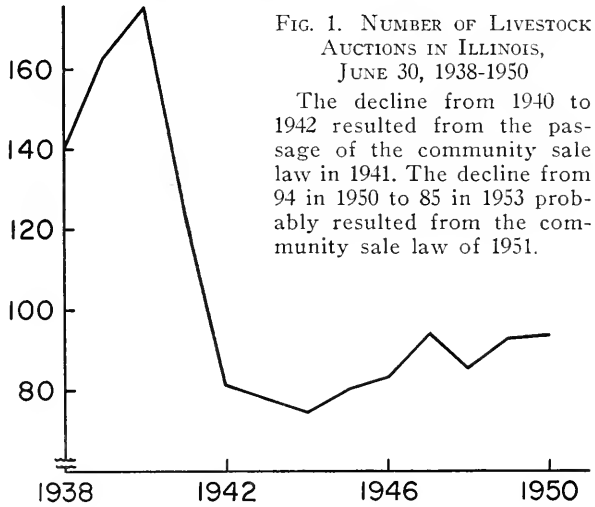


FIG. 1. NUMBER OF LIVESTOCK AUCTIONS IN ILLINOIS, JUNE 30, 1938-1950

The decline from 1940 to 1942 resulted from the passage of the community sale law in 1941. The decline from 94 in 1950 to 85 in 1953 probably resulted from the community sale law of 1951.

Functions an auction may perform. The auction serves the primary function of assembling livestock, and some auctions adequately perform a pricing function. The wide variations in sizes of auctions are largely responsible for differences in functions. For example, in 1951 the 20 largest auctions had a volume of 43 million dollars, 59 smaller ones a volume of 23 million dollars. The auctions in Illinois can be classified as follows:

Farmers' markets to which farmers bring livestock for sale. Farmers in turn buy much of the livestock. Small local slaughterers are often an important outlet for slaughter livestock.

Feeder markets at which a large portion of the livestock are feeder animals belonging either to local farmers or shipped in by large producers or dealers from outside the state. Such markets often specialize in only one species.

Packer markets at which a large portion of the livestock are slaughter animals. Purchasers are local slaughterers and order buyers for more distant packers.

Trader markets to which much of the livestock is either consigned and/or purchased by traders who in turn may sell it at another auction or at some other market.

In using the auction as a market on which to buy or sell, a farmer

TABLE 1. — ESTIMATED NUMBER AND PERCENT OF TOTAL LIVESTOCK PRODUCTION SOLD THROUGH AUCTIONS, ILLINOIS, 1951

Species	Total Illinois marketings	Sold through auctions	Percent through auctions
Cattle	1,387,000	266,600	19.2
Calves	245,000	244,000	99.6
Hogs	9,287,000	372,800	4.0
Sheep and lambs	541,000	66,400	12.3

should know something about the particular auction, since it may be satisfactory or not depending upon the type of auction and what the farmer wants in a market.

Generally, auctions are used more as local outlets for small consignments of livestock than for large shipments. As with any other type of market an adequate volume of business is necessary to attract buyers in the particular species being offered for sale. The fact that a specific auction is a good outlet for veal calves, does not mean that it would be an equally good market for ewes. Therefore, a seller should know something about the type of buyers who patronize a market. He can then decide if that market will provide a satisfactory outlet for the class, weight, grade and species of livestock he has to sell.

Some problems of an auction. Many problems arise in marketing livestock through auctions. Among these volume to attract buyers has been mentioned. Volume is necessary also to keep per unit operating costs at a minimum.

Sanitation is a problem as at other livestock markets. By law each auction is under the direct supervision of an accredited veterinarian, who is charged with the responsibility of enforcing: quarantines; vaccination requirements; cleaning and disinfecting regulations; and inspecting all livestock to be assured diseased animals are not sold. At some auctions the veterinary and auction manager cooperate to conduct a market that leaves little room for complaint; many other auctions follow only general sanitation procedures that may permit the spread of disease.

Method of sale. Sixty-two Illinois auctions have scales. In the large auctions about 87 percent of the cattle, 72 percent of the calves, 55 percent of the hogs and 57 percent of the sheep and lambs are sold by weight. In the smaller auctions a larger percent is sold by the head. Scales at most livestock auctions are tested by the state once a year, or more often as requested. But a scale is accurate only for the weight tested; and the state tests few of the scales for more than 2,000 pounds.

Trade practices. Most auction managers are interested in maintaining good trade practices such as giving all potential buyers a chance to bid; accurately describing the condition of the livestock; accurate weights; and information as to seller, buyer, and price of each lot of livestock. To maintain the public good will over a period of years an auction must continually watch its trade practices.

W. J. Wills

MARKETING DAIRY COWS

The Illinois Brucellosis law provides that by January 1, 1955, all milk sold in Illinois must be from Brucellosis-free herds. Estimates indicate that in some areas 25 percent or more of the cows now on hand must be

TABLE 1. — ILLINOIS VALUE OF MILK COWS JANUARY 1952 AND 1953 AND VALUE OF 1,000 POUND COW OF THREE DIFFERENT GRADES, CHICAGO, WEEK ENDING JANUARY 30, 1952 AND 1953

	January	
	1952	1953
Milk cow	$280.00	$240.00
Canner and cutter	184.20	121.80
Utility	214.00	135.20
Commercial	237.50	145.50

sold to meet this requirement. The difference in value between a producing milk cow and the meat value of a worn-out milk cow is much greater now (spring 1953) than a year ago (Table 1).

During the time in which these cows must be sold, cattle marketings for slaughter will exceed that during any other peacetime period. So more competition from other grades and classes of beef will occur than at any time during the past decade.

These cows go to three principal types of markets: terminal public markets, such as Chicago, National Stockyards and Peoria; auction markets; and direct to packers or to traders. In choosing a market, both price and marketing costs at alternative markets should be considered. Unless a farmer is a good judge of slaughter grades and weights of cows, he can easily miss per head values by $20 or more. Generally, a trader buying for resale expects to make a profit. It is suggested these cows be sold by weight. If the farmer can sell at a market where purchase is by the packer, he should secure a large part of this trade profit.

Cow prices fluctuate seasonally in much the same manner as prices for other lower grades of cattle, with a seasonal high in the spring and a seasonal low in the fall (Fig. 1). Few dairy cows will grade as high as commercial. It may prove profitable to breed these cows to freshen in the early fall or late summer, milk them through January or February, then fatten to sell on the slaughter market in April or May. The increased flow of milk would be sold during the months when milk prices are seasonally high. If the calf is

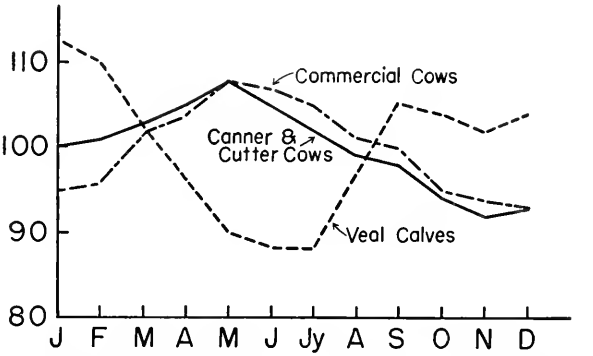


FIG. 1. INDEXES OF SEASONAL MOVEMENT OF COW PRICES AT CHICAGO, 1947-1951, AND OF PRICES OF GOOD-CHOICE VEAL CALVES, AT NATIONAL STOCK YARDS, 1931-1942, AND 1947-1949

produced as a veal it might also be sold on a seasonally rising market. Veal prices normally are their highest in the winter and reach a seasonal low in May and June.

In deciding when to sell cull cows, management aspects should be considered as well as seasonally higher markets. For many dairymen feed and labor requirements may make it more profitable to sell "worn-out" cows off pasture in the summer or fall. Often a cow that is sold while still in milk has inadequate finish to grade above a canner, but if fed for a couple of months, will gain 100 pounds or more and grade utility. Thus, a 1,000 pound canner may bring $121.80, but a 1,000 pound utility cow, $148.70. Do most dairy farmers have sufficient labor and facilities to carry a dry cow two months for $26.90?

W. J. Wills

WHAT CAN BE DONE TO STRENGTHEN THE DAIRY INDUSTRY?[1]

Dairymen in the United States now have a strong competitor in vegetable fat substitutes. An appraisal indicates that while per capita sales of market milk, cheese and dried whole milk will increase, those of butter, ice cream, and evaporated milk are likely to decrease. (Table 1). Population will probably increase from 152,000,000 in 1950 to 169,400,000 people in 1960,[2] a net increase of 11.4 percent. The combined effect of per capita sales and change in population is likely to result in an increase of around 9 percent in total volume of milk needed for 1960 above that used in 1950.

Why have butter sales declined? Ten years ago butterfat producers faced the prospect of increasing competition with vegetable fats because of improved quality of vegetable fat and compulsory use during the war. At that time the writer stated:

[1] Abstract of talk before the Dairy Marketing Conference, University of Illinois, February 3, 1953.

[2] U.S.D.A., P.M.A., PA 191. December 1951.

Table 1. — Civilian Per Capita Consumption of Specified Dairy Products and Margarine, United States, Average 1935-39, Annual 1945-52[a]

Year	Total milk	Fluid milk and cream	Butter	Cheese	Evaporated and condensed milk	Ice cream	Dried whole milk	Margarine
Average				(pounds)				
1935-39	801	340	16.7	5.5	16.6	9.5	.12	2.9
1945	804	432	10.9	6.6	18.2	13.1	.37	4.0
1946	813	423	10.5	6.7	18.5	22.5	.51	3.8
1947	787	398	11.1	6.9	20.3	19.4	.45	5.0
1948	751	387	9.9	6.9	20.1	17.3	.29	6.1
1949	761	384	10.4	7.2	19.6	16.4	.25	5.7
1950	776	385	10.7	7.7	20.0	16.1	.28	6.1
1951	759	395	9.6	7.2	18.2	16.1	.27	6.5
1952	743	400	8.7	7.5	17.9	16.2	.34	7.7
1960[b]	795	462	6.0	10.0	15.0	10.0	.56	...

[a] Data from U.S.D.A. Bureau of Agricultural Economics. Data for 1951 were preliminary and for 1952 were partly forecast.

[b] Estimates by R. W. Bartlett.

"Food scientists generally agree that, when properly enriched with vitamins, vegetable fats are as good, pound for pound, from a nutritional viewpoint, as butterfat."[1]

More recently, Professor Childs reported the results of many scientific studies made in different parts of the United States and Europe, showing that "the vegetable fats when supplemented with the fat soluble vitamins and when fed with the mixed diet commonly consumed by men are nutritionally equivalent to butterfat."[2]

Repeal of laws which taxed colored margarine has increased its sale at the expense of butter. In 1950 all federal taxes and license fees on margarine were removed. At that time, sixteen states, with about two-fifths of the nation's population, also taxed the sale of colored oleo. Thirteen of the 16 states have repealed these taxes and three states, Iowa, Minnesota, and Wisconsin retain them. Together these three states have only 6.0 percent of the total population.

For consumers the important cause of a decline in butter sales is price; oleo in recent years has cost about one-third as much as butter.

Changes in sales of non-fat solids. Sales of non-fat solids for human consumption have more than doubled since 1940. Agencies such as the American Dry Milk Institute, home economics departments, and various trade associations have done excellent work in expanding sales. In 1951, nine-tenths of the non-fat solids were used in baked goods, dairy products, meat products, and those packaged for home use.

For the dairy industry as a whole, however, the importance of non-fat solids can easily be over-emphasized. The net price to farmers for these solids varies from region to region and from market to market within a region. If, on the average, farmers receive 10 cents per pound for dry solids or 90 cents per 100 pounds of skim milk, the commercial sales in 1951 of about 600 million pounds would have returned $60 million. This figure represents 1.4 percent of the cash income of $4.29 billion received for dairy products in that year.

Butterfat prices should not be lowered by increasing the price of solids-not-fat. First, there is a relative abundance of non-fat solids. About 70 percent of the total production of these solids is used for human consumption.[3] The 30 percent still available will keep the price down.

Second, any attempt to increase the price of these solids arbitrarily would result in a decrease in sales.

Competition of vegetable fats with butterfat may affect the breeds of dairy cattle. Fat in milk is now worth less and non-fat solids have a greater value than formerly. These facts suggest the desirability of developing high-producing low-fat strains in each breed of cattle which

[1] Illinois Farm Economics, April, 1943, p. 457.
[2] Dairy Store Conference, University of Illinois, December 10, 1952.
[3] Fifty-two percent was used for human consumption 20 years ago.

have high-fat tests. Furthermore, if market milk is to absorb an increasing proportion of all milk produced, the high-producing low-fat test breeds are likely to assume increasing importance.

Any changes in pricing butterfat should be made to discourage production of high-fat test milk. The best way to do so is to keep low the butterfat differential. Fluid Milk Reports from 1919 to 1953 showed that during most of this period the allowance for 1/10 percent of butterfat in the New York market was four cents. This allowance was far below either the direct ratio or the price of New York 92 score butter plus 20 percent for most of this period.

Ninety-two percent of the cows in New York State are Holsteins. With the low allowance for butterfat, dairymen have decided that they can make more money milking high-producing low-fat test cows than milking high-fat test cows.

Some markets still fail to pay for butterfat above the market standard on the basis of its competitive value in manufactured uses. Failure to make this adjustment will result in continuing to force distributors who buy high-fat test milk to operate at a loss on this segment of their business, except as they are able to use it in high-value by-products. In December 1952, only two of the 102 markets shown in the U.S.D.A. Fluid Milk Report had a prevailing fat test of milk commonly sold above four percent.

From the viewpoint of public interest, it is not desirable to attempt to legislate vegetable fat substitutes out of existence. The dairy industry should center attention upon preventing vegetable fat substitutes from masquerading as dairy products. If legislation is necessary to do this, such legislation should be promoted.

Can market milk sales be increased 20 percent by 1960? The prediction that per capita sales of market milk and cream can be increased 20 percent by 1960 was based upon six assumptions:[1]

1. That efficient distribution practices will be adopted generally so that prices to consumers on a nation-wide basis can be reduced two or three cents a quart.

2. That competitive Class I (market milk) prices will be restored in areas of the country which now exact prices above their competitive level.

3. That batteries of vending machines, some dispensing half-pints and others, quarts or two quarts of milk will be distributed in strategic locations throughout the country.

4. That vendors who own their own trucks and buy bottled milk at the platform will gradually replace union drivers in all areas where wage rates are materially above their competitive level.

5. That fresh concentrated milk from surplus producing areas will be

[1] R. W. Bartlett, Prairie Farmer, December 20, 1952.

sold in all areas of the country where present consumer prices for whole milk are materially above the average price for the country.

6. That research studies will show other ways of broadening the market for milk and its products.

"Sacred cows" whether those of distributors, farmers, labor, or government will be sacrificed in bringing about these changes. The machinery is already in motion to effect such changes which are definitely in line both with the public interest and with the long-run interest of the dairy industry.

R. W. Bartlett

INCOMES AND COSTS ON CLARENCE-ROWE AND FLANAGAN-DRUMMER SOILS AS RELATED TO LAND VALUE

A farm purchaser with limited capital is often faced with the alternative of buying a small but productive farm at a high price per acre or a larger, less productive farm at a lower price. If he buys the less productive farm, he should realize that one reason for its lower price may be the difficulty of making it more productive. Some land has a low ceiling on productivity, i.e., there are limitations as to maximum yields with present known practices. For example, farms on the Clarence-Rowe soils of northeastern Illinois are of lower productivity and also are less responsive to treatment than those of the surrounding area. Their lower value is generally recognized by farmers in the area. In contrast, farms on nearby Flanagan-Drummer soils are much more productive and much higher in price. Which farm is the better buy?

A few farms on Clarence-Rowe soils sold during 1951 and 1952 for an average of about $163 per acre. These farms were badly depleted and the yield level was low. For the years 1946-50, corn averaged 33 bushels per acre. Flanagan-Drummer farms similarly depleted might be expected to sell for $425 per acre and to yield 60 bushels of corn. Assuming a corn price of $1.60, gross income from an acre of corn on the Clarence-Rowe farm is 55 percent as high as that of the Flanagan-Drummer farm.

What about net income per acre? On the Clarence-Rowe farm it is only 23 percent as high as that on the more productive farm. (Table 1). Also, the greater susceptibility of Clarence-Rowe soils to erosion losses limits the proportion of the farm that can safely be planted to intertilled crops. Obviously such a farm cannot compete with the Flanagan-Drummer farm in grain production, and it will be a comparatively poor investment as a cash-grain farm at the prices and costs listed.

What results can be expected if good soil treatment practices are used? It is more difficult to build up productivity on Clarence-Rowe soils than on Flanagan-Drummer soils, probably because physical condition is so often a limiting factor.

TABLE 1. — COMPARISON OF PER-ACRE INCOME AND EXPENSES FROM CORN ON CLARENCE-ROWE AND FLANAGAN-DRUMMER FARMS, UNDER PRESENT AND IMPROVED SOIL TREATMENT[a]

	Present soil treatment			Improved soil treatment		
	(1) Clarence-Rowe farms	(2) Flanagan-Drummer farms	Percent that (1) is of (2)	(3) Clarence-Rowe farms	(4) Flanagan-Drummer farms	Percent that (3) is of (4)
Bushels per acre	33	60	55	45	80	56
Gross income	$52.80	$96.00	55	$72.00	$128.00	56
Expenses						
Land (interest at 4 percent)	6.52	17.00		6.52	17.00	
Taxes	2.50	4.00		2.50	4.00	
Power and machinery	16.36	16.36		16.36	16.36	
Soil improvements[b]	2.56	2.56		3.01	3.58	
Seed and crop expense	2.78	3.56		2.78	3.56	
Buildings	2.60	2.60		2.60	2.60	
Labor	8.64	8.64		8.64	8.64	
Management	1.94	1.94		2.58	2.58	
Total expenses	$43.90	$56.66	77	$44.99	$58.32	77
Net income	$ 8.90	$39.34	23	$27.01	$69.68	39

[a] Expenses are based on 1951 prices. Labor and management costs are based on data from Department of Agricultural Economics Publication AE2907, "Detailed Cost Report for Central Illinois, 1951."
[b] Under improved soil treatment, costs were increased enough to buy the phosphorus and potassium contained in the yield increase. It is assumed that nitrogen will be furnished by legumes in the rotation.

There are few records of corn yields averaging more than 50 bushels per acre on Clarence-Rowe farms, even where good soil management practices have been used for a number of years. For depleted farms a 45-bushel average yield is more realistic. One the other hand, corn yields on Flanagan-Drummer farms may be raised to 80 bushels by proper soil treatment. A comparison of the two kinds of farms when the yield is raised to these higher figures shows net income from an acre of corn is 39 percent as high on the Clarence-Rowe farm as on the more productive farm, and its price per acre is 38 percent as high (Table 1). But it still cannot compete as a grain farm because of the erosion hazard.

The Clarence-Rowe farm, however, can still be used profitably for hay and pasture production. Long-time average yields of hay under good management were 2.4 tons per acre compared with 2.6 tons for Flanagan-Drummer farms.[1] Hay yields may be more variable on the less fertile farm because of poor resistance to drouth, but it will still produce a higher net income by growing more forage crops and less grain *if* the forage can be marketed profitably through livestock. Hay and pasture crops would also help to control erosion and improve the physical condition of the soil. A farmer who buys a farm on the less fertile soil should be a good livestock manager in order to make the best use of his labor and capital.

Many farms are purchased by nonfarmers as investments. Which farm is the better investment for the landlord? The net income of the landlord

[1] University of Illinois Bulletin 522, *How Productive Are the Soils of Central Illinois?* pp. 376-377.

TABLE 2. — INCOME AND EXPENSES OF LANDLORD AND TENANT FROM ONE ACRE OF CORN ON CLARENCE-ROWE AND FLANAGAN-DRUMMER FARMS UNDER IMPROVED SOIL TREATMENT

	Landlord			Tenant		
	(1) Clarence-Rowe farm	(2) Flanagan-Drummer farm	Percent that (1) is of (2)	(3) Clarence-Rowe farm	(4) Flanagan-Drummer farm	Percent that (3) is of (4)
Bushels per acre	22.5	40	56	22.5	40	56
Gross income	$36.00	$64.00	56	$36.00	$64.00	56
Expenses						
Land	6.52	17.00				
Taxes	2.50	4.00				
Power and machinery				16.36	16.36	
Soil improvements	1.20	1.48		1.20	1.48	
Seed and crop expenses	1.39	1.78		1.39	1.78	
Buildings	2.60	2.60				
Labor				8.64	8.64	
Management	1.29	1.29		1.29	1.29	
Total expenses	$15.50	$28.15	55	$28.88	$29.55	98
Net income	$20.50	$35.85	57	$ 7.12	$34.45	22

on the Clarence-Rowe farm is 57 percent of that on the more productive farms, while the price per acre is only 38 percent as high (Table 2). Thus the lower priced farm is the better investment for the landlord if he can keep a tenant who will maintain the 45-bushel corn yield. The tenant on the less productive farm is not so fortunate as his landlord, for his net income per acre is only 22 percent as high as that of the tenant on the Flanagan-Drummer farm. The landlord will find it difficult to keep a good tenant on the Clarence-Rowe farm if it remains a grain farm under a 50-50 crop-share cash lease.

What can the landlord do to encourage a good tenant to stay on his farm? Adjustments in the lease may be necessary; the tenant may be given a larger share or the landlord may assume more of the expense.

In areas of less productive land, the tenant usually receives a larger share of the crop than the landlord. Clarence-Rowe soils, however, are usually surrounded by more productive soil types, and the leasing practices are likely to be influenced by these productive farms. The possibility of changing to livestock production has been pointed out. On a rented farm the landlord may not be willing to invest in the buildings necessary for a livestock system unless he can share in the income from livestock. A livestock-share lease may be the answer if it provides for dividing the income and expenses equitably between landlord and tenant.

At present prices a farm represents a large investment. A buyer will find it worth while to investigate thoroughly the relative productivity of various soils and to select a farm which is suited to his financial position and managerial ability.

W. H. HENEBERRY

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert W. Hudelson
Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 5-53—9700
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1952[14].....	213	256	257	228	416	501	183	399	304	219
1952 Jan.....	216	262	265	229	395	404	176	388	298	221
Feb....	215	257	261	230	303	325	141	391	298	222
Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	302	214
Sept....	214	255	261	228	544	402	177	407	312	226
Oct.....	212	250	254	225	618	610	271	411	315	227
Nov....	211	247	244	224	532	476	213	411	316	234
Dec....	209	237	235	224	461	466	200	416	322	235
1953 Jan.....	210	238	237	225	410	...	...	417	319	236
Feb....	209	234	231	224	283	...	...	419	319	253
Mar....	...	...	233	224	...	...	...	...	...	...

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			April 1952	Current months, 1953		
	1933-39	1951	1952[14]		Feb.	March	April
Corn, bu.....	$ .66	$1.67	$1.65	$1.69	$1.41	$1.46	$1.46
Oats, bu.....	.31	.87	.83	.86	.74	.75	.73
Wheat, bu.....	.86	2.24	2.19	2.28	2.05	2.10	2.05
Barley, bu.....	.62	1.36	1.35	1.35	1.30	1.25	1.25
Soybeans, bu.....	.90	2.95	2.89	2.76	2.68	2.88	2.89
Hogs, cwt.....	8.52	20.30	18.45	16.60	19.40	20.50	20.80
Beef cattle, cwt.....	7.88	30.85	27.53	29.00	20.00	18.70	18.30
Lambs, cwt.....	8.36	31.66	25.45	26.80	21.60	21.60	21.80
Milk cows, head....	58.00	267.50	265.00	270.00	225.00	235.00	215.00
Veal calves, cwt.....	8.66	33.57	30.10	32.30	27.00	23.40	21.40
Sheep, cwt.....	3.58	16.07	10.46	13.10	8.00	8.50	7.70
Butterfat, lb.....	.27	.66	.69	.68	.62	.62	.61
Milk, cwt.....	1.68	4.16	4.44	4.25	4.05	3.95	3.70
Eggs, doz.....	.19	.42	.36	.30	.38	.41	.42
Chickens, lb.....	.15	.27	.25	.26	.27	.30	.31
Wool, lb.....	.25	.83	.47	.45	.47	.46	.47
Apples, bu.....	1.08	2.04	2.53	2.40	3.00	3.00	3.00
Hay, ton[13].....	9.39	21.08	22.48	21.10	24.50	23.00	23.40

[1-14] For sources of data in tables see preceding issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | June, 1953 | Number 216

Articles in This Issue

COSTS OF VARIOUS HAY-MAKING METHODS

Illinois has more pickup balers than any other state and about three-fourths of the state's hay crop is baled. From these facts it might appear that baling is the answer to the Illinois farmer's question, "What method should I use to harvest the hay crop?" Many farmers, however, are still trying to find the most satisfactory method, or combination of methods, for their individual situations. There is no one best method for all farms.

Methods Analyzed

In 1948, R. H. Wilcox reviewed results of hay-making studies in several midwest states.[1] Labor and time requirements of different methods as summarized by Wilcox check closely with results of a comprehensive survey reported in 1951 by the Bureau of Agricultural Economics.[2] The following analysis is an application of present values to results reported in the 1951 BAE study. Costs of four methods are compared: (1) *loose long hay,* mowed, windrowed, loaded with hay loader, and unloaded with power fork or slings; (2) *baled hay,* mowed, windrowed, baled with power-take-off automatic tie baler, and bales loaded and stored by various methods; (3) *chopped hay,* mowed, windrowed, chopped into self-unloading trailer

[1] "A Comparison of Different Hay-Making Methods," *Illinois Farm Economics,* No. 155, April 1948.

[2] "Hay Harvesting Methods and Costs," U. S. Department of Agriculture Circular 868, June 1951.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 1. — LABOR AND COST OF EQUIPMENT, FOUR METHODS OF HARVESTING HAY

Method	Labor, windrow to storage			Approximate cost of haying equipment
	No. of men in crew	Tons handled per hour	Man hours per ton	
Loose long hay	3	1.1	2.8	$800–$1,000
Baled hay				
Baling	1	2.6	.4	
Storing	3	2.0	1.5	$2,750–$3,450
Chopped hay	4	3.5	1.1	$2,900–$3,600
Grass silage[a]	4	10.0	.4	$3,800–$4,000

[a] One ton of dry hay is equivalent to about 3 tons of grass silage.

or truck by power-take-off forage harvester, and blown into barn storage; (4) *grass silage,* mowed and windrowed, chopped into self-unloading trailer or truck by engine-mounted forage harvester, and blown into silo.

Labor and investment required. Relative costs of different methods are influenced largely by the amount of labor required and by the investment in equipment. A comparison of typical size of crew, labor, and cost of hay equipment for the four methods is shown in Table 1. Labor requirements in Table 1 do not include mowing and windrowing, but mowers and windrowers are included in the cost of haying equipment.

Costs vary with tons harvested. The methods differ in both labor required per ton and overhead investment in equipment. Hence, relative costs of different methods vary with the tons harvested annually. This is illustrated by a summary of total per ton costs for harvesting 25, 50, 100, 200, and 500 tons (Table 2). Two custom methods are also included.

The figures in Table 2 can be used only as a general indication of the costs of harvesting hay on a particular farm. From these data, however, we can draw the following generalizations and conclusions:

1. In these estimates the entire overhead of haying equipment — mowers, rakes, balers, forage harvesters — is charged to the indicated tonnage. In most cases, however, these machines are used for other purposes, and often on other farms under custom work, exchange work, or joint-ownership arrangements. All of these situations spread the overhead cost and lower the cost of harvesting hay on farms where the machines are owned.

2. The farmer with 25 tons or less to harvest cannot afford the investment in a baler or forage harvester for use on his farm alone. His alternatives are to harvest loose long hay, or participate in an arrangement in which harvesting equipment is used on more than one farm. Considering the small tonnage of hay on many Illinois farms it is obvious why custom work and cooperative arrangements are so common in hay-making.

3. With 50 tons, harvesting loose long hay is still a relatively cheap method. Most farmers with this tonnage, however, prefer a method that is quicker and easier. With 50 tons, costs of baling and chopping are equal,

TABLE 2. — TOTAL HARVESTING COST[a] PER TON OF HAY IN QUANTITIES VARYING FROM 25 TO 500 TONS ANNUALLY

Method	Tons harvested annually				
	25	50	100	200	500
Farmer owning all equipment					
Loose long hay	$ 9.57	$ 7.11	$5.89	$5.29	$4.91
Baled hay	16.33	10.36	7.72	6.24	5.38
Chopped hay	17.41	10.36	6.82	5.06	4.00
Grass silage[b]	19.16	11.07	7.02	5.00	3.79
Custom operator hired					
Baled hay[c]	9.00	8.24	7.85	7.65	7.53
Chopped hay[d]	7.79	6.22	5.43	5.03	4.80

[a] Includes mowing, windrowing, baling or chopping, loading, hauling, and putting hay into storage. Except as included in custom charges, labor is charged at $1.00 per hour; tractors at uniform rates of 90 cents per hour for two-plow and $1.15 for three-plow.

[b] Adjusted to equivalent tonnage of dry hay.

[c] Custom rate of 17 cents per bale (32 bales per ton) for windrowing and baling. Farmer hiring custom baling bears all expenses of mowing and putting bales into barn.

[d] Custom rate of $12.82 per hour for chopping and putting hay into barn or silo. Farmer hiring custom operator bears all expenses of mowing and windrowing. Custom rate is based on a small number of cases reported in the Illinois custom rate survey.

but it is cheaper to hire custom operators (under the custom arrangements described) than to own the equipment for either of these methods.[1]

4. With 100 tons, baling with an owned baler costs almost exactly the same as custom baling. However, hiring a custom chopper at the indicated rate, is cheaper than owning one up to about 200 tons per year.

5. As tonnage increases, the cost per ton decreases more rapidly for chopping than for baling. This is mainly because of the cost of baling twine or wire, which is directly proportional to the tons baled.

6. A farmer may harvest part of his crop as grass silage but prefer not to chop his dry hay. For this situation the authors of a recent Michigan bulletin[2] conclude as follows:

a. The farmer with less than 100 tons of hay and silage — about what he would have with 15 cows — would be better off to put up loose long hay and hire a custom silage harvester.

b. For 100 to 300 tons a small forage chopper is most economical.

c. With more than 300 tons a large chopper is most economical.

d. As much as 500 tons of hay and silage is required to justify ownership of both baling and forage chopping equipment.

What Method to Use

The preceding analysis does not completely answer the individual farmer's question. "What method should I use?" Although harvesting cost is important, other factors are often of equal or greater importance in determining the best method. Harvesting, storage facilities, and feeding

[1] The data do not permit a strict comparison of the costs of the grass silage method and baling or chopping. The grass silage figures are for an engine-mounted forage harvester; the other methods are for power-take-off machines.

[2] "Reducing Dairy Costs on Michigan Farms," Michigan State College Special Bulletin 376.

methods are all tied together and should be considered as one problem. The physical effort or difficulties of the work involved is another consideration. Quality or feeding value of the crop is quite important. For dry hay the chances of high quality are increased by a method that reduces the number of days required to harvest the crop. The longer it takes to complete the job, the greater the risk of having hay damaged by rain.

General suitability of different methods to situations found on individual farms may be summarized as follows:

1. Harvesting loose long hay is adapted to farms that have only a small amount of hay, equipment and labor to handle loose long hay, and barns not well suited to storing and feeding chopped or baled hay.

2. Baling is popular in Illinois for a number of reasons. From a cost standpoint it is best adapted to the medium-sized quantities of hay harvested on many Illinois farms. It is well suited to custom or exchange work, and to farms where hay may be sold. On many farms, baled hay is most convenient to store and feed, particularly in barns with ground-level storage or where hay must be moved a considerable distance in feeding. Baling is not a cheap method, however, and it requires a good deal of hard work unless an easy way is used to load, haul, and store the bales.

3. Chopping dry hay is an economical method with a large tonnage and where all of the hay is fed on the farm. Its chief advantages are that it gets the job done quickly and with little strenuous work. Feeding chopped hay is most convenient where it can be fed without being moved.

4. Harvesting legumes and grass crops as silage is also an economical method with a large volume. A major reason for its increasing popularity is that it largely eliminates the risk of damage to the crop from bad weather during harvest. It also makes possible a more complete utilization of legumes and grasses by preserving surplus pasture. If grass silage is to compete economically with hay, it is necessary to use economical storage facilities and efficient methods of handling the silage when it is fed.

J. E. Wills and R. E. Rogers

FORCES BACK OF RECENT PRICE MOVEMENTS

Four major forces affect the prices of farm products: (1) domestic consumers' ability to buy; (2) domestic consumers' willingness to buy; (3) foreigners' ability and willingness to buy our products, and (4) the quantity of farm products sold.

At the present time (June 1953) the domestic demand, represented by consumers' ability and willingness to spend money, is strong. Exports are low for several important products. The volume of farm marketings is high. The latter two items are depressing prices.

Let us examine the behavior of these price-making forces during the past five years.

Domestic Demand

Consumers' ability to buy depends on how much money they have. The quantity of money depends largely on the extent to which banks lend money (or buy government bonds, which is lending money to the government) or reduce their loans and investments. New money comes almost entirely from loan expansion. A little comes from an increase in gold holdings by the government. In Fig. 1, A, B, and C, are shown the changes from one year earlier in total loans and investments combined, total investments, and total loans of a certain group of representative commercial banks in leading cities. In Fig. 1, D, is shown year-to-year changes in the velocity of turnover of demand deposits in cities other than New York. In Fig. 1, E, the results of the changes in the quantity of money and its turnover are shown as year-to-year changes in personal disposable income. The last item is a measure of domestic consumers' ability to buy.

The present policy of the Federal Reserve System is to prevent large annual increases in the money supply. It will not be a free buyer of government bonds in the open markets. If commercial banks wish to sell large quantities of bonds they probably would depress the prices of bonds below present relatively low levels. This would be unprofitable for the banks, hence they are unlikely to sell their investments as they did in 1948 and 1950-

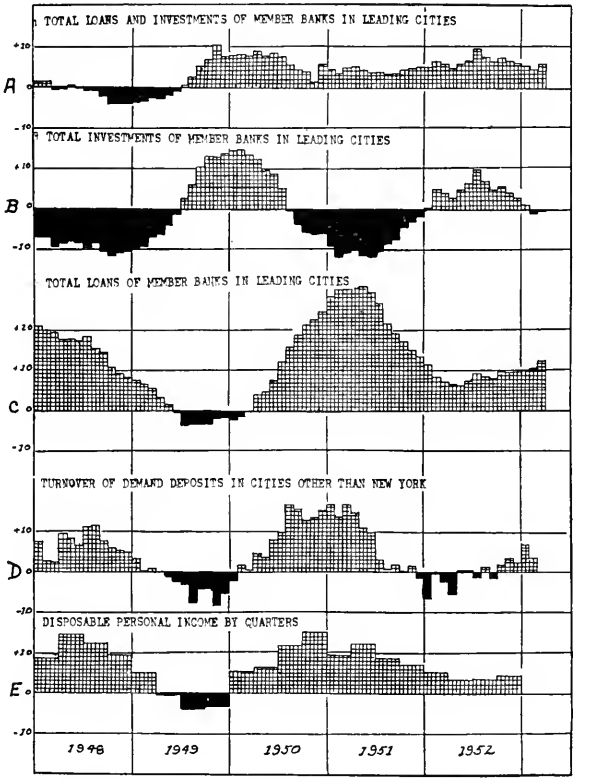


Fig. 1. Twelve Month Changes in Bank Credit and Disposable Personal Income. U. S. 1948-1953

51. That means that they will also be unable to greatly increase their loans relative to the same months a year earlier. They will still be able to take care of seasonal requirements. In the absence of a crisis it appears, therefore, that inflation is over for the foreseeable future, i.e., until national monetary policies change.

The rapidity of turnover of demand deposits is unpredictable. So long as inflation is present and prices are rising, everyone spends freely. The increased money supply and free spending both tend to cause prices to rise. If consumers and business concerns anticipate a depression they will repay their debts, thereby reducing the money supply, and slow up their spending by building up a cash reserve. Both forces tend to bring on and accelerate the depression which was anticipated.

In summary, the money supply has increased continuously since 1949. So has disposable personal income. So has domestic demand for farm products. Our recent price declines came as the result of the other forces operating in the market, namely, reduced exports and large output.

Exports

Changes in the volume of exports of grain, cotton, and fats and oils measured as year-to-year change in cumulative totals for calendar years beginning with January are illustrated in Fig. 2, A, B, and C. These charts are prepared in a different manner from Fig. 1. In Fig. 1, January was compared with January of the previous year. July with the previous July, and December with the previous December. In Fig. 2, A, B, and C, January exports are compared with the previous January, but for February and each succeeding month through December, it is the cumulative quantities to date that are compared with the cumulative quantities to the same date the previous year.

Exports are important outlets for many farm products. In 1951, our exports were 42 percent of the value of raw cotton produced, 36 percent of the value of wheat produced, 28 percent of the value of soybeans produced, and 24 percent of the value of lard produced in this country.

To appreciate the value of an export outlet one has to compare the volume of farm output with the availability of export outlets. The percentage change in farm marketings relative to the same month one year earlier is charted in Fig. 2, D. Marketings were heavy in 1949, 1951, 1952, and 1953 to date. They were light in 1948 and 1950. In 1948 and 1950 we did not have to worry about export outlets because domestic supplies were not burdensome. In 1949 we had large marketings combined with a slump in domestic buying power (Fig. 1, E). Fortunately, exports of cotton and fats and oils increased tremendously (Fig. 2, B and C). In 1951 we again had large marketings, an excellent domestic demand and large exports of

wheat and fats and oils. But in 1952 we again had still larger marketings, a sustained domestic demand, but a great reduction in exports of cotton, and fats and oils. That situation exists today (June 1953). This time the export market did not come to our rescue. Neither is it likely to reach the levels of 1949 and 1951. Exports are not abnormally low; they were abnormally high.

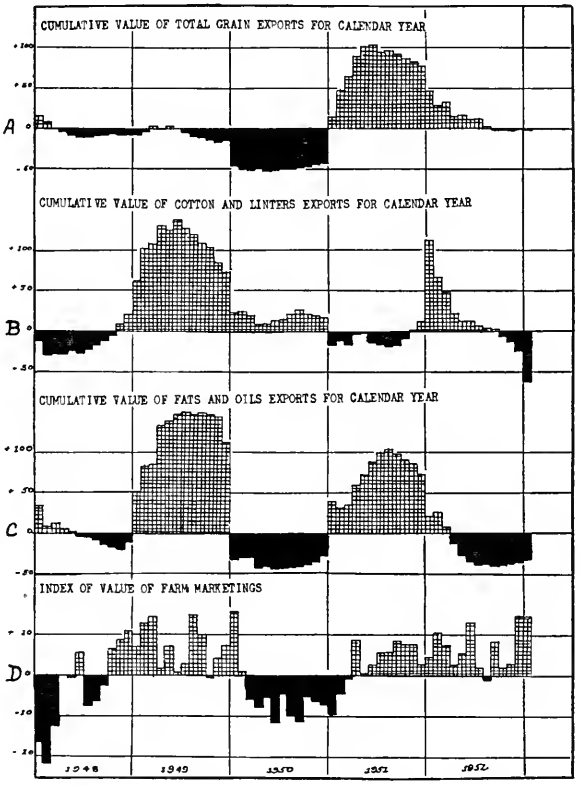


FIG. 2. YEAR TO YEAR CHANGES IN CUMULATIVE CALENDAR YEAR EXPORTS AND TWELVE MONTH CHANGES IN THE INDEX OF THE VALUE OF FARM MARKETINGS. U. S. 1948-1953

Conclusion

If inflation by the monetary expansion route is over and if weather conditions permit the harvest of bumper crops, prices of farm products in 1953-54 have little chance of rising. It is quite important that the domestic demand remains at a high level.

G. L. JORDAN

EFFECT OF EFFICIENCY AND INTENSITY OF PORK PRODUCTION ON NET FARM EARNINGS

Organizing a farm is a difficult problem. It consists of combining the labor, capital, and management which the farmer has or can acquire so as to provide the greatest net income to the farm family which is consistent with maintaining the productivity of the farm. Solution of this problem becomes more important at times when margins between prices received and costs of production are narrow. A recent study noted that

one of the important factors which caused some farms to earn more than similar farms in the period 1936-45 was the numbers of hogs produced.[1]

Other investigations have shown grain farming with a crop fertilization program to be quite profitable on the level, highly-productive, well-drained soils in the cash grain area of Illinois.[2] This is particularly true where erosion and drainage are no problem, and where the farm operator is capable of managing a crop fertilization program. These findings show the need for data which will help with the problem of deciding what is the best use for the productive resources on a level farm.

Sources of data and selection of farms for study

The farms studied were selected from farms in the Farm Bureau Farm Management Service in Central Illinois for the three years

TABLE 1. — FREQUENCY DISTRIBUTION OF RETURNS PER $100. FEED FED TO HOGS ON HOG AND GRAIN FARMS, CENTRAL ILLINOIS — 1949-51 AVERAGE

Returns per $100 feed fed	Number of farms	Percent of farms	
$100 –$107	5	2.3	
108 – 117	8	3.8	Low
118 – 127	28	13.1	One-Third
128 – 137	30	14.1	
138 – 149	71	33.3	
150 – 159	40	18.9	
160 – 169	20	9.4	High
170 – 179	10	4.6	One-Third
180 – 187	1	.5	

1949-51. These were farms on which hogs were the major livestock enterprise and which were located, as well as could be established by soil rating and soil maps, on Muscatine-Sable and Drummer-Flanagan soil-type associations. The results of a tabulation by returns per $100 worth of feed fed to hogs are shown in Table 1. The low and the high one-third farms in this distribution were then selected as two groups for additional study. The low one-third group is represented by all farms having returns per $100 worth of feed fed between $100 and $137 with the average being $126. The high one-third group is represented by all farms having returns per $100 worth of feed fed between $150 and $187 with the average being $161. The Illinois hog-corn ratio for this three year period was 13.9 compared with the average of 13.6 for the years 1945-51.[3]

[1] Mosher, M. L. and West, V. I., "Why Some Farms Earn so Much More Than Others," Bulletin 558, Univ. of Ill. Agr. Experiment Station.

[2] Thompson, W. N., "Systems of Farming Adapted to Highly Productive Level Land in Illinois," Unpublished Ph.D. Thesis, Univ. of Ill. Graduate College, May, 1952.

[3] Based on Market Prices, "Illinois Cooperative Crop Reporting Service," Ill. State Dept of Agr., "Illinois Agricultural Statistics 1951."

Breakeven return needed[1]

Detailed cost studies for the three years 1949-51[2] indicate that an average return of approximately $140 per $100 feed fed was needed to pay all costs and annual charges at their fair market rates. This may be referred to as the average breakeven return. Any returns above $140 for each $100 worth of feed fed could be considered profit for an average farmer. A somewhat lower return for the average farmer may pay for all *cash* costs, but in order to receive a fair return for the non-cash costs such as the value of the farmers own time, and the use of his equipment and other capital, the farmer should consider the profitableness of each enterprise in terms of the return for his cash costs, labor, and capital.

Effect of the Intensity of the Hog Enterprise on Net Farm Earnings at a High and a Low Level of Feeding Efficiency

Adjustments considered

To evaluate the effect of the intensity of hog production on the level of net farm earnings, it is necessary to make allowances for other factors which affect earnings such as the effect of the cropping system and the returns from other livestock. A simplified method of graphic curvilinear correlation was used to hold the effect of these other factors normal or average so that the effect of variations in these factors could be eliminated in computing the net effect of changes in intensity.

Net management returns[3] on farms with low levels of feeding efficiency

The low one-third of the farms represented in the frequency distribution shown in Table 1 are operating at a low level of feeding efficiency. The adjustments indicated above for returns from crops and from other livestock and hog intensity explained about 50 percent of the total variation in net management returns per tillable acre from one farm to another. Nearly all of this variation was explained by variation in the return to crops. The intensity of hog production explained only about 1 percent.

Returns per $100 of non-feed inputs on farms with low feeding efficiency

The returns per $100 of non-feed inputs is a ratio measure indicating the amount of net management returns received for each $100 of costs

[1] The breakeven return is the gross returns per $100 worth of feed fed that are necessary to pay all charges for feed, labor, other capital, and management.

[2] R. H. Wilcox and R. A. Hinton, "Detailed Cost Report for Central Illinois 1951" and "Detailed Cost Report for Northwestern Illinois 1949 and 1950," mimeographed, Dept. of Agr. Econ., Univ. of Illinois.

[3] Net management returns is a measure of net farm earnings. It is the reward to management after all cost and charges for land, labor, and capital have been deducted.

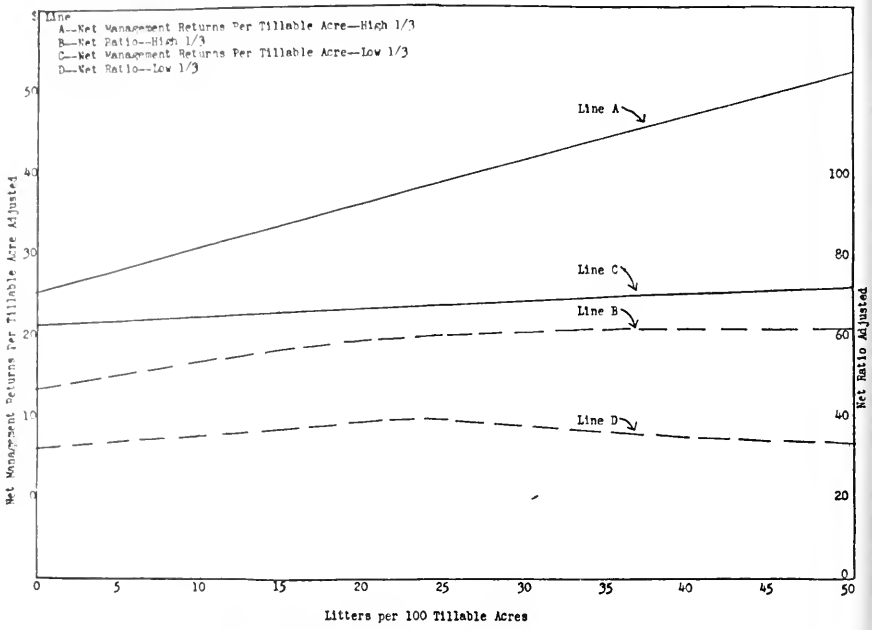


FIG. 1. ADJUSTED NET MANAGEMENT RETURNS PER TILLABLE ACRE AND ADJUSTED NET RATIO AS RELATED TO INTENSITY OF THE HOG ENTERPRISE

and charges on the farm other than feed.[1] For example: If the overhead costs and charges on a farm are fixed and the net management returns go up, the returns per dollar of the fixed costs and charges go up indicating increased efficiency in the use of the fixed resources on the farm. Figure 1 Line D represents the average relationship of the net returns to non-feed inputs when the farms in this low group had low intensity of hog production to farms with as many as 100 litters of hogs. Note that there were increased efficiencies in the utilization of non-feed inputs up to about 25 litters per 100 tillable acres after which the average farmer of this low group secured a lower return for his non-feed inputs.

Net management returns on farms with high feeding efficiency

The high one-third of the farms represented in the frequency distribution shown in Table 1 are operating at a high level of feeding efficiency. The net effect of the intensity of hog production on net management returns for a farmer in this group is represented by the line of average relationship shown in Fig. 1 Line A.[2] The adjustments for crops and other livestock and hog intensity explained about 66 percent of the total varia-

[1] Returns per $100 non-feed inputs calculated in this manner is biased in favor of intensive livestock organizations since the extra feed (capital) which is associated with the more intensive organizations is not included as an input.

[2] Lines derived from graphic multiple correlation analysis.

tion in net management returns per tillable acre. Hog intensity was responsible for about 16 percent of the total variation.

Returns per $100 of non-feed inputs on farms with high feeding efficiency

Line C Fig. 1 may be contrasted with its counterpart Line D as it represents the relationship of returns to non-feed inputs at the various hog production intensities on farms operating with high feeding efficiency. Note that increased efficiencies in the use of fixed costs and charges has resulted as the intensity of hog production increased.

Returns related to intensity

An average farmer in the low one-third group could have expected an increase in net management returns per tillable acre of about ten cents for each litter per 100 tillable acres added. In view of the large variation in returns between farms left unexplained, a statistical analysis does not confirm this as being significant.

An average farmer in the high one-third group could have expected an increase in net management returns per tillable acre of about fifty cents for each intensity increase of one litter per 100 tillable acres if he could have maintained a return per $100 of feed fed at a high level. This amount is great enough to be quite significant. At the same time this farmer could have expected increased efficiency in the use of his fixed resources of land, labor, and capital.

Conclusions

1. The returns per $100 feed fed to hogs varied widely from farm to farm for the three-year period 1949-51. This period was one in which the average hog-corn ratio was relatively favorable to hog production.

2. One-third of the farmers during this period failed to receive enough returns above the cost of feed to pay for the labor and capital used by the hog enterprise at the fair market rates charged for these inputs.

3. It was profitable for farmers who had more than $150 returns per $100 of feed fed to hogs to increase the intensity of the hog business. Farmers who had returns of less than $137 per $100 feed fed had little to gain by increasing the intensity of hog production.

4. The optimum intensity of the hog enterprise for a farmer on level productive soils is determined in part by his ability to maintain a return per $100 feed fed to hogs at a high level, but his feeding efficiency is probably also affected by the intensity of the hog enterprise.

5. There were fewer farmers with intensive hog enterprises in the group with low feeding efficiency than in the group with high feeding efficiency. This indicates that farmers with low feeding efficiency esti-

mated optimum intensity at a lower level than did those with high feeding efficiency. These estimates confirm the belief that feeding efficiencies fall more quickly for inefficient producers than for efficient producers as intensity is increased. These dynamic aspects could not be verified from the data used for this study.

6. In the group studied a number of farmers would have made better use of their resources if they had produced fewer hogs; others would have increased their earnings if they had produced hogs more intensively.

7. The alternatives available to those with low feeding efficiency also include attempts to improve their feeding efficiency through improved production practices.

DELMAR F. WILKEN

INCREASED INCOMES AND LOW STORE PRICES: THE KEY TO HIGHER PER CAPITA MILK SALES IN THE CHICAGO MARKET

Milk sales in the Chicago market from 1902 to 1952 can be divided roughly into three periods:

1902 to 1930. During most of this period the market was under the influence of a trade association monopoly which established store prices to consumers at the same level as prices for home-delivered milk. In contrast, consumers in New York during this same period could buy milk at stores in bulk at four to five cents a quart below the home-delivered bottled price.

1931 to 1939. Between these dates the controls which had prevented low-priced store milk in Chicago were broken. It is reported that the dairy chiefly responsible for this action was owned by Al Capone.[1]

1940 to 1952. Since 1940 there has been plenty of competition in Chicago, and the market has no legal trade barriers to prevent the sale of low-priced Grade A milk.[2] This situation is in sharp contrast to that in about three-fourths of the cities and villages in the United States which still have either a one-cent store differential or charge as much for store milk as for home-delivered milk. This factor should be considered in attempting to analyze reasons for changes in per capita milk sales.

Some changes which have taken place in the Chicago market are:

1. Per capita sales of milk increased from .60 pint daily in 1940 to .78 pint in 1952, an increase of 30 percent. In recent years, milk sales in

[1] Federal Trade Commission Report: Chicago Sales Area, House Document 451 (1936) p. 18.

[2] The 12 states which still have consumer price fixing are Maine, New Hampshire, Rhode Island, Vermont, Alabama, Florida, Virginia, California, Montana, Oregon, New Jersey and Pennsylvania. Exaction of fixed consumer prices in these states has effectively curbed the competition of the gallon jug, such as exists in Chicago and Akron.

Chicago have increased faster than in the United States (Fig. 1), and in 1952 were only four percent less than in New York.

2. The average price to consumers in 1952 was 22.6 cents per quart or 62 percent above that for 1929 (14 cents). The price per quart in gallons in 1952 averaged only 42 percent above that for 1929, and in highly competitive areas was much lower. In contrast, prices of all foods in Chicago increased 81 percent during the same period.

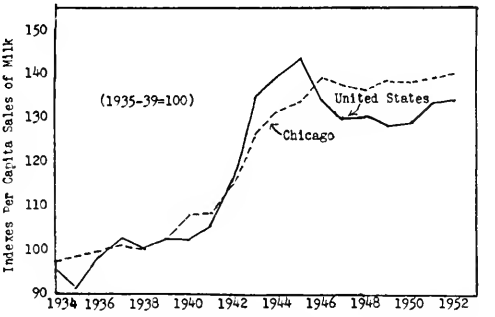


FIG. 1. INDEXES OF PER CAPITA SALES OF MILK, CHICAGO AND UNITED STATES, 1934-1952
(Source: Federal Milk Market Administration and U. S. Department of Agriculture)

3. In 1929, both the store price and home-delivered price were 14 cents per quart. By 1952, as a result of keen store competition, the price in gallon jugs averaged 19.9 cents per quart (79.5 cents per gallon), or 2.7 cents less than the average price (22.6 cents) and 5.4 cents less than the home-delivered price of a single quart (25.3 cents).

4. Keen store competition has resulted in passing on quickly to consumers the lower prices received by farmers. The Class I price to farmers in May 1953, was 2.7 cents per quart less than in November 1952, when the price per gallon in stores ranged from 16.5 cents to 21 cents per quart. By May 1953, the gallon price had been reduced to 14.25 cents per quart in some stores while the usual price at chain stores was 18.25 cents. Thus, the May 1953, gallon price was 10.25 and 6.25 cents per quart respectively *less* than the price per single quart of home-delivered milk (24.5 cents).

5. Store sales increased from 6 percent of total sales in 1930 to around 70 percent in 1952, or about the same proportion as for New York. For the United States, store sales in 1952 were about 45 percent of total milk sales.

6. Sales in half-gallons, paper and glass, increased from 18.7 percent of total sales in April, 1946, to 36.9 percent in April, 1953. The half-gallon paper container was first used in Chicago in the summer of 1949. Half-gallon sales increased from 23.2 percent of total sales in April 1949, to 34.5 percent in April 1950 (Table 1).

7. Sales in gallon jugs increased from 11.6 percent of total sales in April 1946, to 21.9 percent in April 1952 and 25 percent in April 1953.

TABLE 1. — DISTRIBUTION OF MILK SALES IN THE CHICAGO MARKET, BY SIZE OF CONTAINERS FOR APRIL, YEARS 1946 TO 1953[a]

	1946	1947	1948	1949	1950	1951	1952	1953
Quarts	61.5	61.2	59.7	58.8	46.4	40.0	35.5	31.6
Half-gallons	18.7	18.8	21.0	23.2	34.5	35.7	35.9	36.9
Gallons	11.6	11.7	11.2	11.3	12.7	17.4	21.9	25.0
Pints, third-quarts, and half-pints	8.2	8.3	8.1	6.7	6.4	6.9	6.7	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a] Based upon information assembled by the Chicago Federal Milk Market Administration. Data from 1946 to 1948 for Chicago Federal Order 41 from Reporter, July, 1951. Data for Chicago and suburban areas for 1949 to 1952 from Reporter, May, 1952. Orders 41 and 69 were combined on July 1, 1951. Data for April, 1953, from letter of May 25, 1953, from A. W. Colebank, Chicago Market Administrator.

Chicago now ranks second to Akron, Ohio, where it is reported that 50 percent of milk sales in 1952 was distributed in gallon jugs.[1]

8. Sales in paper containers in the United States increased from 4.8 percent of the total in 1940 to 38.5 percent in 1952. It is estimated that 40 percent of the milk sold in Chicago in 1952 was distributed in paper containers, or about the same as the national average.

9. Consumer income in Chicago increased from $607 per person from 1935-39 to $1,758 in 1952, or nearly three times. When corrected for changes in purchasing power, Chicago consumers in 1952 had $1.49 for each dollar in prewar years.

Influence of retail milk prices and disposable income upon per capita sales of milk. While it is generally agreed that consumer income affects per capita milk sales, a question frequently raised among students of dairy marketing is: "To what extent does price affect per capita sales?" With heavy surpluses now available all over the United States, an accurate answer assumes increasing importance.

An analysis of milk sales in the Chicago market between 1940 and 1952 indicated that average retail milk prices (adjusted) and per capita disposable income (adjusted) were the major factors affecting sales (Table 2). The coefficient of multiple correlation for this period with per capita sales lagged one year as the dependent variable, and milk prices (adjusted) and disposable incomes (adjusted) as the independent variables, was .989.[2] Adjusted income was slightly more important than adjusted price in influencing changes in per capita sales of milk.[3]

Similar studies of other markets will be necessary to determine if the results for Chicago are true generally. If such studies substantiate these results several questions may well be raised.

[1] American Milk Review, November 1952, pages 46-48.

[2] The standard error of estimate was .003.

[3] The Beta coefficient for per capita milk sales and adjusted disposable income (other variable being held constant) was +.714. The Beta coefficient for per capita milk sales and adjusted retail milk prices (other variable held constant) was —.528.

TABLE 2. — PER CAPITA SALES OF MILK, RETAIL PRICES OF MILK, RETAIL PRICES OF ALL FOODS, DISPOSABLE INCOME, AND CONSUMERS' PRICE INDEX, CHICAGO, 1940 TO 1952

Year	Daily per capita sales of milk, Chicago[a]	Average retail price of milk, per quart, Chicago[b]	Indexes of retail prices of all food, Chicago[c]	Average retail price per quart of milk adjusted for prices of all food, Chicago[d]	Disposable personal income per capita, Chicago[e]	Consumers' price index, Chicago[g]	Deflated disposable personal income per capita, Chicago[h]
	(pints)	(cents)	(1935-39 = 100)	(cents)	(dollars)	(1935-39 = 100)	(dollars)
1940	.600	10.89	96.7	11.3	703	100.6	699
1941	.600	12.69	106.2	11.9	840	105.7	795
1942	.635	13.55	122.9	11.0	988	116.3	850
1943	.701	15.15	136.0	11.1	1,078	122.8	878
1944	.730	15.09	135.0	11.2	1,184	124.7	949
1945	.741	15.03	137.8	10.9	1,244	127.3	977
1946	.770	17.40	160.1	10.9	1,324	138.4	957
1947	.763	19.35	197.5	9.8	1,425	160.8	886
1948	.757	20.81	215.2	9.7	1,586	174.9	907
1949	.767	19.36	207.4	9.3	1,483	174.5	850
1950	.767	19.31	209.4	9.2	1,595	176.7	903
1951	.773	21.19	233.3	9.1	1,707	190.6	896
1952	.777	22.62	237.0	9.5	1,758[f]	195.0	902

[a] Computed from data of Chicago Market Administrator, Order 41 *Reporter*; Order 69 *Market News*, and U. S. Census of Population.

[b] Estimates of weighted average prices to consumers. Data from USDA Fluid Milk Report, *Illinois Farm Economics*, July, 1951 pp. 1189-1195; Chicago Federal Milk Market Administration; Pure Milk, Association; and specific distributors in the Chicago market.

[c] U.S. Bureau of Labor Statistics, *Retail Prices of Foods.*

[d] Column two divided by column three.

[e] "Survey of Current Business," August 1952, page 17, data for Illinois. Since the trend of bank debits for Illinois cities outside Chicago closely paralleled those for Chicago, per capita personal income for Illinois (less federal individual income and fiduciary taxes) were used.

[f] Estimate based on three percent increase in Chicago bank debits per capita from 1951 to 1952.

[g] Bureau of Labor Statistics. *Handbook of Basic Economics Statistics*, March 1953.

[h] Column five divided by column six.

1. How can the method used in Chicago of quickly passing on to consumers the lower prices received by farmers be extended to milk markets generally?

2. If Class I prices are materially above their competitive level, what can be done to reduce them and to pass reductions on to consumers?

3. What are the best ways to bring about price competition in markets which still charge as much for milk at stores as for home-delivered milk or have only a one-cent store differential?

4. Are laws which fix consumer milk prices and which prevent efficient distributors from lowering them, desirable from a public viewpoint?

Positive answers to these questions are essential if per capita milk sales are to be increased to the amount recommended by nutritionists and if the dairy industry is to stop the downward trend in per capita milk utilization since 1942.[1] With a forward-looking leadership in the dairy industry, the chances are good for bringing about the desired objective of higher per capita milk sales.

R. W. BARTLETT

[1] In 1952 sales of milk in all forms in the United States was 743 pounds per person or 11.5 percent less than in 1942 (839 pounds).

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert R. Hudelson
Director, Extension Service in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 6-53—11,700
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936	100	106	105	99	105	106	107	101	97	103
1937	107	114	118	105	111	111	105	107	107	113
1938	98	90	90	99	96	101	102	100	99	89
1939	96	86	84	98	99	102	104	107	106	109
1940	97	89	89	99	105	114	115	115	112	125
1941	108	108	112	105	140	147	140	138	132	162
1942	123	139	142	121	193	198	163	176	163	199
1943	128	162	165	136	244	236	174	217	192	239
1944	129	162	165	145	255	243	168	242	205	236
1945	131	169	171	151	270	248	164	250	198	203
1946	150	196	204	165	312	302	185	255	195	170
1947	184	239	265	192	377	391	204	279	223	187
1948	199	256	275	207	383	389	189	303	241	192
1949	190	221	217	200	352	362	181	304	245	176
1950	197	233	228	204	356	361	169	332	265	200
1951	219	270	271	224	412	419	187	374	290	220
1952[14]	213	256	257	228	416	501	183	399	304	219
1952 Mar....	214	258	256	230	314	388	169	390	300	221
Apr....	213	259	254	231	310	358	155	390	294	216
May...	213	257	262	231	323	379	164	394	297	211
June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	302	214
Sept....	214	255	261	228	544	402	177	407	312	226
Oct.....	212	250	254	225	618	610	271	411	315	227
Nov....	211	247	244	224	532	476	213	411	316	234
Dec....	209	237	235	224	461	466	208	416	322	235
1953 Jan.....	210	238	237	225	410	451	200	417	318	236
Feb....	209	234	231	224	283	297	132	420	317	253
Mar....	210	239	233	224	303	...	...	422	321	242
Apr....	209	234	231	223	...	...	...	...	318	...
May....	..	...	240	223	...	...	...	...	...	...

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			May 1952	Current months, 1953		
	1933-39	1951	1952[14]		March	April	May
Corn, bu.....	$ .66	$1.67	$1.65	$1.71	$1.46	$1.46	$1.48
Oats, bu.....	.31	.87	.83	.80	.75	.73	.73
Wheat, bu.....	.86	2.24	2.19	2.21	2.10	2.05	1.97
Barley, bu.....	.62	1.36	1.35	1.30	1.25	1.25	1.25
Soybeans, bu.....	.90	2.95	2.89	2.81	2.88	2.89	2.86
Hogs, cwt.....	8.52	20.30	18.45	20.20	20.50	20.80	23.60
Beef cattle, cwt.....	7.88	30.85	27.53	29.20	18.70	18.30	19.00
Lambs, cwt.....	8.36	31.66	25.45	26.90	21.60	21.80	23.50
Milk cows, head....	58.00	267.50	265.00	270.00	235.00	215.00	215.00
Veal calves, cwt.....	8.66	33.57	30.10	32.30	23.40	21.40	22.00
Sheep, cwt.....	3.58	16.07	10.46	12.00	8.50	7.70	6.90
Butterfat, lb.....	.27	.66	.69	.66	.62	.61	.61
Milk, cwt.....	1.68	4.16	4.44	4.00	3.95	3.70	3.50
Eggs, doz.....	.19	.42	.36	.29	.41	.42	.43
Chickens, lb.....	.15	.27	.25	.24	.30	.31	.26
Wool, lb.....	.25	.83	.47	.45	.46	.47	.49
Apples, bu.....	1.08	2.04	2.53	2.40	3.00	3.00	3.00
Hay, ton[13].....	9.39	21.08	22.48	20.40	23.00	23.40	23.10

[1-14] For sources of data in tables see February-March issue.

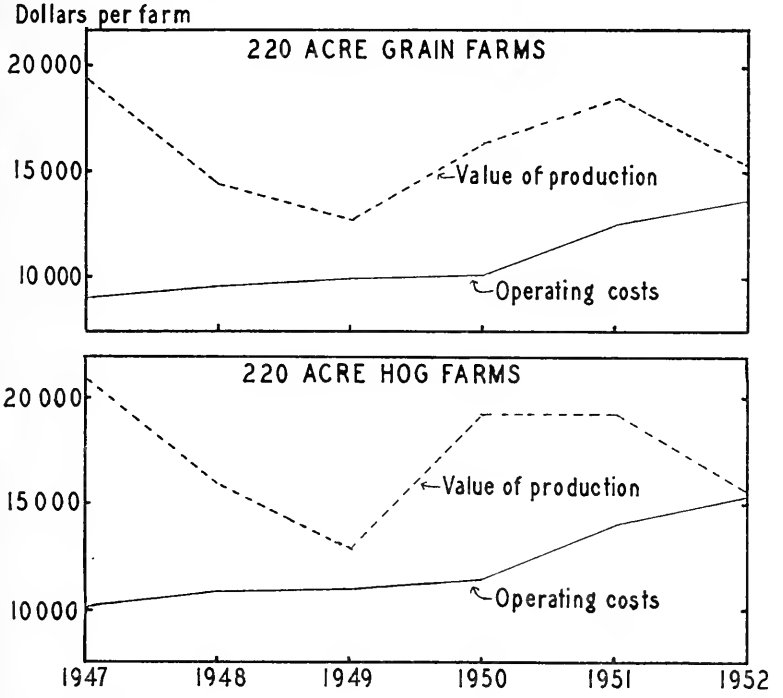
Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | July-August, 1953 | Numbers 217 and 218

Summary of Annual Farm Business Reports on Illinois Farms For the Year 1952



Value of Production and Operating Costs on 220 Acre Grain and Hog Farms, 1947-1952. The Farm Cost-price Squeeze was Interrupted in 1950 by Higher Prices which Followed the Beginning of the Korean Conflict, but Returned in 1952 with Lower Prices for Farm Products to Again Reduce Farm Earnings.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

USING THE RESULTS FROM FARM RECORDS

Illinois agriculture is dynamic. Changes not only in prices received and paid, but also in new varieties, new products, methods of doing things, and equipment used call for continued adjustments both on individual farms and in the agricultural pattern of the state. Financial records showing farmers' receipts and expenses under various types of production aid in making such adjustments.

To better evaluate changes in the farmer's financial position, trends for grain, hog, and dairy farms for the years 1947 to 1952 are given for northern Illinois. Livestock returns in relation to value of feed fed are shown for the past 20 years.

For the year 1952, this report includes results summarized from the Farm Bureau Farm Management Service from 86 Illinois counties. Farms both in northern and southern Illinois are arranged by type and size groups, and some groups are further divided by quality of soil. Results for dairy, beef cattle, hog, poultry, and sheep enterprises are shown in relation to feed costs.

These materials provide standards of accomplishment for the types and sizes shown. They may be useful also as reference materials as a basis for farm budgeting and for appraisal of trends in farm earnings.

H. C. M. Case

SUMMARY OF FARM BUSINESS RECORDS ON ILLINOIS FARMS FOR 1952

A. G. Mueller

Returns to capital and management. The returns to capital and management on Illinois farms dropped sharply in 1952. Returns to capital and management as used here include net cash income, inventory and capital change and farm products consumed less a charge for the family and operator's labor. This term, returns to capital and management, is the same as net farm earnings as used in earlier reports.

The drop in returns to capital and management from 1951 to 1952 on 180-259 acre farms in the northern 58 counties of the state was 38 percent on grain farms, 49 percent on hog farms, and 45 percent on dairy farms (Table 1). Compared to the average of the past six years, 1952 returns to capital and management were 27 percent, 43 percent and 27 percent lower, respectively, for the three types of farms.

Net cash income. Net cash income on the 180-259 acre farms in northern Illinois showed an inconsistent change from 1951 to 1952. Net

cash income on grain farms dropped slightly, hog farms showed an increase and dairy farms showed a sizeable decrease (Table 1). In any one year net cash income is not a good measure of changes in farm earnings on different groups of farms, since the net cash position of farmers does not reflect changes in carry-over and inventory stocks of farm products, and may be influenced by purchases made with borrowed money.

Effect of price levels on earnings. In 1952, prices received by farmers dropped, particularly livestock prices, while prices paid for supplies and services increased, putting Illinois farmers in a cost-price squeeze (See chart on cover). In 1952, the ratio of prices received by Illinois farmers to prices paid for supplies was 102 percent of the 1910-1914 base. This ratio was 109 in 1951. The index of prices paid by farmers increased five points to 286 in 1952 while the index of Illinois farm prices dropped 16 points to 291. Price changes for meat animals caused much of the drop in the index of farm prices and was an important factor in greatly reducing net farm earnings on hog and beef cattle farms.

Uses for data from farm accounting farms. Farm account-keeping farms are in general much larger than the average size of farm in the state and generally are located on better quality soils. Hence, farm or per-acre averages should not be interpreted as representative of all farms. However, farm record data are valuable for many uses. Year-to-year changes in patterns of farm costs and income can be accurately measured by use of selected groups of farms such as in Table 1. Previous studies indicate that managerial ability of the farm operator, size of farm, quality of soil, cost-price relationships and weather are some of the major factors influencing the level of farm earnings from farm to farm. By grouping farm records according to size of farm, soil quality, and type of farm it is possible to control the effect of several of the above factors. For example, the corn-hog ratio can affect farm earnings but by separating hog and grain farms the same cost-price relationship may affect farm earnings in a different way for each type of farm. Thus, the classification by type of farm will improve farm record data for purposes of comparing earnings and costs on a particular farm.

Returns from livestock. Table 2 presents the returns per $100 feed fed to livestock on Illinois farms for the past 20 years. Since feed represents the major cost item in livestock production, the returns are expressed as a ratio to feed cost. The difference between $100 of feed and the return figure is the margin available to pay for labor, equipment, supplies and profits. Different livestock enterprises require different margins to cover these other costs. Labor and equipment costs are high relative to feed for dairy and poultry enterprises, and low for hogs and

TABLE 1. — SELECTED TOTAL FARM ITEMS ON FARMS 180 TO 259 ACRES IN SIZE; 1947-1952

Grain Farms

Items	1947	1948	1949	1950	1951	1952
Number of farms	227	164	123	129	118	105
Size of farm	223	224	223	223	223	224
Soil productivity rating	81	81	80	81	80	82
Total cash income	$18 089	$16 904	$17 296	$17 090	$17 814	$18 529
Total cash expenses	9 436	10 388	10 027	10 207	10 550	11 321
Net cash income	8 653	6 516	7 269	6 883	7 264	7 208
Inventory and capital change	5 581	2 339	−335	3 477	4 352	868
Farm products consumed	420	412	377	312	343	276
Returns to unpaid labor, cap. and mgt.	14 654	9 267	7 311	10 672	11 959	8 352
Returns to capital and management	12 616	7 315	5 315	8 720	9 771	6 021
Power and machinery cost	$ 2 460	$ 2 734	$ 2 812	$ 2 974	$ 3 191	$ 3 374
Labor cost	2 628	2 579	2 530	2 518	2 677	2 651
Building and fence cost	636	653	765	740	738	799
Soil fertility cost	364	425	452	475	588	905
Capital purchases	2 613	3 116	3 011	2 996	2 684	3 533

Hog Farms

Items	1947	1948	1949	1950	1951	1952
Number of farms	184	214	130	141	169	157
Size of farm	218	219	219	220	219	219
Soil productivity rating	76	76	72	75	74	75
Total cash income	$24 860	$24 140	$21 433	$24 011	$26 889	$26 849
Total cash expense	14 746	16 509	14 994	18 156	21 043	20 060
Net cash income	10 114	7 631	6 439	5 855	5 846	6 789
Inventory and capital change	4 755	1 695	−221	6 260	5 193	58
Farm products consumed	495	470	392	428	472	388
Returns to unpaid labor, cap. and mgt.	15 364	9 796	6 610	12 543	11 511	7 235
Returns to capital and management	13 195	7 720	4 439	10 382	9 121	4 692
Power and machinery cost	$ 2 700	$ 3 030	$ 3 129	$ 3 391	$ 3 687	$ 3 858
Labor cost	3 047	3 053	3 055	3 026	3 197	3 433
Building and fence cost	867	932	891	928	1 028	1 094
Soil fertility cost	351	401	408	389	457	666
Capital purchases	2 779	3 642	3 263	3 225	3 846	2 903

Dairy Farms

Items	1947	1948	1949	1950	1951	1952
Number of farms	67	71	57	51	40	47
Size of farm	215	214	216	214	219	216
Soil productivity rating	69	67	65	63	64	65
Total cash income	$18 960	$19 680	$18 244	$17 191	$21 221	$18 179
Total cash expenses	11 967	13 517	13 397	12 089	13 882	12 993
Net cash income	6 993	6 163	4 847	5 102	7 339	5 186
Inventory and capital change	3 432	929	1 061	2 128	2 367	1 408
Farm products consumed	466	499	427	380	474	397
Returns to unpaid labor, cap. and mgt.	10 861	7 591	6 335	7 610	10 180	6 991
Returns to capital and management	8 611	5 360	3 868	5 345	7 821	4 285
Power and machinery cost	$ 2 975	$ 3 233	$ 3 351	$ 3 358	$ 3 880	$ 3 903
Labor cost	3 608	3 507	3 582	3 396	3 501	3 697
Building and fence cost	959	1 017	1 062	1 055	1 124	990
Soil fertility cost	372	391	431	390	465	626
Capital purchases	2 480	3 763	3 529	2 906	3 343	3 194

feeder cattle. In using Table 2, comparisons should be made to the 20-year average or to a break-even standard in order to appraise the profitableness of any class of livestock in a particular year. For example, dairy herds returned $175 per 100 feed fed in 1952 compared to a 20-year average of $174; hogs returned $116 compared to an average of $146. The 1952 returns per $100 feed fed were the lowest in 20 years for hogs, poultry,

sheep and feeder cattle. Only dairy herds showed returns comparable with the 20-year average.

Livestock enterprises. The livestock enterprise data taken from farm records in Tables 3 through 7 provide accurate data on rates of production and feed requirements for various kinds of livestock. These data can provide reasonable performance standards for livestock enterprises on all farms. The size of the enterprise given in these tables should not be considered as typical since very small enterprises are intentionally omitted to improve the accuracy of the data. Tables 3, 4, 5, and 6 present different levels in the returns per $100 feed fed and an average of all records. Comparisons of groups of farms with high and low returns per

TABLE 2. — RETURNS PER $100 FEED FED TO DIFFERENT CLASSES OF LIVESTOCK

Year	Beef cow herds	Dairy cow herds	Dual purpose herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry	Yearly price of corn
1933	$ 90	$152	$112	$ 97	$...	$...	$128	$217	$ .32
1934	84	145	118	125	...	...	127	198	.58
1935	110	143	141	152	93	163	174	211	.74
1936	85	150	109	96	109	101	155	180	.73
1937	99	159	116	106	123	50	122	157	.91
1938	119	193	151	142	98	153	184	208	.45
1939	146	204	162	131	136	136	144	195	.43
1940	134	198	173	136	142	149	118	177	.54
1941	136	212	162	124	160	122	193	202	.63
1942	127	176	151	136	131	147	201	187	.77
1943	108	160	118	105	93	108	136	169	.97
1944	94	166	120	107	88	136	125	140	1.07
1945	110	174	128	119	117	120	138	159	1.07
1946	130	183	148	135	138	194	154	141	1.39
1947	130	162	147	138	130	131	150	117	1.90
1948	143	183	152	137	138	79	131	137	1.89
1949	132	175	137	136	142	104	144	161	1.16
1950	169	173	173	170	177	182	152	122	1.35
1951	170	187	163	142	171	111	127	137	1.66
1952	99	175	120	86	67	44	116	116	1.65
20-year average	121	174	140	126	125[a]	124[a]	146	167	1.01

[a] Average of 18 years only.

$100 feed fed will indicate the phases of various enterprises that contribute to high or low returns in livestock production.

Grouping of Farm Bureau Farm Management Service records. Data presented in the following tables (Tables 8-14) were taken from Farm Bureau Farm Management Service records. These records were grouped into two areas. Northern Illinois included Adams, Brown, Coles, Edgar, Macon, Morgan, Moultrie, Sangamon, and all counties to the north. Southern Illinois included Bond, Christian, Clark, Clay, Clinton, Crawford, Cumberland, Effingham, Fayette, Greene, Jackson, Jasper, Jersey, Lawrence, Macoupin, Madison, Marion, Monroe, Montgomery, Perry, Pike, Randolph, Richland, Scott, Shelby, St. Clair, Wabash, and Washington counties.

TABLE 3. — DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$200-239	$110-159
Number of farms	400	87	87
Number of cows in herd	17.4	18.9	17.1
Number of milk cows	17.0	18.7	16.7
Percent of milk cows dry	18	15	19
Total animal units in herd	26.7	27.8	26.6
Pounds of beef produced	9 050	9 429	8 727
Total returns from cattle	$7 600	$9 296	$6 296
Value of feed fed to cattle	4 350	4 346	4 794
Returns per $100 feed fed	175	214	131
Returns above feed per milk cow	191	265	90
Total pounds of milk produced	140 268	162 349	126 364
Pounds of milk per milk cow	8 251	8 735	7 567
Pounds of butterfat per milk cow	314	337	284
Pounds of beef per cow in herd	520	499	510
Weight of death loss: pounds	647	586	765
Percent death loss by weight	7.1	6.2	8.8
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.85	$16.93	$22.44
Prices received for each:			
100 lbs. milk produced	4.52	4.60	4.32
100 lbs. cattle sold	21.17	21.42	19.93
Lbs. feed per unit of milk and beef			
Grain	213	180	254
Protein and mineral feeds	53	48	65
Total concentrates	266	228	319
Hay and dry roughage	476	436	566
Hay silage	163	138	184
Corn and other silage	329	169	216
Pasture (pasture days)	19	18	20
Pasture days per animal unit	166	167	160

TABLE 4. — BEEF CATTLE ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$120-159	$40-79
Number of farms	224	52	55
Number of cows in herd	19.2	19.4	22.1
Number of milk cows	.6	.7	.5
Total animal units in herd	32.2	32.0	37.3
Pounds of beef produced	15 396	16 377	17 399
Total returns from cattle	$2 842	$3 883	$2 125
Value of feed fed to cattle	2 877	2 875	3 389
Returns per $100 feed fed	99	135	63
Total pounds of milk produced	3 214	4 004	2 417
Pounds of milk per milk cow	5 357	5 720	4 834
Pounds of beef per cow in herd	802	844	787
Weight of death loss: pounds	753	513	877
Percent of weight produced	4.9	3.1	5.0
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.30	$17.14	$19.21
Prices received for each:			
100 lbs. milk produced	3.77	4.13	2.97
100 lbs. cattle sold	27.53	29.30	27.63
Lbs. feed per unit of milk and beef			
Grain	207	201	218
Protein and mineral feeds	18	15	23
Total concentrates	225	216	241
Hay and dry roughage	558	526	553
Hay silage	81	48	80
Corn and other silage	95	57	163
Pasture (pasture days)	41	39	41
Pasture days per animal unit	200	206	193

TABLE 5. — HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$130-149	$80-99
Number of farms	612	110	113
Pounds of pork produced	50 152	61 839	40 454
Total returns from hogs	$8 457	$10 795	$6 546
Total value of feed fed	7 308	7 888	7 103
Returns per $100 feed fed	116	137	92
Returns above feed per litter	36	76	−20
Number of litters farrowed	32	38	28
Number of pigs weaned	209	259	172
Pigs weaned per litter	6.5	6.8	6.1
Number that died after weaning	11	9	16
Weight of death loss: pounds	993	884	1 324
Percent of weight produced	2.0	1.4	3.3
Average weight per hog sold	243	241	241
Average price received	$17.48	$17.65	$17.44
Feed cost per 100 lbs. produced	14.57	12.76	17.53
Lbs. feed per 100 lbs. produced			
Grain	392	341	475
Protein and mineral feeds	45	41	54
Total concentrates	437	382	529
Hay	3.4	3.6	3.6
Pasture (pasture days)	2.1	2.1	2.3

TABLE 6. — POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$130-149	$80-99
Number of farms	376	72	75
Weight of poultry produced	1 756	2 174	1 665
Total returns from poultry	$1 649	$2 445	$1 209
Total value of feed fed	1 425	1 777	1 335
Returns per $100 feed fed	116	138	91
Returns above feed cost per hen	.92	2.11	−.62
Average number of hens	243	316	204
Eggs produced per hen	183	192	169
Percent production	50	53	46
Hens in Oct., Nov., Dec.	287	381	231
Percent production in Oct., Nov., Dec.	55	60	46
Feed Req. Units (1 doz. eggs or 1.5 lbs. wt. produced)	4 869	6 517	3 867
Feed cost per unit	$ .29	$ .27	$ .35
Pounds concentrates per unit	7.6	7.0	8.7
Weight of poultry sold	1 261	1 634	1 265
Average price per pound	$ .32	$ .32	$ .32
Price per dozen eggs sold	.41	.45	.38

TABLE 7. — SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms	246	37
Pounds wool and mutton produced	3 388	11 416
Total returns from sheep	$ 401	$1 088
Total value of feed fed	596	2 446
Returns per $100 feed fed	67	44
Weight of death loss: pounds	634	2 269
Percent of total production	18.7	19.9
Feed cost per cwt. produced	$17.59	$21.43
Price received per cwt.	23.11	24.78
Price paid for sheep bought	23.46	23.39
Lbs. feed per cwt. produced:		
Concentrates	162	474
Hay	534	399
Silage	65	12
Pasture (pasture days)	57	23

In each of these areas, records were grouped by size and type of farm. Adequate numbers of grain and hog farm records in northern Illinois were obtained to permit a further grouping by soil productivity rating.

The method of classifying farms by type was based on the value of feed fed and the feed and grain returns. Farms were classified as grain farms if the total feed input was less than one-half of the value of feed and grain returns. The livestock farms were classified as hog or beef cattle farms if those enterprises received one-half or more of the total feed input; as dairy or poultry farms if these enterprises received one-third or more of the total feed input; as mixed livestock farms if none of the requirements were met.

TABLE 8. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF BEEF CATTLE FARMS IN NORTHERN ILLINOIS, 1952

Range in size (total acres) Number of farms		Under 180 47	180-259 92	260-339 63	340-499 68
Average size of farm	1	145	219	302	397
Acres of tillable land	2	132	199	270	325
Soil rating on improved land	3	77	78	79	76
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	2.8	.8	1.2	2.8
Average number of hens	5	89	64	82	82
Average number of milk cows	6	.7	2.0	1.5	3.3
Animal units of "other" cattle	7	46.0	61.1	86.8	107.8
Number of litters farrowed	8	11	19	24	27
Total amounts of feed fed:					
Corn, bushels	9	4 707	6 586	9 958	10 704
Oats, bushels	10	991	1 461	1 722	1 952
Silage, tons	11	84.1	93.5	150.0	200.1
Hay, tons	12	48.7	64.9	79.5	97.0
Pasture, days	13	5 229	6 151	8 340	14 037
Supplement, pounds	14	33 922	43 264	70 157	77 174
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 409	$ 621	$ 958	$ 1 160
Buildings and fence	16	982	1 347	1 778	1 967
Machinery and equipment	17	2 845	4 134	5 392	6 141
Labor	18	2 612	3 364	4 420	5 596
Taxes	19	594	864	1 180	1 375
Seed and crop expense	20	395	621	786	945
Livestock and miscellaneous expense	21	325	432	505	648
Capital charge (4 and 5 percent)	22	3 839	5 476	7 696	8 896
Total non-feed input	23	(12 001)	(16 859)	(22 715)	(26 728)
Total feed input	24	12 873	17 462	25 682	29 025
Total farm inputs	25	$24 874	$34 321	$48 397	$55 753
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 411	$ 589	$ 915	$ 596
Feed and grain returns	27	10 277	14 986	21 130	24 892
All livestock returns	28	12 736	16 982	24 630	28 114
Total farm returns	29	$23 424	$32 557	$46 675	$53 602
Net management returns	30	−1 450	−1 764	−1 722	−2 151
Total returns per acre	31	161.54	148.66	154.55	135.02
Total inputs per acre	32	171.54	156.72	160.25	126.23
Net management returns per acre	33	−10.00	−8.05	−5.70	−5.42
Net cash income (cash balance)	34	7 941	9 008	15 200	12 923
Inventory and capital change	35	−3 655	−3 317	−7 134	−3 892
Farm products consumed	36	347	408	482	527
Less unpaid labor	37	2 244	2 387	2 574	2 813
Capital and management	38	2 389	3 712	5 974	6 745
Capital and management per acre	39	16.48	16.95	19.78	16.99
Total farm labor and management	40	509	275	331	68
Value of land (current basis)	41	44 042	66 392	92 476	109 143
Total capital investment	42	85 584	122 803	172 408	199 742
Total capital investment per acre	43	590.23	560.74	570.89	503.13
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 244	$ 2 387	$ 2 574	$ 2 813
Hired labor cost	45	368	977	1 846	2 783
Total months of labor	46	14.7	18.7	23.6	29.2
Labor cost per crop acre	47	24.88	20.77	19.45	21.95
Machinery repairs, supplies, etc.	48	571	902	1 307	1 435
Machinery hire	49	305	452	430	513
Gasoline and oil	50	542	791	1 081	1 282
Total auto cost (farm share)	51	345	407	472	462
Machinery and equipment cost per crop acre	52	27.10	25.52	23.73	24.09
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	42.8	42.9	46.3	41.1
Soybeans	54	1.5	2.4	3.0	4.3
Small grains	55	23.0	24.6	23.8	21.9
All hay and pasture crops	56	32.6	29.9	26.2	32.2
Feed and grain returns per tillable acre	57	77.42	74.92	77.72	75.43
Feed fed per tillable acre	58	97.52	87.75	95.12	89.32
Corn yield, bushels per acre	59	81.5	81.7	79.5	79.1
Soybean yield, bushels per acre	60	30.1	29.3	29.1	30.0
Oats yield, bushels per acre	61	50.6	46.5	47.7	47.2
Wheat yield, bushels per acre	62	28.8	31.4	36.4	33.3

TABLE 9. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF HOG FARMS IN SOUTHERN ILLINOIS, 1952

Range in size (total acres) / Number of farms		Under 180 / 17	180-259 / 31	260-339 / 25	340-499 / 22
Average size of farm	1	139	219	298	402
Acres of tillable land	2	119	175	235	291
Soil rating on improved land	3	51	38	42	38
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	1.0	.3	.7	3.1
Average number of hens	5	116	123	136	108
Average number of milk cows	6	.9	2.1	2.4	3.5
Animal units of "other" cattle	7	12.0	16.6	21.8	22.6
Number of litters farrowed	8	23	26	31	41
Total amounts of feed fed:					
Corn, bushels	9	2 916	3 150	3 895	5 247
Oats, bushels	10	389	364	460	618
Silage, tons	11	6.9	13.3	16.6	17.5
Hay, tons	12	29.2	33.5	36.4	53.6
Pasture, days	13	3 096	4 588	5 427	6 398
Supplement, pounds	14	28 865	26 015	37 341	54 706
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 527	$ 901	$ 1 184	$ 1 632
Buildings and fence	16	725	655	795	1 027
Machinery and equipment	17	2 623	3 001	3 766	4 581
Labor	18	2 447	2 946	3 580	3 863
Taxes	19	403	495	696	724
Seed and crop expense	20	306	465	510	622
Livestock and miscellaneous expense	21	296	270	362	389
Capital charge (4 and 5 percent)	22	2 030	2 381	3 324	3 838
Total non-feed input	23	9 357	11 114	14 217	16 676
Total feed input	24	8 033	8 648	10 597	14 681
Total farm inputs	25	$17 390	$19 762	$24 814	$31 357
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 362	$ 438	$ 590	$ 888
Feed and grain returns	27	7 234	8 902	13 069	14 545
All livestock returns	28	8 853	9 590	12 548	15 652
Total farm returns	29	$16 449	$18 930	$26 207	$31 085
Net management returns	30	−941	−832	1 393	−272
Total returns per acre	31	118.34	86.44	87.94	77.33
Total inputs per acre	32	125.11	90.24	83.27	78.00
Net management returns per acre	33	−6.77	−3.80	4.67	−.67
Net cash income (cash balance)	34	3 817	3 794	7 928	5 771
Inventory and capital change	35	−985	−211	−1 131	−50
Farm products consumed	36	373	412	489	388
Less unpaid labor	37	2 116	2 446	2 569	2 543
Capital and management	38	1 089	1 549	4 717	3 566
Capital and management per acre	39	7.83	7.07	15.83	8.87
Total farm labor and management	40	852	1 096	3 295	1 608
Value of land (current basis)	41	24 543	30 896	45 052	52 263
Total capital investment	42	45 515	53 807	75 491	87 217
Total capital investment per acre	43	327.45	245.69	253.33	216.96
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 116	$ 2 446	$ 2 569	$ 2 543
Hired labor cost	45	331	500	1 011	1 320
Total months of labor	46	15.4	18.2	22.3	23.0
Labor cost per crop acre	47	24.62	21.55	18.83	16.54
Machinery repairs, supplies, etc.	48	462	622	819	1 071
Machinery hire	49	297	282	224	407
Gasoline and oil	50	416	589	832	955
Total auto cost (farm share)	51	390	359	344	411
Machinery and equipment cost per crop acre	52	26.39	21.95	19.81	19.61
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	31.4	29.7	32.5	31.6
Soybeans	54	14.0	13.6	17.1	16.8
Small grains	55	26.0	24.3	22.8	22.8
All hay and pasture crops	56	27.1	30.5	26.4	25.4
Feed and grain returns per tillable acre	57	60.03	50.17	54.78	49.05
Feed fed per tillable acre	58	67.50	49.42	45.09	50.45
Corn yield, bushels per acre	59	62.9	53.1	56.8	52.0
Soybean yield, bushels per acre	60	26.4	20.4	22.6	20.6
Oats yield, bushels per acre	61	33.3	26.7	35.6	28.5
Wheat yield, bushels per acre	62	22.5	22.9	28.0	22.9

TABLE 10. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF HOG FARMS IN NORTHERN ILLINOIS, 1952

	Soils rated 76 to 100				Soils rated 56 to 75			
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339	340-499
	86	85	63	41	59	60	36	43
1	146	220	303	393	142	222	291	406
2	134	198	271	325	122	182	223	320
3	84	83	83	82	67	69	69	68
4	1.0	.5	1.5	1.8	1.1	1.1	2.7	1.3
5	111	114	96	83	81	99	66	63
6	3.0	2.8	3.0	3.8	3.1	5.1	3.8	2.0
7	13.8	25.6	26.1	45.9	13.8	21.3	28.0	50.8
8	35	46	58	58	36	39	44	57
9	4 441	6 032	7 206	8 695	3 858	5 279	5 778	9 249
10	1 359	1 588	1 730	1 694	1 149	1 159	1 403	1 579
11	11.2	15.0	28.1	37.6	8.9	18.2	23.4	30.1
12	33.0	41.0	44.0	69.3	33.8	50.6	57.1	71.0
13	4 123	5 957	7 228	10 533	4 309	6 410	7 922	10 527
14	33 663	48 578	54 506	63 460	30 693	41 382	44 138	62 465
15	$ 473	$ 639	$ 911	$ 1 197	$ 485	$ 706	$ 896	$ 1 406
16	983	1 164	1 491	1 715	739	1 063	1 234	1 457
17	3 013	3 980	5 111	6 045	2 676	3 810	4 212	5 509
18	2 765	3 454	4 325	5 126	2 440	3 476	3 531	4 703
19	626	848	1 116	1 468	476	750	928	1 251
20	450	581	818	958	374	499	635	812
21	445	552	654	701	432	514	540	753
22	3 515	4 906	6 546	8 012	2 625	4 112	4 950	6 598
23	(12 270)	(16 124)	(20 972)	(25 222)	(10 247)	(14 930)	(16 926)	(22 489)
24	11 857	15 918	18 767	22 444	10 536	14 310	15 765	23 323
25	$24 127	$32 042	$39 739	$47 666	$20 783	$29 240	$32 691	$45 812
26	$ 455	$ 520	$ 609	$ 857	$ 455	$ 591	$ 516	$ 569
27	10 154	14 662	20 075	23 480	8 006	12 305	14 591	21 234
28	13 652	17 774	21 022	24 134	12 173	15 596	17 307	25 132
29	$24 261	$32 956	$41 706	$48 471	$20 624	$28 492	$32 414	$46 935
30	134	914	1 967	805	−159	−748	−277	1 123
31	166.17	149.80	137.64	123.34	145.24	128.34	111.39	115.60
32	165.25	145.65	131.15	121.29	146.36	131.71	112.34	112.84
33	.92	4.15	6.49	2.05	−1.12	−3.37	−.95	2.76
34	6 164	6 865	9 907	11 956	4 445	7 048	6 127	11 468
35	−528	1 102	677	−1 115	−163	−1 552	679	−1 387
36	374	385	454	528	321	402	383	458
37	2 361	2 532	2 525	2 552	2 137	2 534	2 516	2 818
38	3 649	5 820	8 513	8 817	2 466	3 364	4 673	7 721
39	24.99	26.45	28.10	22.44	17.37	15.15	16.06	19.02
40	2 157	2 962	4 006	2 801	1 788	1 380	1 828	3 168
41	48 050	71 213	97 632	116 716	33 955	54 610	68 766	92 957
42	79 922	112 361	150 435	183 588	59 286	93 171	112 764	150 550
43	547.41	510.73	496.49	467.14	417.51	419.68	387.50	370.81
44	$ 2 361	$ 2 532	$2 525	$ 2 552	$ 2 137	$ 2 534	$2 516	$ 2 818
45	404	922	1 800	2 574	303	942	1 015	1 885
46	15.4	19.2	24.2	28.1	13.8	18.8	20.2	26.8
47	25.25	21.49	19.09	19.43	25.71	23.47	19.57	18.58
48	646	879	1 211	1 495	570	833	977	1 468
49	304	416	441	524	314	389	394	475
50	524	730	981	1 229	454	693	825	1 093
51	387	397	459	460	368	401	374	519
52	27.62	24.77	22.56	22.92	28.20	25.72	23.35	21.77
53	46.2	45.8	48.0	46.9	41.9	42.9	42.0	43.0
54	2.5	4.7	5.4	4.0	3.2	5.6	4.9	4.9
55	23.2	23.4	23.4	21.6	22.8	23.3	24.6	23.1
56	28.0	25.9	23.2	27.5	31.7	28.2	28.4	28.1
57	75.45	73.63	73.51	70.95	64.93	66.50	63.74	65.02
58	88.48	80.39	69.25	69.06	86.36	78.63	70.70	72.88
59	80.7	77.6	76.1	75.9	73.0	70.2	67.2	69.1
60	30.6	29.8	31.4	32.0	27.9	27.1	29.1	30.7
61	44.7	44.8	41.7	43.3	40.0	39.4	38.9	40.8
62	32.6	32.7	29.2	32.7	24.6	30.4	33.8	28.1

TABLE 11. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF GRAIN FARMS IN SOUTHERN ILLINOIS, 1952

Range in size (total acres) / Number of farms		Under 180 / 13	180-259 / 35	260-339 / 30	340-499 / 29
Average size of farm	1	148	217	300	403
Acres of tillable land	2	136	186	251	336
Soil rating on improved land	3	42	48	41	38
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	1.7	.5	.4	1.5
Average number of hens	5	67	88	101	108
Average number of milk cows	6	1.2	2.8	2.4	2.2
Animal units of "other" cattle	7	4.9	10.7	13.9	20.0
Number of litters farrowed	8	5	7	10	10
Total amounts of feed fed:					
Corn, bushels	9	828	1 116	1 511	1 663
Oats, bushels	10	143	214	178	358
Silage, tons	11	1.8	7.2	6.4	16.0
Hay, tons	12	11.1	23.7	32.6	40.7
Pasture, days	13	1 649	2 687	3 578	4 959
Supplement, pounds	14	8 916	12 200	15 498	16 500
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 713	$ 919	$ 1 262	$ 1 735
Buildings and fence	16	511	526	759	749
Machinery and equipment	17	2 657	3 112	3 858	4 519
Labor	18	2 268	2 606	2 799	3 563
Taxes	19	433	547	725	714
Seed and crop expense	20	415	445	526	661
Livestock and miscellaneous expense	21	152	220	237	268
Capital charge (4 and 5 percent)	22	1 818	2 496	3 295	3 910
Total non-feed input	23	8 967	10 871	13 461	16 119
Total feed input	24	2 534	3 720	4 869	5 627
Total farm inputs	25	$11 501	$14 591	$18 330	$21 746
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 495	$ 413	$ 492	$ 791
Feed and grain returns	27	8 200	11 864	15 169	18 244
All livestock returns	28	2 890	4 036	5 158	5 633
Total farm returns	29	$11 585	$16 313	$20 819	$24 668
Net management returns	30	84	1 722	2 489	2 922
Total returns per acre	31	78.28	75.18	69.40	61.21
Total inputs per acre	32	77.71	67.24	61.10	53.96
Net management returns per acre	33	.57	7.94	8.30	7.25
Net cash income (cash balance)	34	4 089	4 896	7 529	7 833
Inventory and capital change	35	−362	1 234	65	997
Farm products consumed	36	255	334	355	336
Less unpaid labor	37	2 080	2 246	2 165	2 334
Capital and management	38	1 902	4 218	5 784	6 832
Capital and management per acre	39	12.85	19.44	19.28	16.95
Total farm labor and management	40	1 888	3 602	4 366	4 756
Value of land (current basis)	41	25 508	36 799	47 172	60 465
Total capital investment	42	41 464	57 283	75 340	90 288
Total capital investment per acre	43	280.16	263.98	251.13	224.04
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 080	$ 2 246	$ 2 165	$ 2 334
Hired labor cost	45	188	360	634	1 229
Total months of labor	46	14.5	16.3	17.5	22.3
Labor cost per crop acre	47	18.26	15.58	12.87	12.84
Machinery repairs, supplies, etc.	48	487	587	814	1 028
Machinery hire	49	380	308	322	409
Gasoline and oil	50	467	628	745	968
Total auto cost (farm share)	51	297	159	340	412
Machinery and equipment cost per crop acre	52	21.39	18.60	17.75	16.28
LAND USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	31.8	34.1	29.4	24.5
Soybeans	54	24.1	24.9	23.7	24.6
Small grains	55	27.8	24.4	24.9	24.5
All hay and pasture crops	56	16.1	16.2	21.3	24.8
Feed and grain returns per tillable acre	57	60.01	63.40	60.09	53.76
Feed fed per tillable acre	58	18.63	20.00	19.40	16.75
Corn yield, bushels per acre	59	53.8	59.1	56.6	55.5
Soybean yield, bushels per acre	60	25.1	25.3	24.5	23.6
Oats yield, bushels per acre	61	21.8	28.5	30.6	28.4
Wheat yield, bushels per acre	62	24.1	23.8	24.0	23.5

TABLE 12. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF GRAIN FARMS IN NORTHERN ILLINOIS, 1952

	Soils rated 76 to 100				Soils rated 56 to 75			
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339	340-499
	46	80	86	85	20	25	24	25
1	152	222	305	413	151	227	302	417
2	140	210	284	382	130	201	275	349
3	86	86	85	86	71	68	69	70
4	.9	2.1	1.1	1.6	.6	1.5	.9	3.0
5	79	81	80	66	55	79	102	102
6	1.3	1.7	3.2	2.4	1.4	2.6	1.8	2.4
7	7.6	11.2	14.5	23.7	5.8	10.0	18.7	23.1
8	5	7	10	12	4	8	11	17
9	746	1 074	1 512	2 056	546	1 010	1 385	2 194
10	320	416	539	579	216	383	587	471
11	3.6	4.6	4.0	9.0	7.4	12.0	12.5	4.2
12	15.7	22.1	32.7	37.9	13.1	31.5	35.6	41.4
13	2 403	3 200	4 357	6 230	1 964	3 143	4 537	6 338
14	8 703	10 819	13 000	17 917	6 779	10 406	16 194	19 335
15	$ 661	$ 922	$ 1 101	$ 1 553	$ 592	$ 849	$ 1 032	$ 1 404
16	681	831	885	1 364	736	700	1 030	1 060
17	2 545	3 487	4 155	5 694	2 646	3 011	3 920	5 044
18	2 279	2 704	3 469	4 716	2 230	2 482	3 328	4 019
19	625	853	1 129	1 559	571	750	926	1 222
20	400	557	751	990	430	501	628	959
21	191	234	282	392	185	235	338	310
22	3 116	4 581	5 924	7 937	2 613	3 628	4 704	6 348
23	(10 498)	(14 169)	(17 696)	(24 205)	(10 003)	(12 156)	(15 906)	(20 366)
24	2 653	3 644	4 966	6 559	2 092	3 796	5 045	6 832
25	$13 151	$17 813	$22 662	$30 764	$12 095	$15 952	$20 951	$27 198
26	$ 304	$ 525	$ 546	$ 639	$ 441	$ 344	$ 592	$ 804
27	10 133	15 353	20 363	28 126	8 785	12 737	17 648	23 229
28	2 824	3 762	5 639	7 207	2 448	4 025	5 160	7 603
29	$13 261	$19 640	$26 548	$35 972	$11 674	$17 106	$23 400	$31 636
30	110	1 827	3 886	5 208	−421	1 154	2 449	4 438
31	87.24	88.47	87.04	87.10	77.31	75.35	77.48	75.86
32	86.52	80.24	74.30	74.49	80.10	70.27	69.37	65.22
33	.72	8.23	12.74	12.61	−2.79	5.08	8.11	10.64
34	5 052	7 623	11 731	11 949	3 351	5 878	7 119	11 284
35	51	837	96	3 447	764	967	2 283	1 494
36	283	275	367	354	184	280	324	311
37	2 160	2 327	2 384	2 605	2 107	2 343	2 573	2 303
38	3 226	6 408	9 810	13 145	2 192	4 782	7 153	10 786
39	21.22	28.86	32.16	31.83	14.52	21.07	23.69	25.87
40	2 118	3 899	5 920	7 346	1 511	3 235	4 553	6 455
41	51 394	75 675	101 885	137 467	40 098	57 110	78 079	104 011
42	72 595	106 765	138 861	186 225	60 269	83 982	109 705	147 752
43	477.60	480.92	455.28	450.91	399.13	369.96	363.26	354.32
44	$ 2 160	$ 2 327	$ 2 384	$ 2 605	$ 2 107	$ 2 343	$ 2 573	$ 2 303
45	119	377	1 085	2 111	123	139	755	1 716
46	13.1	15.3	19.9	25.9	12.4	13.7	18.9	22.8
47	18.59	14.66	13.99	13.96	19.56	14.05	13.87	13.16
48	513	788	919	1 397	539	648	911	1 141
49	294	367	436	529	299	303	347	510
50	467	711	938	1 258	454	656	925	1 085
51	346	386	388	470	386	338	443	424
52	20.76	18.90	16.76	16.86	23.21	17.05	16.34	16.52
53	46.0	43.0	40.7	41.9	40.8	41.6	38.0	41.8
54	12.4	16.4	17.8	17.2	8.3	12.0	13.9	11.3
55	24.6	23.4	23.4	23.5	27.5	26.2	26.1	28.3
56	16.7	16.7	17.7	16.5	22.7	19.3	19.8	18.5
57	72.38	73.11	71.70	73.63	67.58	63.37	64.17	66.56
58	18.95	17.35	17.49	17.17	16.09	18.89	18.35	19.58
59	69.5	71.1	69.4	69.8	67.3	63.2	64.8	66.3
60	28.9	30.3	29.4	28.9	31.7	27.3	26.1	27.1
61	39.8	42.2	39.9	40.6	38.4	35.0	33.5	35.7
62	32.7	32.2	32.7	32.0	30.0	31.3	28.6	30.6

TABLE 13. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF DAIRY FARMS IN SOUTHERN ILLINOIS, 1952

Range in size (total acres)		Under 180		180-259	
Soil rating		5-35	36-55	5-35	36-55
Number of farms		34	21	30	14
Average size of farm	1	144	138	215	212
Acres of tillable land	2	117	110	173	168
Soil rating on improved land	3	28	45	26	44
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	.4	.....	1.3	.....
Average number of hens	5	178	130	180	146
Average number of milk cows	6	13.1	14.9	16.3	19.6
Animal units of "other" cattle	7	1.1	.8	.3	.4
Number of litters farrowed	8	5	4	5	8
Total amounts of feed fed:					
Corn, bushels	9	1 125	1 116	1 346	1 672
Oats, bushels	10	372	382	323	770
Silage, tons	11	42.9	67.0	60.7	91.1
Hay, tons	12	47.6	56.7	52.9	62.3
Pasture, days	13	4 827	4 008	4 268	5 993
Supplement, pounds	14	23 715	28 634	31 071	40 695
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 558	$ 480	$ 820	$ 929
Buildings and fence	16	532	730	595	718
Machinery and equipment	17	2 549	2 611	2 810	3 840
Labor	18	2 630	2 842	3 103	3 670
Taxes	19	293	339	450	420
Seed and crop expense	20	306	339	324	499
Livestock and miscellaneous expense	21	308	453	316	497
Capital charge (4 and 5 percent)	22	1 556	1 806	2 040	2 569
Total non-feed input	23	(8 732)	(9 599)	(10 458)	(13 142)
Total feed input	24	5 486	6 136	6 537	8 500
Total farm inputs	25	$14 218	$15 735	$16 995	$21 642
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 418	$ 368	$ 429	$ 666
Feed and grain returns	27	5 351	6 332	7 293	10 084
All livestock returns	28	8 459	9 694	9 508	12 661
Total farm returns	29	$14 228	$16 394	$17 230	$23 411
Net management returns	30	10	659	235	1 769
Total returns per acre	31	98.81	118.80	80.14	110.43
Total inputs per acre	32	98.74	114.02	79.05	102.09
Net management returns per acre	33	.07	4.78	1.09	8.34
Net cash income (cash balance)	34	3 015	3 121	5 074	5 475
Inventory and capital change	35	510	1 100	−587	1 636
Farm products consumed	36	407	432	495	453
Less unpaid labor	37	2 366	2 187	2 707	3 226
Capital and management	38	1 566	2 466	2 275	4 338
Capital and management per acre	39	10.88	17.87	10.58	20.46
Total farm labor and management	40	1 802	2 479	2 124	3 667
Value of land (current basis)	41	18 308	21 171	25 801	32 295
Total capital investment	42	34 779	39 407	45 954	57 839
Total capital investment per acre	43	241.52	285.56	213.74	272.83
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 366	$ 2 187	$ 2 707	$ 3 226
Hired labor cost	45	264	655	396	444
Total months of labor	46	16.7	17.9	19.9	22.5
Labor cost per crop acre	47	28.93	30.94	23.05	26.50
Machinery repairs, supplies, etc.	48	525	482	575	833
Machinery hire	49	272	342	234	422
Gasoline and oil	50	394	417	507	706
Total auto cost (farm share)	51	299	277	273	430
Machinery and equipment cost per crop acre	52	28.04	28.41	20.88	27.73
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	26.4	33.0	22.6	32.1
Soybeans	54	11.2	9.8	14.0	13.6
Small grains	55	22.3	24.4	26.0	25.9
All hay and pasture crops	56	39.3	32.4	34.4	28.4
Feed and grain returns per tillable acre	57	44.67	56.41	41.35	58.58
Feed fed per tillable acre	58	46.89	55.78	37.79	50.60
Corn yield, bushels per acre	59	49.6	58.1	47.5	57.7
Soybean yield, bushels per acre	60	21.1	20.9	18.7	25.8
Oats yield, bushels per acre	61	24.7	18.8	19.5	26.9
Wheat yield, bushels per acre	62	21.4	23.7	22.4	24.7

TABLE 14. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF DAIRY AND DAIRY-GRAIN FARMS IN NORTHERN ILLINOIS, 1952

	Dairy farms				Dairy-Grain		
	Under 180	180-259	260-339	340-499	Under 180	180-259	260-339
	86	47	18	16	29	42	22
1	144	216	290	390	154	218	298
2	124	167	241	285	142	197	253
3	69	65	69	64	78	80	75
4	1.0	1.2	.1	1.7	.7	.3	.1
5	136	111	141	92	84	103	89
6	20.0	23.2	28.0	28.7	12.2	13.6	14.2
7	1.8	.7	1.2	7.7	.1	.8	1.0
8	7	9	11	22	2	4	6
9	1 478	1 955	2 456	3 981	715	813	1 315
10	1 172	1 366	1 596	2 368	570	826	737
11	90.8	90.7	142.2	162.7	13.9	29.5	15.8
12	72.8	80.2	92.2	102.4	40.7	47.3	55.8
13	5 602	6 967	8 286	11 372	3 685	4 282	4 894
14	25 140	25 181	37 022	43 487	13 016	15 322	15 708
15	$ 425	$ 626	$ 983	$ 1 259	$ 518	$ 808	$ 628
16	1 012	990	1 434	1 548	811	845	1 187
17	3 293	3 903	5 115	6 342	2 761	3 659	4 045
18	3 243	3 697	4 737	5 994	2 530	2 960	3 843
19	574	740	938	1 164	623	832	1 070
20	400	566	587	893	413	509	643
21	535	598	647	1 050	349	402	394
22	2 918	3 575	5 341	6 077	3 171	4 282	5 077
23	(12 400)	(14 695)	(19 782)	(24 327)	(11 176)	(14 297)	(16 887)
24	8 005	9 381	11 950	16 525	3 962	4 836	5 727
25	$20 405	$24 076	$31 732	$40 852	$15 138	$19 133	$22 614
26	$ 435	$ 490	$ 545	$ 455	$ 284	$ 363	$ 524
27	8 624	10 538	14 683	18 318	10 311	13 332	15 953
28	12 355	13 758	18 419	22 512	6 839	7 931	8 187
29	$21 414	$24 786	$33 647	$41 285	$17 434	$21 626	$24 664
30	1 009	710	1 915	433	2 296	2 493	2 050
31	148.71	114.75	116.02	105.86	113.21	99.20	82.77
32	141.70	111.46	109.40	104.75	98.30	87.77	75.89
33	7.01	3.27	6.60	1.11	14.91	11.44	6.88
34	5 293	5 186	10 552	6 090	6 743	6 808	8 347
35	778	1 408	−848	2 744	788	2 085	1 103
36	402	397	495	468	335	331	310
37	2 546	2 706	2 942	2 791	2 400	2 449	2 633
38	3 927	4 285	7 257	6 511	5 466	6 775	7 127
39	27.27	19.84	25.02	16.69	35.49	31.08	23.92
40	3 085	2 754	4 105	2 524	4 402	4 585	4 054
41	37 568	50 394	74 582	88 500	46 899	67 072	82 170
42	65 864	81 577	121 743	139 244	72 791	99 064	117 975
43	457.39	377.67	419.80	462.89	472.67	454.42	395.89
44	$ 2 546	$ 2 706	$ 2 942	$ 2 791	$ 2 400	$ 2 449	$ 2 633
45	697	991	1 795	3 203	130	511	1 210
46	17.7	20.5	24.0	31.5	14.3	16.4	21.3
47	33.36	27.28	24.34	26.45	21.00	17.26	17.82
48	719	920	1 355	1 719	433	818	891
49	364	388	176	389	432	379	442
50	569	687	917	1 099	492	679	836
51	387	359	517	393	337	395	407
52	33.88	28.80	26.28	27.99	22.91	21.34	18.76
53	36.4	37.9	37.2	34.7	43.9	43.1	38.9
54	3.6	2.3	4.1	3.3	9.3	10.3	12.4
55	21.6	23.4	23.3	25.6	22.0	22.7	25.0
56	38.1	35.2	33.9	35.6	24.8	23.3	23.3
57	68.77	61.72	60.31	62.82	72.44	67.15	62.57
58	64.56	56.17	49.58	57.98	27.90	24.55	22.64
59	76.3	65.1	63.9	69.1	71.7	68.7	64.8
60	27.7	22.8	25.0	28.1	30.3	28.3	28.6
61	44.3	40.0	42.8	40.9	40.0	39.8	36.9
62	22.8	30.1	25.8	34.2	37.8	31.8	30.8

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert W. Hudelson

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 8-53—9,900
Permit No. 1247

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments[8]	Av. weekly earnings, all manufacturing industries[9]	Industrial production[10]
	Wholesale prices		Illinois farm prices[3]	Prices paid by farmers[4]	U. S. in money[5]	Illinois				
	All commodities[1]	Farm products[2]				In money[6]	In purchasing power[7]			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39
1936.....	100	106	105	99	105	106	107	101	97	103
1937.....	107	114	118	105	111	111	105	107	107	113
1938.....	98	90	90	99	96	101	102	100	99	89
1939.....	96	86	84	98	99	102	104	107	106	109
1940.....	97	89	89	99	105	114	115	115	112	125
1941.....	108	108	112	105	140	147	140	138	132	162
1942.....	123	139	142	121	193	198	163	176	163	199
1943.....	128	162	165	136	244	236	174	217	192	239
1944.....	129	162	165	145	255	243	168	242	205	236
1945.....	131	169	171	151	270	248	164	250	198	203
1946.....	150	196	204	165	312	302	185	255	195	170
1947.....	184	239	265	192	377	391	204	279	223	187
1948.....	199	256	275	207	383	389	189	303	241	192
1949.....	190	221	217	200	352	362	181	304	245	176
1950.....	197	233	228	204	356	361	169	332	265	200
1951.....	219	270	271	224	412	419	187	374	290	220
1952[14].....	213	256	257	228	416	501	183	399	304	219
1952 June...	213	256	259	228	356	342	150	394	297	204
July....	214	263	264	228	401	496	217	391	293	193
Aug....	214	262	266	229	434	366	160	401	302	215
Sept....	214	255	261	228	544	402	177	407	312	228
Oct.....	212	250	254	225	618	610	271	411	315	230
Nov....	211	247	244	224	532	476	213	411	316	234
Dec....	209	237	235	224	461	466	208	416	322	235
1953 Jan.....	210	238	237	225	410	451	200	417	318	236
Feb....	209	234	231	224	283	297	132	420	317	240
Mar....	210	238	233	224	302	388	173	422	321	243
Apr....	209	232	231	223	286	339	152	427	318	241
May...	210	233	240	223	293	345	155	429	319	240
June...	209	228	230	220	324	341	155	432	319	240
July....	212	234	246	222	...	...	...	...	319	233
	...	...	237	222	...	...	...	...	...	...

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS[12]

Product	Calendar year average			August 1952	Current months, 1953		
	1933-39	1951	1952[14]		June	July	August
Corn, bu.....	$ .66	$1.67	$1.65	$1.69	$1.45	$1.46	$1.48
Oats, bu.....	.31	.87	.83	.79	.67	.67	.71
Wheat, bu.....	.86	2.24	2.19	2.11	1.74	1.72	1.73
Barley, bu.....	.62	1.36	1.35	1.35	1.15	1.15	1.20
Soybeans, bu.....	.90	2.95	2.89	3.14	2.70	2.45	2.45
Hogs, cwt.....	8.52	20.30	18.45	20.50	23.00	25.10	23.90
Beef cattle, cwt.....	7.88	30.85	27.53	28.00	18.10	21.40	19.40
Lambs, cwt.....	8.36	31.66	25.45	27.40	22.30	23.70	20.50
Milk cows, head....	58.00	267.50	265.00	265.00	205.00	185.00	175.00
Veal calves, cwt.....	8.66	33.57	30.10	27.20	18.00	19.00	18.50
Sheep, cwt.....	3.58	16.07	10.46	9.00	5.50	5.80	5.50
Butterfat, lb.....	.27	.66	.69	.68	.60	.58	.58
Milk, cwt.....	1.68	4.16	4.44	4.35	3.35	3.65	3.80
Eggs, doz.....	.19	.42	.36	.40	.40	.40	.42
Chickens, lb.....	.15	.27	.25	.22	.22	.22	.21
Wool, lb.....	.25	.83	.47	.47	.49	.48	.47
Apples, bu.....	1.08	2.04	2.53	2.40	3.00	2.90	2.45
Hay, ton[13].....	9.39	21.08	22.48	23.50	19.90	21.60	22.70

[1-14] For sources of data in tables see February-March issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | March, 1954 | Number 219

Publication of *Illinois Farm Economics* was suspended since the July-August, 1953, issue because of a shortage of funds. — Editor.

ARTICLES IN THIS ISSUE

THE MARKET FOR ILLINOIS CORN

Agriculture is, in one way, a peculiar industry. Because there are many small units of production, no one of which is of major importance in the total supply, and because it does not change the nature of its products very much or very often, it sometimes loses sight of its market.

Farmers need to know who buys their products, to what uses these products are put, what kinds of products their customers want, and what quantity can be sold at prices that will return profits to the producers.

The first concern of farmers must be that their products move into consumption. When products stop moving into consumption as rapidly as they are produced, excessive inventories begin to build up. When this happens, production must be cut back or prices reduced. And the longer readjustments are delayed, the more drastic they become. Readjustments do and will take place. Not only does it fail to make sense to produce things that are not wanted or to hold products at prices higher than consumers will pay, but it is impossible to continue such a production and price program indefinitely.

What Is the Nature of the Market for Corn?

Corn production and sales. About 475 million bushels of corn were produced for grain in Illinois in 1953 compared with 500 million in 1952. The smallest production in recent years was 323 million bushels in 1947, and the largest on record was 547 million bushels in 1948.

Extract from talk given at Farm and Home Week, February 2, 1954.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

In 1949, a representative year and one for which detailed data are available, Illinois growers produced 458 million bushels, and from this they sold off farms 235 million bushels, or 51 percent.

The percentage sold varies from year to year. The smallest was in 1947, 44 percent, and the highest in 1949, 51 percent. The percentage sold also varies from section to section in the state. The highest in 1949 was 75 percent in east-central Illinois, and the lowest was 31 percent in western Illinois.

About one sixth of all of the corn produced in the United States is produced in Illinois. The national corn crops, grain only, in recent years have been as follows:

1947	2.1 billion	1951	2.6 billion
1948	3.3 billion	1952	3.0 billion
1949	2.9 billion	1953	2.9 billion
1950	2.8 billion		

These figures represent about 90 percent of the production of corn for all purposes. We seem to have arrived at a normal production of about three billion bushels.

Not nearly so high a percentage of corn is sold off farms in the United States as a whole as in Illinois. In recent years 25 to 28 percent of all corn produced in the United States has been sold off farms. Illinois is the leading commercial corn state, producing about one fourth of the commercial corn in the United States.

The carry-over of corn. What do we do with corn? We either use it or carry it over to the next year. The amount we carry over varies from year to year. The average carry-over for 1935-39 was 375 million bushels from an average production of 3.1 billion, or 18 percent of production. The last ten years may be divided into two periods: the five years 1944-47, before price support programs, and the five years 1948-53, in which price support programs have been operative. During the first half of the period, our corn carry-over averaged 225 million bushels, or 8.6 percent of an average production of 2.614 billion. During the past five years our carry-over has averaged 730 million, or 24.9 percent of an average production of 2.927 billion.

In the first five years of this ten-year period, our average disappearance was 2.669 billion bushels and in the last five years it was 2.780, an increase of 4.15 percent. Production was up 12.0 percent.

From these figures we can reach two conclusions: First and most important, we are not moving corn into consumption as fast as we are producing it. Second, only a small increase in consumption would have prevented these large stocks from developing.

We went into the October 1952 — September 1953 crop year with a fairly modest carry-over — 487 million bushels — and a big crop — 3.0

billion bushels for grain. Production was up 400 million bushels from the year before, an increase of 15 percent. In 1952-53 our consumption of corn went down from 2.871 billion bushels the year before to 2.725 billion bushels, a decrease of 5 percent. A disappearance only 2.5 percent larger than in 1942, 7.0 percent larger than in 1946, 3.0 percent larger than in 1949, 4.5 percent larger than in 1950, and 4.5 percent larger than in 1951 would have been required to prevent any increase in carry-over into the following year. Instead of the surplus problem that we now have, we would have gone into this crop year with consumption geared to a high level and a 5 percent reduction in crop size. It seems reasonable to expect that the price picture would then have been quite different.

Utilization of Corn

Corn has six major categories of use: seed, food, the wet milling industry, alcohol, export, and livestock feed. The percentage of total disappearance that was accounted for by each of the six categories, average for the last five years, was:

	Percent
Seed	.4
Food	3.3
Wet milling	4.5
Alcohol	1.1
Export	3.8
Livestock feed	86.9
Total	100.0

Seed requirements are very small and vary little from year to year. There appears to be a long-term downtrend in corn acreage and seed requirements.

Corn used for food takes 3.3 percent of the total, or an average of about 94 million bushels. This use includes corn meal and grits, breakfast foods, and farm household use. Of these, farm household use is the most important. The amount used in this category varies little from year to year and does not appear to depend on the supply of corn. It is an unimportant outlet for commercial corn. It does not include corn consumed by the wet milling industry.

The wet milling industry is the most important outlet for corn other than feed. It takes 4.5 percent. The average consumption in the wet milling industry in the past five years was 126 million bushels. This industry makes corn starch, corn syrup, corn oil, and gluten feed and meal. Most of its products go into foods. It is an important outlet for commercial corn in Illinois. There are important processing plants in Decatur, Kankakee, Peoria, Keokuk, Chicago, and East St. Louis.

The use of corn by the wet milling industry is relatively constant. The

two big postwar years were 1946 and 1950. The industry has used 1.6 times as much corn in the past five years, on the average, as it did in 1935-39. This outlet for corn appears to be growing, slowly and gradually. The consumption of corn by the wet milling industry is not related to the supply of corn. It produces a high-value product and can afford to pay whatever is necessary to get enough corn to produce as much product as it can sell.

The production of alcohol by distilleries takes 1.1 percent of our corn. Alcohol production has been quite variable since World War II. The peak year was 1946-47, when 55 million bushels of corn were used, and the low year was 1952-53, with 17 million. The sharp decline in the past two years has been the result of overproduction in 1950-51 and the heavy taxes levied on whiskey in 1950. This industry is an outlet of considerable importance for Illinois corn. Its consumption is not related to the supply of corn.

Export of corn, which has averaged 106 million bushels during the past five years, has accounted for 3.8 percent of the disappearance. Exports vary sharply from year to year. For the most part, the volume of our exports of corn depends upon factors outside the United States, such as need, ability to pay, and production in competing export countries. The only time domestic supplies are a factor is when we have a short crop. In 1947-48, a short crop year, we exported only seven million bushels. Last year was our best year with 137 million bushels. Exports this year are down sharply, mainly because of increased production in the Argentine.

Utilization of Corn by Livestock

Far and away the most important outlet for corn is livestock feed, which accounts for 86.9 percent of the total disappearance. For the past five years this consumption has averaged 2.432 billion bushels. Of this amount, 1.983 billion was fed on the farms where it was grown, and 449 million bushels or 18½ percent was sold for feed. Livestock are more important in the consumption of commercial corn than all of the other five uses of corn combined.

The consumption of corn by livestock varies directly with the quantity of corn produced. Because corn acreage varies little from year to year and most of the variation in production is the result of variation in weather, we must conclude that, to an important degree, livestock production depends on the amount of corn available for feed. And, further, if we are to get rid of our surplus corn, we must do so by encouraging the feeding of livestock.

What kinds of livestock use our corn? This is a subject about which there is not very precise information. In 1947, hogs consumed 48

percent; poultry, 19 percent; dairy cattle, 16 percent; beef cattle, 10 percent; and horses, 5 percent.

When the quantities of corn consumed by the different kinds of livestock are compared with the supply, little relation appears for any of the classes except hogs. The numbers of poultry, dairy cattle, and beef cattle are apparently not affected to any great extent by the amount of corn that is available. While we do feed these kinds of livestock more sparingly when corn is scarce, this reduction in feed does not importantly affect corn consumption.

There is, however, a close relation between the available corn supply and the number of hogs that are raised. When corn is abundant, we increase hog numbers. When corn is scarce, we cut hog numbers. By increasing and decreasing the amount of corn fed to hogs, we keep our supplies of corn in adjustment.

As mentioned above our carry-over of corn was under reasonable control in the fall of 1952, at 487 million bushels. We increased carry-over while decreasing consumption by 5 percent, as a result of decreasing the size of the 1953 spring pig crop by 10 percent. The number of pigs raised did not correspond to the supplies of corn that were available. And if there is now an oversupply of corn, herein lies the reason. There is only one solution to the problem of too much corn — feed it to hogs.

This corn must be fed at prices that will return profits to producers. If it is not so priced it will not be used.

T. A. Hieronymus

IS STATE CONTROL OF CONSUMER PRICES OF MILK IN THE PUBLIC INTEREST?

In each of 13 states, a law establishes minimum prices at which milk can be sold to consumers. This type of regulation came into being as an emergency regulation during the 1930's when farmers and distributors were suffering from low prices. Similar legislation which was passed during this same period in 13 other states and by the federal government was subsequently repealed or discontinued. This situation, twenty years after the emergency period, raises a very pertinent question: Is state control of consumer prices of milk now in the public interest, or is it continued to protect some vested interest at the expense of the public?

This study was based upon changes in the usual single quart home-delivered prices and the lowest reported store prices of milk in 50 cities[1] for 1929, 1939, 1949, and two Novembers, 1952 and 1953. Consumer prices of milk in 18 of the 50 cities in 1953 were under state control while

[1] Cities for which data on home-delivered prices of fresh milk were available from 1919 to 1952 by the Bureau of Labor Statistics.

in the other 32 cities they were under conditions of actual or potential competition.

This study shows that consumers in cities under state control are being forced to pay higher prices for milk than prevails in cities where competition exists. It shows also that in recent years, and particularly in 1953, store prices of milk have been reduced materially below home-delivered prices in many competitive markets but not in cities under state control.

Earlier studies have shown that: (1) Present per capita sales of milk are far below those recommended by nutritionists for an adequate diet; and (2) people, particularly those in the medium- and low-income groups, drink more milk when prices are low than when they are high.[1] When these facts are added to the results of this study, it is evident that insofar as the cities included in this study were representative of all cities under state control and under competition, state control of consumer prices constitutes a legalized monopoly which is definitely against the public interest.

Summary of Results in 50-City Study

An analysis of consumer price changes in the 50 cities, when subdivided into three groups, indicated:

1. In November 1953, the lowest reported store price in 17 competitive markets averaged 20.1 cents per quart, or 3.1 cents less than the single quart home-delivered price (23.2 cents) (Table 1C). In 10 of the 17 markets, the store price was three cents a quart or more below the home-delivered price.

2. In sharp contrast in November 1953, the lowest store price in 18 state-controlled markets averaged 23.6 cents per quart, or only .5 cent per quart less than the single quart home-delivered price (24.1 cents) (Table 1A). Ten of 18 markets in this group had no store differential.

3. The difference between home-delivered prices and store prices in the 17 competitive markets has been increasing in the past 24 years. In 1929, the difference between these two prices averaged only 1.0 cent per quart. By November 1953, this difference had increased to 3.1 cent per quart.

4. In sharp contrast, in the 18 state-controlled markets, the average difference between the single quart home-delivered price and the lowest

[1] Stiebeling, Hazel K., etc., USDA Cir. 645, 1952; Cochrane, Willard W., USDA Misc. Pub. 581, 1945; Blanford, Charles J., Cornell Univ. Agr. Exp. Sta. Bul. 280, 1951; "Consumers Guide," USDA, May 18, 1936; Mumford, Herbert W., Cornell Univ., unpublished thesis, 1935; Brinegar, George K., Storrs Agr. Exp. Sta. Bul. 280, 1951; Williams, Sheldon W., Alabama Exp. Sta. Bul. 282, 1952; Ill. Agr. Exp. Sta. Bul. 397, pp. 441-448, 1934; *Illinois Farm Economics*, pp. 1484-1487, June 1953; and *Illinois Farm Economics*, pp. 1340-1347, April 1952.

TABLE 1. — NET DIFFERENCES BETWEEN HOME-DELIVERED AND LOWEST REPORTED STORE PRICES FOR 50 CITIES BY SPECIFIC GROUPS, 1929, 1939, 1949, NOVEMBER 1952, AND NOVEMBER 1953[a]

A. State-Controlled Cities[b]

	November, 1953			Net difference between home-delivered and lowest reported store prices			
	Home-delivered price	Lowest reported store price	Net difference	November 1952	1949	1939	1929
Newark	24.5	23.0	1.5	1.5	1.0	1.0	0
San Francisco	22.5	21.0	1.5	1.5	1.0	1.2	2.0
Los Angeles	22.5	21.0	1.5	1.5	1.0	2.3	0
Mobile	25.0	23.8	1.2	0	0	.4	2.7
Philadelphia	24.0	23.0	1.0	1.0	1.0	1.0	0
Pittsburgh	25.0	24.0	1.0	1.0	0	0	0
Providence	24.0	23.0	1.0	1.0	.9	1.0	1.6
Portland, Oregon	22.0	21.5	.5	0	0	0	0
Atlanta	25.0	25.0	0	0	0	0	0
Birmingham	25.0	25.0	0	0	0	1.0	3.0
Butte	20.0	20.0	0	0	0	0	0
Jacksonville	27.0	27.0	0	0	0	0	.2
Manchester	23.5	23.5	0	0	0	0	2.0
Norfolk	25.0	25.0	0	0	1.0	0	0
Portland, Maine	24.0	24.0	0	0	0	0	−1.0
Richmond	24.5	24.5	0	0	0	0	0
Savannah	27.0	27.0	0	0	0	0	0
Scranton	23.0	23.0	0	0	0	0	−.6
18-city average	24.1	23.6	.5	.4	.3	.4	.5
B. Cities Not under State Control: Potentially Competitive Markets[c]							
Cleveland	21.0	16.0	5.0	1.0	1.0	1.2	2.2
Columbus	21.0	16.0	5.0	1.0	0	1.0	.9
Detroit	22.0	17.5	4.5	1.0	1.5	1.8	1.8
Dallas	24.0	22.0	2.0	.5	.9	1.1	2.4
Bridgeport	24.5	23.0	1.5	1.0	.8	1.0	0
Little Rock	24.0	22.5	1.5	0	0	0	1.3
Cincinnati	23.0	22.0	1.0	1.0	.4	1.0	0
Fall River	24.0	23.0	1.0	1.0	.9	1.0	1.3
Omaha	21.0	20.0	1.0	1.0	1.2	.9	0
Rochester	25.0	24.0	1.0	1.0	1.0	.9	0
Indianapolis	22.0	21.5	.5	1.0	.1	1.1	.8
New Orleans	26.5	26.0	.5	1.0	1.0	2.0	0
Baltimore	24.0	24.0	0	0	0	3.0	0
Charleston	24.0	24.0	0	0	0	1.2	0
New Haven	25.0	25.0	0	1.0	.8	1.0	0
15-city average	23.4	21.8	1.6	.8	.6	1.2	.7
C. Cities Not under State Control: Competitive Markets[d]							
Chicago	25.5	18.75	6.75	3.5	3.6	2.3	0
Houston	26.0	21.5	4.5	3.0	0	2.0	0
New York	27.0	22.5	4.5	5.0	4.1	2.6	5.0
Minneapolis	21.0	17.0	4.0	4.0	3.9	1.1	1.1
Milwaukee	21.0	17.5	3.5	1.5	1.7	0	.7
Kansas City, Missouri	22.0	19.0	3.0	2.5	2.1	1.0	3.0
Peoria	23.5	20.5	3.0	3.5	1.0	1.0	0
Springfield	23.0	20.0	3.0	2.5	1.0	0	−.7
St. Paul	19.0	16.0	3.0	3.0	3.0	0	0
Washington, D.C.	24.5	21.5	3.0	3.5	1.2	2.8	1.0
Boston	24.0	21.5	2.5	2.0	1.5	1.0	2.3
St. Louis	23.0	20.5	2.5	2.5	1.0	1.3	0
Louisville	23.0	21.0	2.0	2.0	1.0	.1	.3
Seattle	20.5	18.5	2.0	1.5	1.0	1.0	1.4
Buffalo	25.5	24.0	1.5	2.0	1.6	1.0	.9
Denver	24.0	22.5	1.5	1.5	1.3	.7	.8
Salt Lake City	21.0	19.5	1.5	1.5	1.0	0	1.1
17-city average	23.2	20.1	3.1	2.7	1.8	1.1	1.0

[a] Data from USDA Fluid Milk and Cream Reports, U.S. Bureau of Labor Statistics Reports, or Trade Association Reports. Data on retail prices of fresh milk were reported each year from 1919 to 1952 for the 50 cities used in this study by the U.S. Bureau of Labor Statistics. [b] Cities in states which regulate minimum prices to be paid for milk by consumers. Cities in 12 of the 13 states having such laws were included in this sample. Vermont is the only such state not included. [c] Includes markets not under state control which in November, 1952, had a store differential of one cent or less per quart. [d] Includes markets not under state control which in November, 1952, had a store differential of more than one cent a quart.

store price was the same in 1929 as in November 1953 — only .5 cent per quart.

Low Store Prices Result in Higher Milk Sales in Cleveland, Columbus, and Detroit

This study in 50 cities showed two important facts: (1) that from November 1952 to November 1953, store prices in Cleveland, Columbus, and Detroit were reduced more than in any of the other cities (Table 1); and (2) that milk sales in these markets increased faster in 1953 than in any of the other cities of comparable size for which sales data were available.

Among markets of one-million population or over, the 1953 sales of milk in Cleveland[1] were 7.1 percent higher than in 1952; in Detroit, 5.9 percent higher; and in ten cities, of this size, the 1953 sales averaged 1.8 percent higher than in 1952.[2]

Among cities of less than a million population, the 1953 sales of milk in Columbus were 11.1 percent higher than in 1952; in Wichita, Kansas, 10.2 percent higher, and in 20 federal-order cities, the 1953 sales averaged 6.1 percent higher.

No distributor in a state-controlled city could legally reduce consumer prices without sanction of the governing agency. Hence few, if any, state-controlled markets have store prices as low as those reported for Chicago,[3] Cleveland, Columbus, Detroit, and many other cities not under state control.

R. W. Bartlett

DISTRIBUTION OF ILLINOIS FARM INCOME

The manner in which total income is divided among individuals is significant in evaluating public economic policy. The purpose of this article is: (1) to describe the distribution of farm income among commercial farmers in Illinois for 1949[4] and (2) to briefly indicate likely results of certain government programs upon the pattern of farm income distribution.

Concentration of net income[5] among Illinois commercial farms in

[1] Data obtained through the courtesy of the Milk Market Administration in Cleveland.

[2] Data for markets, other than Cleveland, obtained from the USDA Fluid Milk and Cream Report, February 1954, page 24.

[3] See *Illinois Farm Economics*, June 1953, pp. 1484-1487.

[4] The data presented are based upon the 1950 census of agriculture.

[5] Net income is total value of products sold minus major cash expenses: hired labor, machinery custom work; feed; livestock and poultry purchased; seed, bulbs and trees; gasoline and other petroleum fuel and oil; and machinery repairs. An estimate of rent paid was also deducted. Property and income taxes are not deducted. Inclusion of nonfarm income and value of farm products used in household would not likely alter the distribution presented in Figure 1 to any marked degree.

TABLE 1.—PERCENT OF COMMERCIAL FARMS IN EACH ECONOMIC CLASS BY ECONOMIC AREAS, ILLINOIS, 1949[a]

Economic class (value of farm products sold)	Economic area												State
	1, A and B	2 and C	3	4	5	6a, D and E	6b	7 and F	8	9	10	11	
(dollars)	(percent)												
I. Over 25,000	6.0	6.2	6.6	3.3	5.1	5.6	5.0	0.6	0.2	1.3	0.3	0.8	4.1
II. 10,000 to 24,999	27.6	25.8	30.2	17.6	30.8	30.7	35.1	9.5	4.2	10.3	4.1	4.9	23.0
III. 5,000 to 9,999	36.2	33.6	31.2	28.5	38.4	31.1	34.7	31.7	17.8	22.5	12.4	12.0	30.1
IV. 2,500 to 4,999	18.5	19.7	19.1	25.5	15.9	16.3	14.3	29.4	28.7	28.5	24.3	23.7	20.8
V. 1,200 to 2,499	8.0	10.4	8.6	16.0	6.1	10.4	6.9	19.1	28.6	21.1	31.0	30.0	13.5
VI. 250 to 1,199	3.7	4.3	4.3	9.1	3.7	5.9	4.0	9.7	20.5	16.3	27.9	28.6	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of commercial farms	17,661	11,691	20,907	16,823	7,668	16,802	26,366	15,173	9,803	7,030	5,096	5,847	160,867

[a] The census defines a commercial farm as one having a value of farm products sold amounting to $1,200 or more, or with a value of sales of $250 to $1,199, provided that the farm operator worked off the farm less than 100 days and that the income of the farm operator and his family received from nonfarm sources was less than the total value of all farm products sold. The 1950 census for Illinois indicates 160,867 commercial farms and 34,345 noncommercial farms, the latter being part-time farms, residential farms and abnormal farms. It should be noted that of the farms classed as "commercial" with a value of products sold over $1,200, there were some farms on which the operator's off-farm work was significant. However, for the state as a whole only 7.7 percent of the commercial farm operators with value of sales $1,200 or over worked more than 100 days off of the farm. In two economic areas (Figure 2) this percentage exceeded ten percent: Area 2 and C, 12.2 percent and Area 10, 13.7 percent.

1949 is shown in Figure 1.[1] For example, the lower 50 percent income group of Illinois commercial farm operators received approximately 16 percent of the total net farm income before taxes.

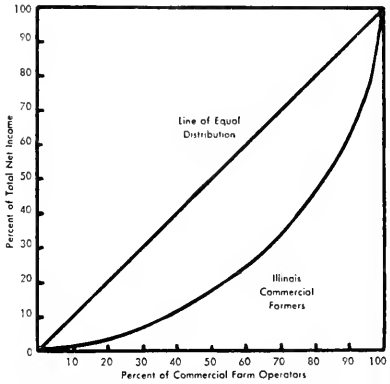


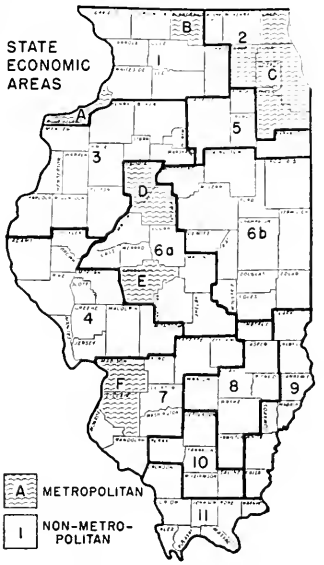
FIG. 1. NET INCOME DISTRIBUTION OF COMMERCIAL FARM OPERATORS, ILLINOIS, 1949

An indication of the geographic distribution of high- and low-income farms is supplied in Figure 2 by the average net incomes of commercial farmers in each economic area. On the basis of average net incomes the state is readily divided into two areas: Northern (Areas 1 through 6) and Southern (Areas 7 through 11). Net incomes in each of the Northern areas averaged above $3,000; those in each of the Southern areas averaged below $3,000. It is at least of equal significance to observe the variation in income that exists among farmers in each area. Table 1 gives the percent of farms in each economic class (value of farm products sold) for each economic area.

What are the basic causes of the variation in income among farmers, both within and among areas? In general, they stem from two related sources: (1) variation among individual farmers with respect to personal factors such as preferences, skills, age, physical ability, motivation, desire for conformance with community standards, etc., and (2) differences in opportunities to gain control over resources (land, capital, etc.) and their profitable use. The latter source includes variation in conditions among farmers with respect to the supply and quality of resources available, the ease with which credit may be obtained, the nature of farm product markets, sources of production and market information, local custom, and other primarily environmental differences. These basic causes lead to differences in the amounts of resources controlled by farm operators (Table 2). The amounts of resources (size of business) along with the efficiency of their use determine, in a large part, the pattern of income distribution in any given year.

How much inequality of income distribution should we have? Obviously there are other important and related objectives in public economic policy: efficient production of goods and services, and national defense considerations are important examples. Although economic analysis does not provide solutions to the ethical problems of determining a "desirable"

[1] The straight line indicating the situation of a completely equal income distribution should not be interpreted as ideal; it is presented for comparison only.



Area	*Net Income*
1, A and B	$4619
2 and C	4316
3	4475
4	3615
5	4717
6a, D, and E	4995
6b	5123
7 and F	2707
8	1758
9	2517
10	1452
11	1674
State	**3997**

FIG. 2. AVERAGE NET INCOME OF COMMERCIAL FARM OPERATORS BY ECONOMIC AREAS. ILLINOIS, 1949.

personal income distribution, such analysis may provide an insight into the possible effect of governmental programs upon income distribution.

Government action affecting income distribution may take several forms. The graduated income tax acts directly on personal incomes to reduce inequality. Death and gift taxes, although working indirectly through making changes in the distribution of ownership of resources, also probably have the same ultimate effect of decreasing the inequality of income distribution. A third way in which government action may affect income distribution is through programs affecting the price structure: minimum wage laws and agricultural price support programs are

TABLE 2. — AVERAGE QUANTITIES OF CERTAIN BASIC RESOURCES PER COMMERCIAL FARM BY ECONOMIC CLASS, ILLINOIS, 1949

Economic class (value of of farm products sold)	Workers[a]	Value of land and buildings	Tractors	Major cash[b] expenses
	(dollars)			(dollars)
I. Over 25,000	3.3	$100,955	3.0	$27,035
II. 10,000 to 24,999	2.1	57,518	2.0	5,872
III. 5,000 to 9,999	1.8	31,282	1.5	2,965
IV. 2,500 to 4,999	1.6	17,607	1.1	1,925
V. 1,200 to 2,499	1.5	10,106	0.7	1,250
VI. 250 to 1,199[c]	1.4	5,857	0.4	797
All economic classes	1.8	32,767	1.4	4,245

[a] The number of persons doing farm work or chores on the farm during the calendar week preceding census enumeration. In order for family members to be included they must have worked at least 15 hours during the week.
[b] See footnote 2 above.
[c] See footnote a, Table 1.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert B. Hudelson

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension
Work. Acts of May 8 and June 30, 1914

Ill. 8900, 3-54—11,500
Permit No. 1247

examples. Price support programs may act to decrease the difference between *average* incomes in agriculture and those in nonagricultural industries but at the same time may increase or decrease the inequality within agriculture. This would be true if the structure of support prices causes changes in the relative profitability among types of farming.

The effect of differences in the rates of adoption of new techniques upon farm income distribution has a significant implication for agricultural information programs. The adoption by higher income farmers of a new method or technique that increases production would, other things being equal, reduce both the relative and absolute share of income received by the lower income farmers. This effect is more pronounced in the case of commodities in which the demand is such that an increase in total quantity sold would yield a smaller total income. This is not to imply that programs designed to aid farmers by adoption of new methods should be assessed solely from the viewpoint of their effect on income distribution; however, such effects may merit consideration.

EARL R. SWANSON

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | May, 1954 | Number 220

ARTICLES IN THIS ISSUE

APPRAISING THE SYSTEM FOR DISTRIBUTING FEED TO FARMERS

Purchases of feed by farmers are a major farm expense. In the five years, 1948-52, feed bought made up 18 percent of total production expenses of farm operators. In Illinois, average purchases of commercial feed supplement in 1952 on account-keeping farms of 180-259 acres in size ranged from less than 900 pounds a month on grain farms to more than 4,000 pounds a month on hog farms. Thus farmers are vitally interested in the system of, and the costs involved in, distributing feeds.

Criteria for an Effective Feed Distribution System

Two requirements that appear essential for a feed distribution system for commercially mixed feeds are:

1. The system should be so organized that supplies of the kind, quality, and amount of feeds that the livestock and poultry feeder can profitably use are readily available.

2. Differences in costs of performing services necessary to make feed readily available to patrons should be reflected in the prices charged.

The first requirement implies that the buyer should have an opportunity to select the type of feed needed. The total cost of feed and service cannot exceed for long the return that the feeder would get from using it, yet every feeder cannot be assured a profit when he buys feeds, nor can every distributor and manufacturer of feed be guaranteed a fixed margin for each unit of product handled. Whenever opportunities exist for feed-

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

ers to use purchased feeds profitably, an effective feed distribution system will meet the apparent need.

The second requirement recognizes that some feeders can profitably use services which other feeders do not require; it also implies that the market will permit a feeder to choose not only the type of feed, but also the type of service. Only by clearly identifying the price related to these services — and then weighing the cost to secure the service by any other means — can the feeder really exercise complete freedom of choice.

As examples, some feeders may find it most convenient and economical, as well as assuring their livestock feed at all times, to have feed delivered to the farm, whereas other feeders may feel they can perform this service themselves for less than it can be performed by the dealer. Some feeders may require the use of credit, whereas others may not. Some feeders will require far more advisory help from their feed dealer in managing their livestock enterprises than will others.

The principle involved is a recognition that different customers have different needs, and that it costs more to meet the needs of some than of others.

Comparison of Practices with These Criteria[1]

How well does the existing feed distribution system meet the suggested requirements? Commercially mixed feeds and supplements have been made readily available to nearly all Illinois farmers. Over 600 manufacturers have registered their feeds for sale in this state; in-transit freight rate privileges and lower costs of ingredients have enabled many out-of-state mills to enter the Illinois market.

Most principal towns have three or more feed retailers, and the maximum distance between a given retailer and his nearest competitor not in the same town is usually less than ten miles. Thus, a comprehensive distribution system has been developed.

The second requirement implies that differences in the terms of specific sales usually justify variations in the prices charged, as do the costs of providing a convenient location, special facilities, or services.

Different prices *are* quoted by dealers in a given area for feeds of comparable quality (even for feeds of identical type and brand). Such differences may be due to location and convenience aspects, to lack of information by dealers and feeders regarding prices quoted by other dealers (an element of imperfect competition), to differences among dealers in margins taken for performing comparable services, and to differences among dealers in extra services performed. Some dealers have transportation advantages that enable them to secure their supplies at lower cost than their competitors, and others may have greater expenses

[1] The Retail Distribution of Feed to Illinois Farmers, University of Illinois College of Agriculture mimeo report, AE 2953, 1953, is source of basic data.

per unit of product sold which necessitate a higher margin. It is evident that all buyers do not choose on a strictly price basis.

Price discounts. Many feed retailers vary prices for different types of sales by granting price discounts. The Illinois feed retailing study showed that 60 percent of the dealers granted discounts for quantity purchases. Such a discount may be justified because of a reduction in the amount of labor required in bookkeeping and in loading out, a shifting of some costs in carrying an inventory, and the probability of greater sales volume — all of which reduce units costs. Yet in several market areas less than half the dealers granted quantity discounts.

Twelve percent of the dealers gave a discount for the pickup of feed at the warehouse by the customer; more than half of these dealers granted a discount of one dollar a ton, a third give a discount of two dollars a ton, and one gave a discount of four dollars a ton.

The third most common type of discount (granted by eight percent) was for payment of cash at time of purchase. About equal numbers granted discounts of one dollar, and two dollars a ton.

A discount to patrons who picked feed up directly from a railroad car on track was granted by a few dealers. This practice definitely is a labor-saver for dealers, but it is not common since the majority of dealers do not receive feeds by rail.

Differences in services rendered. Many firms in effect charge the same prices for different types of sales. They do this by performing various services for their patrons with no specific itemized charge. Such services include extension of credit, delivery, and advice on livestock management problems (often at the farm).

Most retailers granted credit, partly because of convenience (purchaser not home when a delivery was made) and partly because their competitors did. Five percent operated on a strictly cash basis, but another 37 percent extended credit for not more than a month. None of the retailers made an interest charge for the extension of credit, and only a very few made an interest charge on overdue accounts.

Ninety percent of the dealers delivered some feed, but less than a fourth of them made a charge for delivery; of those making a charge, only one-third made a charge on all deliveries. Some dealers would not deliver less than one ton of feed; one-third of those making deliveries made charges only for deliveries of less than one ton (usually five cents a bag, with a few charging ten cents a bag).

Certainly the feeder who receives these services needs to appraise their value to him when comparing prices with those of other dealers who do not provide the service. Likewise, the patron who pays the same price for feed without securing the service needs to keep that fact in mind when comparing prices.

Problems Involved in Finding Out the Cost of Performing a Service

Actually, the problem of discovering what it costs to perform different services is often not simple. An analysis of 146 retail feed stores operating in all sections of the country by Dun and Bradstreet[1] in 1953 showed the following average expenses per dollar of sales for all firms:

	Cents
Owner's compensation and employees' wages	7.0
Occupancy expense	1.5
All delivery costs other than wages	0.9
Depreciation on fixtures and equipment — except for delivery	.5
Advertising	.2
Bad debt losses (less than 0.1 cent)	.0
All other expense	1.3
Total	11.4

The performance of a service requires the use of labor and facilities. However, these services usually bring additional volume and reduce unit costs of items such as occupancy expense, depreciation, advertising, and owner's compensation. These reductions may, or may not, offset the cost of performing the service.

Every dealer will not be able to reduce his expenses by the same amount per unit by not performing a given service for some patrons. For example, if a dealer continues to keep a truck to provide delivery service for some patrons, he will reduce his expenses by not delivering to other patrons only by the amount of variable costs (gasoline, extra labor, etc.).

Different dealers have different costs for performing similar services. Expenses per dollar of sale vary among firms with different volumes (averaged 14.6 cents for firms with sales under $100,000 and 10.7 cents for sales above $250,000 in the Dun and Bradstreet study). Nor are costs the same among firms of the same size, because of differences in inventory turnover and other aspects of management. Furthermore, size alone is an inadequate measure, for in the Dun and Bradstreet study 47 incorporated farm supply stores averaging $376,100 sales had expenses of 13.1 percent of sales, compared to 11.8 percent for 120 individual proprietorships with average sales of only $122,710. And even for the same dealer, the extension of credit to some patrons entails more cost than to others.

Differences in the amounts of discounts granted suggest that either there are differences among dealers in the amount expenses are reduced by foregoing a given service, or that dealers do not know what the service costs. A dealer granting a cash discount of two dollars on a product priced

[1] Cost of Doing Business — Farm Supply Stores, Operating Results in 1951.

at $100 a ton is, in effect, assuming costs of extending credit equal to 12 percent if his accounts receivable on the average run two months before collected. In some cases the cash discount may exceed what the distribution system saves by not extending credit.

These remarks suggest that each retailer and manufacturer will need to appraise his own situation with respect to how well he meets the second requirement suggested above. Experience will help determine what differentials to provide, though even here one cannot assume that the costs in extending additional credit, for example, will be the same as they were on credit previously extended.

The Problem of Margins

In the past year dealers have felt the effect of rising costs and nearly fixed margins, just as farmers' costs have risen while their prices have fallen. Some dealers feel that higher margins are the only solution to that problem. Can some services be performed more economically in other ways than they are now being performed?

If a sufficient number of users do not require a certain service (because they perform it themselves or have it done elsewhere — such as securing credit from banks or securing advice on feeding from other sources), one may expect that they will try to secure their feeds where they save the cost of those services. They may use their own trucks and secure feed at more distant points, and in a few cases some feeders have secured a dealer's franchise.

A variety of methods are used in feed distribution, and each has certain advantages and disadvantages. Some dealers are so situated that they can secure incoming feed with relatively favorable transportation costs. Others are more accessible to their customers. If all other things are equal, farmers are likely to gain most in supporting a feed distribution system whose natural advantages are reflected in the prices paid for feeds of comparable quality.

Pricing which does not reflect these natural advantages in effect encourages the entry of firms less favorably situated, and a reduction in volume per firm which might (though not necessarily) follow could cause total distribution costs per unit to increase.

Summary

Usually the feed distribution system is providing the commodities and services which feeders can profitably use; further opportunities exist for some firms to use their resources closer to their capacity, and to reflect in their prices the costs involved in making different types of sales.

R. J. Mutti

SOME CHANGES IN CORN BELT FARMS — 1925 TO 1952

Twenty-five farms in Livingston, McLean, Tazewell and Woodford counties in north-central Illinois have been enrolled in the Farm Bureau Farm Management Service each year since 1925. A comparison of the average records of the same 25 farms for the three years, 1925 to 1927, with the three years, 1950 to 1952, gives a clear idea of some of the changes in corn-belt farming during the past 30 years.

The operation of ten of the farms changed from father to son or son-in-law; two from father to father and son; one from owner to widow; three from owner to tenant; and nine continued under the same management throughout the period.

A comparison of these continuous records for 28 years shows the following changes from 1925-1927 to 1950-1952.

1. The average size of farm increased from 234.5 acres to 263.6 acres, or 12.4 percent (Table 1).

TABLE 1. — AVERAGE SIZE, NUMBER OF MEN EMPLOYED, INVESTMENTS, RECEIPTS, EXPENSES AND EARNINGS PER FARM

Item	Average of 3 years, 1925-1927	Average of 3 years, 1950-1952
Average size of farms—acres	234.5	263.6
Number of men employed, 12 months basis	2.07	1.77
Investments		
Land	$45,474	$ 75,000
Farm improvements	5,881	12,273
Machinery and equipment	2,141	7,088
Feed, grain and livestock	7,865	19,296
Total investments	$61,361	$113,657
Cash receipts		
Feed and grain[1]	$ 2,662	$ 7,178
Livestock[1]	3,290	10,106
Miscellaneous	124	250
Total cash receipts	$ 6,076	$ 17,534
Cash expenses		
Farm buildings and fences	$ 380	$ 1,189
Land improvements[2]	.....	646
Machinery and equipment[3]	654	3,667
Hired labor	499	1,397
Taxes	537	941
Miscellaneous	366	440
Total cash expenses	$ 2,436	$ 8,280
Net cash income	$ 3,640	$ 9,254
Noncash earnings and costs		
Home-used farm produce	$ 455	$ 330
Operator and family labor	994	2,056
Horse feed and depreciation	586	34
Net farm earnings	$ 2,515	$ 7,494
Rate earned on investment	4.09	6.59
Operator's labor and management earnings	$ 145	$ 3,607
Farm and family earnings[4]	$ 4,095	$ 9,584

[1] Less purchases.
[2] Limestone, rock phosphate and fertilizers.
[3] Including auto, and less income from sales and custom work.
[4] For use of farm, family living and savings.

TABLE 2. — AMOUNTS AND VALUE OF CROPS AND LIVESTOCK PRODUCED

Product	Amounts produced		Average farm prices 1948-1952	Value of products at 1948-1952 prices	
	3-year average 1925-1927	3-year average 1950-1952		3-year average 1925-1927	3-year average 1950-1952
Crops					
Corn—bushels	4,791	7,070	$ 1.48	$ 7,091	$10,464
Soybeans—bushels	51	496	2.53	129	1,255
Oats—bushels	1,962	2,367	.77	1,511	1,823
Wheat—bushels	336	87	2.07	696	180
Barley—bushels	62	0	1.25	77	0
Silage—tons	....[1]	19	8.83[3]	.....	169
Hay—tons[2]	24.6	56.3	21.94	540	1,235
Pasture—days	4,731	5,355	.124	587	664
Other crops—acres	7.3	2.9	105.00	766	304
Total crops				$11,397	$16,094
Value of crops per acre				$ 48.60	$ 61.06
Value of crops per man				5,506	9,093
Percent increased value per acre					26%
Percent increased value per man					65%
Livestock					
Cattle—pounds	5,936	13,676	$27.20[5]	$ 1,615	$ 3,720
Hogs—pounds	21,239	30,702	19.65	4,173	6,033
Sheep—pounds	1,189[4]	821	25.51	303	209
Poultry—pounds	680	619	.26	177	161
Milk—pounds	34,119[6]	41,715	3.96	1,351	1,652
Eggs—dozens	772	1,879	.38	293	714
Total livestock				$ 7,912	$12,489
Value of livestock per acre				$ 33.74	$ 47.38
Value of livestock per man				3,822	7,056
Percent increased value per acre					40%
Percent increased value per man					85%
Total crop and livestock production				$19,309	$28,583
Value per acre				82.34	108.43
Value per man				9,328	16,149
Percent increased value per acre					32%
Percent increased value per man					73%

[1] Corn for silage was included with corn for grain during these years.
[2] Grass silage was included with hay at rate of three tons silage for one ton hay.
[3] Silage was valued at the value of six bushels of corn per ton.
[4] Weight of sheep for these years was estimated by multiplying the number of animal units in sheep by the weight produced per animal unit in later years when records of both were kept.
[5] The five-year average farm price of good beef cattle. A careful study shows that the total value of all cattle was approximately the same during the five years when figured at the price of good beef cattle as it would have been if the relative amounts of dairy cows, veal calves and beef cattle had been figured at the respective prices for the three classes of cattle as recorded in the Illinois, U. S. Department of Agriculture reports.
[6] An estimated production based on the production per cow in 1931, compared with the Illinois, U. S. Department of Agriculture production records during the years 1925 to 1931.

2. The number of men employed, including operator, family, and hired labor, decreased from 2.07 men to 1.77 men per farm, or 14 percent.

3. The number of farm acres worked per man increased from 113 acres to 149 acres, or 32 percent.

4. Investments in land increased from $194 to $285 per acre, or 47 percent.

5. Total investments per acre increased from $262 to $431, or 65 percent. Total investments per man increased from $29,643 to $64,213, or 117 percent.

6. Total cash receipts (less feed and livestock purchased) increased from $25.91 to $66.52 per acre, or 157 percent.

7. Total cash expenses (less feed and livestock purchased) increased from $10.39 to $31.41 per acre, or 202 percent.

8. Total farm and family earnings increased from $4,095 to $9,584, or 134 percent.

9. Crop production increased from $48.60 to $61.06 per acre, when valued for both periods at 1948 to 1952 Illinois farm prices, or 26 percent. Crop production per man increased by 65 percent (Table 2).

10. Livestock production increased from $33.74 to $47.38 per acre, or 40 percent. Livestock production per man increased by 85 percent.

11. Total crop and livestock production per acre increased by 32 percent and the production per man by 73 percent.

12. Crop yields increased as follows: corn, 37 percent; oats, 13 percent; wheat, 41 percent; and soybeans, 74 percent (Table 3).

13. Livestock production increased as follows: eggs per hen, 97 percent; milk per cow, 11 percent; pork per 100 pounds of concentrates, 6 percent; pigs weaned per litter, 5.9 to 6.9, or 17 percent.

TABLE 3. — EFFICIENCY OF PRODUCTION OF CROPS AND LIVESTOCK

Product	Three-year average 1925-1927	Three-year average 1950-1952	Percentage increase
Crops			
Corn—bushels per acre	51.0	69.7	37
Oats—bushels per acre	38.9	43.8	13
Wheat—bushels per acre	20.0	28.2	41
Soybeans—bushels per acre	18.9	32.8	74
Livestock			
Milk per cow	6,690	7,449	11
Eggs per hen	93	183	97
Pigs weaned per litter	5.9[1]	6.9	17
Feed per 100 lbs. of hogs			
Grain	421	380	..
Protein feeds[2]	24	41	..
Total concentrates	445	421	..
Protein feeds per 100 lbs. total concentrates	5.3	9.6	..

[1] Average for the years of 1931 to 1933.

[2] Skimmilk was figured as one pound of protein feed per gallon. Much of the protein feed fed during the years of 1925-1927 and little of that fed during 1950-1952 was skimmilk.

TABLE 4. — LAND USE. PERCENT OF TILLABLE LAND IN CROPS

Crop	Three-year average 1925-1927	Three-year average 1950-1952
Corn for grain and silage	43.9	42.7
Soybeans for grain	1.2	6.4
Total of corn and soybeans	45.1	49.1
Oats	23.4	22.6
Wheat	7.9	1.3
Other grains	1.3	.1
Total of small grain	32.6	24.0
Hay, pasture and green manure	18.8	25.7
Other crops, mostly canning crops	3.5	1.2
Total of all tillable land	100.0	100.0
Percent of all land tillable	91	91

14. Land-use changes consisted of a marked increase in the acreages of hay, pasture and green manure crops, and in soybeans and corresponding decreased acreages of small grain, especially wheat and barley. The percentages of land in corn and oats remained about the same (Table 4).

M. L. Mosher

DIGEST OF ILLINOIS LAWS RELATING TO WATER

There seems to be ample evidence that Illinois water resources, both ground and surface, will be used more heavily in the future than in the past and that the rate of increased usage may be accelerated. This will pose economic problems for both private and public users and governmental and control problems for those charged with protecting the public interest in water resources. Agriculture generally, and Illinois farmers in particular, will be materially affected by the manner in which the water problem is ultimately solved. It seems appropriate therefore, to review present laws in an attempt to determine what gaps exist and how best to approach the problem.

The following digest covers only statutory law of the State of Illinois. References at the end of each section are to the Illinois Revised Statutes, 1953.

A. Powers and Duties of State Agencies

1. State Water Resources and Flood Control Board. This Board was established in 1945. Its members are by law the directors of the departments of public works and buildings, conservation, agriculture, registration and education, and public health. The law states that it shall have the following power and authority:

(1) To study, investigate, and determine ways and means by which the various water uses may be coordinated to the end that the water resources of the State be put to their maximum beneficial use.

(2) To require any department or agency of the State to make surveys, studies, investigations, prepare plans, specifications, estimates, reports, and furnish such data and information as may be necessary to carry out the provisions of this Act.

(3) To make such rules and regulations as may be necessary to carry out the provisions of this Act.

(4) To represent and act for and in behalf of the State of Illinois, subject to the approval of the Governor, in matters concerning any project for the improvement of navigation, flood control, or any other purpose on any of the rivers, waters, or watershed of Illinois by the United States or any agency thereof.

(5) To arbitrate and provide ways and means for the equitable reconciliation and adjustment of the various conflicting claims and rights to water by users or uses.

(6) To recommend legislation for the most feasible method or methods of conserving water resources and putting them to the maximum possible use, taking into account the problems of navigation, flood control, river flow control and stabilization, reclamation, drainage, recapture and further utilization of water after use for any purpose, domestic and industrial use, irrigation of land, municipal use, development of electric energy, public health, recreational, fish and game life, and other beneficial uses.

(7) To make such reports, from time to time, as may be required by the Governor or the General Assembly.

Perhaps more important than this statement of authority is the following statement of policy contained in the Act:

"It is hereby declared that the general welfare of the people of this State requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water." 127 = 200.1-200.4

2. State Department of Public Works and Buildings. (1) Control of Floods and Conservation of Water. This law, adopted in 1945, contains a long declaration of policy and authorizes the Department of Public Works and Buildings to:

(a) Make examinations and surveys, prepare plans and estimates, and construct, control and maintain, or supervise construction, reconstruction, or maintenance of all works for the control of floods.

(b) Cooperate with other agencies.

(c) Exercise emergency powers as set out in the Act.

The scope of the Department's activity is indicated by this language: ". . . all works for the control of floods, the improvement of upland and bottomland drainage and the conservation of low water flows in the rivers and waters of Illinois, including the watersheds thereof." Expenditure of funds for such improvements must be authorized by the General Assembly. 19 = 126a-126b.

(2) Regulation of Rivers, Lakes, and Streams. The Department of Public Works and Buildings ". . . shall upon behalf of the State of Illinois, have jurisdiction and supervision over all of the rivers and lakes of the State of Illinois, wherein the State of Illinois or the people of the

State have any rights or interests. . . ." Among specific powers and duties designated are the following:

(a) To list by counties all waters, and whether or not navigable.

(b) To obtain ". . . all possible data with reference to the waters of the State of Illinois. . . ."

(c) To prevent encroachments on public waters.

(d) To hear complaints of citizens regarding use of any such waters.

(e) To obtain all possible data on navigability and deep waterways.

(f) To maintain stream gauge stations, investigate the carrying capacity of streams and prevent voluntary impairment of their capacity. 19 = 52-77

3. The State Department of Registration and Education. This Department is authorized to cooperate with the United States Geological Survey in the mapping, recording, collection, and printing of water resources data, including stream flow measurements. Facts and data on the volume and flow of underground and surface waters are to be collected, and the results of investigations published from time to time. 127 = 58.25-58.30

4. Sanitary Water Board. Following a statement of policy the board is created and empowered generally to determine if pollution exists, to issue orders requiring the discontinuance of pollution, and to exercise some supervisory authority over sewage works. 19 = 145.1-145.22

5. State Department of Mines and Minerals. Conservation of Oil, Gas, Coal, and Other Surface and Underground Resources. This conservation act of 1941 includes water wells which penetrate the subsurface below the glacial drift. 104 = 63

6. The State Department of Public Health. This Department is required to maintain laboratories for this purpose. 127 = 55.09

B. Powers and Duties of Municipalities, Counties, Townships, and Sanitary Districts

1. Authority of Cities and Villages over Water Generally. 24 = articles 23, 31, 35, 41, 47, 49, 54, 60, 61, 62, 70.1, 74, 75, 76, 77, 78, 79, 80, 81, 82, 84, 85

2. Power of County over Water Supply and Sewage in Subdivisions. The county may prescribe reasonable requirements. 34 = 25.09

3. Authority of County to Cause Removal of Obstructions from Water Courses. "The County boards . . . shall have power to cause the removal of, in such manner as they may direct, the driftwood and

other obstructions from natural watercourses in their respective counties." 34 = 111 (1877)

4. **Prevention of Discharge of Sewage into Waters of a Sanitary District.** Defines "waters," "sewage," "industrial-wastes," "other wastes," and "pollution" and prescribes procedure for determination and order of discontinuance. 42 = 326 bb

C. Laws Creating Public Corporations or Other Legal Entities

1. **Drainage Districts.** The legislature in 1879 passed two laws, the Levee Act and the Farm Drainage Act. These laws, still in force, provide for drainage districts based on a system of assessments which permit districts to include only those lands that are benefited.

The primary purpose of the Levee Act and the Farm Drainage Act is to provide landowners a legal entity or organization which can be used to force unwilling owners into the district and to secure adequate drainage or flood protection for the lands lying within such entity. Although the two acts are distinct, they do not apply to distinct areas or situations, and a group of interested landowners may generally choose the one under which it wishes to petition and organize. About half the five and one-half million acres in drainage districts in Illinois are in levee districts.

2. **Public Water Districts.** This 1945 law enables such districts to organize as public corporations for the purpose of maintaining waterworks and supplying water to the inhabitants of the district. The area must be contiguous and such as will be conducive of the general welfare of the inhabitants. 111⅔ = 188-212

3. **River Conservancy Districts.** In 1925 the Illinois Legislature adopted a law on the organization of districts for the control of river systems. The law states that an area may be organized for these purposes:

Unified control of a river system or of a portion of the system

Sanitation Prevention of stream pollution

Development, conservation, and protection of the water supply

Protection of fish life

Aid to navigation

Promotion of the public health, comfort, and convenience

These purposes were enlarged by a 1951 amendment, and the following were added:

Control or prevention of floods

Reclamation of wet and overflowed lands

Development of irrigation and conservation of soil

Providing domestic, industrial or public water supplies

Sewage and liquid waste collection and disposal

Providing forest, wildlife, park and recreational areas and facilities

The organizational process is commenced by a petition to the county judge by one percent or more of the legal voters residing in the proposed district (if more than one county is involved, the petition goes to the judge in the county containing most of the proposed area).

The area to be included in such a district need not be contiguous, and it need not be confined to territory within one mile of the center line of the main stream.

The board of trustees has broad authority to carry out the purpose of the law, including the levying of a tax, issuance of bonds, adoption of ordinances, acquisition of land (by eminent domain if necessary), building of dams, creation of reservoirs for collection and storage of water, and operation of pumps and pumping stations. Also, it may construct drains, sewers, and similar works by special assessment.

Plans for any work done under this law must first be approved by the State Sanitary Water Board and by the State Department of Public Works and Buildings. 42 = 383-410

4. Soil Conservation Districts. Briefly summarized, soil conservation districts are empowered to do the following:

"(1) To develop comprehensive plans for the conservation of soil resources and for the control and prevention of soil erosion . . .

"(2) To carry out preventive and control measures within the district . . .

"(3) To cooperate, or enter into agreements with other agencies;

"(4) To obtain options upon and to acquire, by purchase, exchange, lease, gift, grant, bequest, devise or otherwise, any property, real or personal, or rights or interests therein necessary for the purpose of the district; . . .

"(5) To make available, on such terms as it shall prescribe, to landowners or occupiers within the district, the use of agricultural and engineering machinery and equipment, and such other material or equipment as will assist such landowners or occupiers to carry on operations upon their lands for the conservation of soil resources and for the prevention and control of soil erosion;

"(6) To construct, improve and maintain such structures as may be necessary for the performance of any of the operations authorized in this Act.

"(7) To accept donations, gifts and contributions in money, services, materials, or otherwise, from the United States, or from this State or any of its agencies, and from any other source;

"(8) To sue and be sued in the name of the district;

"(9) . . . to require contributions in money, services, materials, or otherwise for any operations conferring benefits, and to require landowners to enter into and perform such agreements or covenants as to the permanent use of such lands as will tend to prevent or control erosion therein;"

Besides this enumeration, districts have one additional power of great importance — the power to adopt and enforce land-use regulations. 5 = 106-138.1

5. Surface Water Protection Districts. In 1953 the Illinois General Assembly adopted legislation permitting the organization of special districts to be known as "Surface Water Protection Districts." These districts are empowered to construct and maintain ditches and a wide range of structures regarded as necessary for ". . . the collection of surface waters within the district boundaries, and the subsequent conveyance and disposal of such waters at suitable points of discharge. . . ." These functions are almost identical with those performed by a drainage district, and though this law was apparently adopted with the idea of providing a ready means of protecting a municipality from surrounding surface waters, it does not seem to be so limited.

Organization of a Surface Water Protection District is initiated by a petition to the county court signed by 50 or more legal voters (a majority if there are fewer than 100 in the proposed district). The proposed area must be contiguous and in not more than two counties. It cannot contain territory in another Surface Water Protection District, and must be so situated that the construction and operation of facilities by the district will ". . . conduce to the promotion and protection of the health, safety, welfare and convenience of the public."

Following the petition there is notice, hearing and an election. If a majority of the votes cast at the election favor organization, the county court enters an order organizing the district. Five trustees are then appointed by the county court.

The district may borrow money and issue bonds. The trustees may levy and collect a tax of .125 percent or, if approved at an election, a tax of .25 percent.

There are three apparent and very important differences between these districts and drainage districts — the latter can be organized only on petition of one-half the landowners owning a third of the land (or a third of the owners owning one-half of the land); they can secure funds only by levying a special assessment, and they can include only lands benefited by the drainage works. 42 = 448-471

6. Water Authorities. In 1951, legislation was adopted in Illinois,

making it possible for any contiguous area in the State to organize a "Water Authority," with regulatory power over the use of water within the "authority." However, the law contains an exception of great importance to farm areas: its provisions do not apply ". . . to water used for agricultural purposes, farm irrigation, or water used for domestic purposes where not to exceed four families are supplied by the same well or other immediate source." Such an authority is organized upon petition to the county court by five hundred or more legal voters, followed by an election at which a majority of those voting favor organization of the authority.

Following organization the court appoints three trustees. Among other things, the board of trustees may:

(1) Inspect wells and collect data.

(2) Require registration of withdrawal facilities.

(3) Require permits for additional wells.

(4) Require plugging or repair to prevent contamination or loss of water.

(5) Reasonably regulate the use of water and during periods of actual or threatened shortage set up use priorities.

However, anyone using water at the time the authority is established is permitted to continue taking water at the rated capacity of the equipment he is using at that time. A general tax not to exceed .08 percent may be levied on all property in the authority.

Though this law may appear to have no bearing on the agricultural usage of water, it is important for two reasons: agricultural usage may be vitally affected by other uses subject to control under the law, and the law might conceivably at some future date be broadened to include agricultural usage and irrigation. 111⅔ = 223-232

D. General Provisions

1. Definitions — "Waters of This State." ". . . means the Illinois portion of all boundary lakes and rivers, and all lakes, rivers, streams, ponds and canals within this state." 38 = 433a; 110 = 263a

2. Right of Drainage District to Alter and Improve Watercourses. This right is granted in rather broad terms. 42 = 165, 260

3. Logs of Wells. It is the duty of those who drill wells to file a log of the well with the State Geological Survey. The log must show the character and depth of formations passed through. 104 = 34

4. Regulating and Measuring Water Power or Usage. A law of 1877 provides that persons taking water furnished by a dam may agree on a plan for dividing the water, and construct weirs or other devices to

remove their proportionate parts. When recorded, this agreement is binding on subsequent owner. 92 =12

5. **Corrupting, Poisoning, or Rendering Impure.** Three sections in the Criminal Code either define as a public nuisance or impose penalties for defiling springs, reservoirs, or sources of water; throwing offal or dead animals in streams, ponds, wells, or watercourses, or otherwise corrupting them; and for poisoning sources of water. 38 = 436, 466 (2, 3), 479

6. **Permitting Salt Water, Oil, Gas, or Other Wastes to Escape into Any Underground Fresh Water Supply.** Such is declared to be a public nuisance and penalties are imposed for continuance. 38 = 466 (13)

7. **Depositing Rubbish and Trash Upon Ice of Waters of the State.** Prohibits such and imposes a penalty. 38 = 433a

8. **Obstructing Stream or Watercourse.** Imposes a penalty for willfully and wantonly obstructing the passage of a stream or watercourse. Does not apply to lawful dams and bridges. 38 = 433, 466 (4)

Drainage and levee districts shall not impair the use of harbors or bays in navigable streams. 42 = 36

Summary

Present Illinois water legislation may be said to do three things: empower different state agencies to accomplish a number of specified and varied objectives; authorize the establishment of several kinds of public croporations having something to do with water; and prohibit pollution and obstruction of waters through a variety of laws, some in the Criminal Code, some outside. Taken all together these laws do not provide an adequate approach to the water problem.

In the minds of many people the next legislative step should be a sound and comprehensive water law establishing use priorities and creating an agency with the power essential to properly administer the law.

H. W. Hannah

LIVESTOCK INCOME VARIABILITY

The year-to-year fluctuation in returns of alternative livestock systems may be an important factor in the selection of a livestock system. The importance this aspect takes in relation to the relative *average* profitableness of the various systems will depend largely on the particular operator. For example, some operators who have limited amounts of capital may prefer a more stable, but lower, income. Further, under progressive income tax rates, income after taxes may be greater with a more stable income even though total income before taxes for a period of years is greater with a more variable income. On the other hand, certain operators

do not object to having a more variable income from livestock. This would be true in cases where the operator, because he has other sources of income, can afford fluctuations in livestock income.

Our purpose here is (1) to show the year-to-year variations (1933-52) in income from selected livestock enterprises, (2) to show combinations of livestock enterprises that would have minimized the variability in the period considered, and (3) to suggest important factors associated with the year-to-year income variation. It should be emphasized that our purpose is not to assess the relative profitability of the various livestock enterprises. We merely wish to present comparisons of year-to-year *variability* of returns. Farmers must weigh their preference for stable returns against their ability to produce each class of livestock at a profit.

Using average returns per $100 worth of feed fed[1] as a measure of livestock income, we analyzed the income variability for the 20-year period 1933-52 on the basis of Farm Bureau Farm Management Service records.[2] The average returns per $100 worth of feed fed over the 20-year period are different for each class of livestock.

Dairy cow herds	*Beef cow herds*	*Feeder cattle bought*	*Native sheep raised*	*Feeder sheep bought*	*Hogs*	*Poultry*
$174	$121	$126	$125	$124	$146	$167

This does not mean that a class of livestock with high returns is more profitable. Each class requires a different combination of resources (feed, labor, equipment, etc.). Those livestock enterprises having a low return for each $100 feed fed require relatively small amounts of labor, equipment, and other resources.

One way to look at the fluctuations in income or the "riskiness" of a livestock enterprise is to look at the "odds" of the returns falling below that necessary to pay feed costs. If a livestock enterprise just pays for its feed, it would return $100 for each $100 feed fed. If we base our anticipations of the future on the 20-year period 1933-52, the chances of income falling this low are as follows:

Dairy cow herds	*Beef cow herds*	*Feeder cattle bought*	*Native sheep raised*	*Feeder sheep bought*	*Hogs*	*Poultry*
Less than one in 100	20 out of 100	11 out of 100	20 out of 100	27 out of 100	3 out of 100	2 out of 100

In order to show the effect of combining enterprises on income variability, it is necessary to use an index of variability which will make the different classes of livestock comparable even though they require differ-

[1] Returns per 100 dollars feed fed = (sales + ending inventory — purchases — beginning inventory) ÷ (value of feed fed ÷ 100).

[2] *Illinois Farm Economics,* 217 and 218, 1943, Table 2. July-August 1953.

ent amounts of feed in relation to the other resources. Letting the income variability index of dairy cow herds equal 100, we get the following relative variability in returns from the various enterprises:

Dairy cow herds	*Beef cow herds*	*Feeder cattle bought*	*Native sheep raised*	*Feeder sheep bought*	*Hogs*	*Poultry*
100	188	150	213	289	152	176

In making comparisons it is important to remember that "returns per $100 feed fed" includes inventory changes as well as purchases and sales. Several interesting observations may be noted. The fact that the returns from dairy cow herds is the least variable, agrees with common experience. However, the fact that income from average beef cow herds is more variable than that from the average purchased feeder cattle enterprise may not generally be recognized. Of course, some of the variability stems from the valuation of inventory at the beginning and close of the year. In the beef cow herds this may represent only a "paper" profit or loss.

Next let us consider combinations of livestock enterprises that would have *minimized* income variation over the 20-year period. With a given amount of feed, Table 1 shows the allocation of the feed necessary to achieve the minimum fluctuation of income. For example, with a "beef cow herd" and "hogs," the combination necessary to minimize income variability would be to allot 37 percent (read across the "beef cow herd" row to the "hog" column) of the feed to the beef cow herd and 63 percent (read down the "hog" column to the "beef cow herd" row) to the hog enterprise. Some combinations do not reduce income variability. For example, adding "native sheep raised" did not reduce the income variability of "dairy cow herds;" hence we feed 100 percent of the feed to the dairy cows.

Table 2 shows how much the variability of income would have been reduced during this period by diversification as specified in Table 1. Reading across the first row (dairy cow herds), we can see that the best enterprise to combine with dairy cows to decrease income variability during this period was poultry (reduce from 100 to 86). By referring back to Table 1, we see that this combination would require that 25 percent of the total value of feed fed go to poultry.

Another question we might ask is: How good were hogs in reducing income variability from purchased feeder cattle? These figures show that combining hogs and purchased feeder cattle reduced the income variability index from 150 to 127. In addition hogs salvage waste feed from the feeder cattle enterprise. Hogs were superior to beef cow herds, native sheep raised and feeder sheep bought in reducing variability of income from feeder cattle.

TABLE 1. — PERCENTAGE OF FEED FED TO EACH CLASS OF LIVESTOCK TO MINIMIZE INCOME VARIABILITY. FARM BUREAU FARM MANAGEMENT SERVICE, 1933-52

	Beef cow herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry
Dairy cow herds	0% 100%	24% 76%	0% 100%	7% 93%	14% 86%	25% 75%
Beef cow herds		90% 10%	12% 88%	19% 81%	63% 37%	53% 47%
Feeder cattle bought			9% 91%	0% 100%	49% 51%	43% 57%
Native sheep raised				29% 71%	69% 31%	59% 41%
Feeder sheep bought					100% 0%	79% 21%
Hogs						38% 62%

Finally, some of the likely sources of the year-to-year variation of returns to each class of livestock are of interest. In this analysis we used two factors to account for the variability in returns: (1) a price movement factor and (2) a product-feed price ratio factor. The first factor reflects the change in price level during the year. Assuming that these price changes in turn affect inventory values for the same animals, this factor would indicate only "paper" profits and losses. On the other hand, where animals are actually bought and sold during the year, the change in price level takes on considerable importance. The product-feed price ratio factor indicates the profitability of the actual production process during the year.

TABLE 2. — RELATIVE VARIABILITY OF ANNUAL AVERAGE RETURN PER $100 FEED FED. FARM BUREAU FARM MANAGEMENT SERVICE, 1933-52. (DAIRY COW HERDS = 100)

	Dairy cow herds	Beef cow herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry
Dairy cow herds	100	100	93	100	98	98	86
Beef cow herds	..	188	150	188	180	129	105
Feeder cattle bought	..	...	150	150	150	127	112
Native sheep raised	...	...	...	213	195	131	129
Feeder sheep bought	..	..	...	..	289	152	164
Hogs	...	...	...	..	...	152	137
Poultry	...	...	...	...	..	...	176

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Robert W. Hudelson
Director, Extension Service
in Agriculture and Home Economics

FREE — Cooperative Agricultural Extension
Work. Acts of May 8 and June 30, 1914

Ill. 8900, 5-54—10,000
Permit No. 1247

TABLE 3. — PERCENT OF LIVESTOCK INCOME VARIATION ASSOCIATED WITH PRICE MOVEMENT AND PRODUCT-FEED PRICE RATIO FACTORS. FARM BUREAU FARM MANAGEMENT SERVICE 1933-52[a]

Enterprise	Price movement factor	Product-feed price ratio factor	Total (R^2)
	(percent)	(percent)	(percent)
Dairy cow herds	1	38 (milk/feed)	39
Beef cow herds	14	53 (beef/hay and grain)	67
Feeder cattle bought	44	13 (beef/hay and grain)	58
Native sheep raised	26	19 (lamb/hay and grain)	45
Feeder sheep bought	44	1 (lamb/hay and grain)	45
Hogs	18	65 (hog/corn)	83
Poultry	1	27 (egg/feed)	28

[a] For methods of computation see Ezekiel, Mordecai. Methods of Correlation Analysis. Wiley and Sons, New York. Second edition, 1950. pp. 498-500.

Table 3 shows the relative importance of these two factors in determining the variation in returns per $100 worth of feed fed in each of the livestock classes. The very minor effect of the price movement factor in dairy and poultry may reflect, in part, the tendency of inventory values in dairy herds and poultry flocks to remain the same. The two beef enterprises present an interesting contrast. These data indicate that beef price changes during the year are much more important in affecting returns per $100 worth of feed fed to feeder cattle than the beef/feed price ratio. The reverse is, however, true for beef cow herds. Again this possibly reflects the method of inventory: inventory values of recently purchased animals (feeders) are more likely to correspond with current market prices than are values of breeding animals.

EARL R. SWANSON

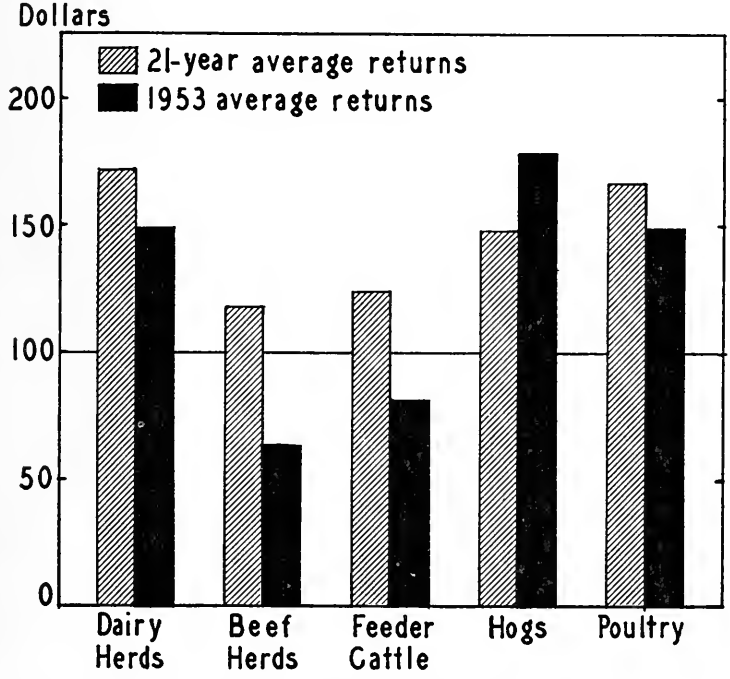
Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. R. R. HUDELSON, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | November, 1954 | Number 221

Summary of Annual Farm Business Reports on Illinois Farms For the Year 1953



Returns per $100 Feed Fed to Livestock, Twenty-one-Year Average Returns and Returns in 1953

Annual returns from livestock enterprises vary with feed-product price ratios. Also, different livestock enterprises require varying proportions of feed, labor and capital inputs. In order to pay market prices for all inputs, annual returns should approximate the 21-year average returns. Net farm earnings for different systems of farming in 1953 were influenced by these margins from livestock feeding operations.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

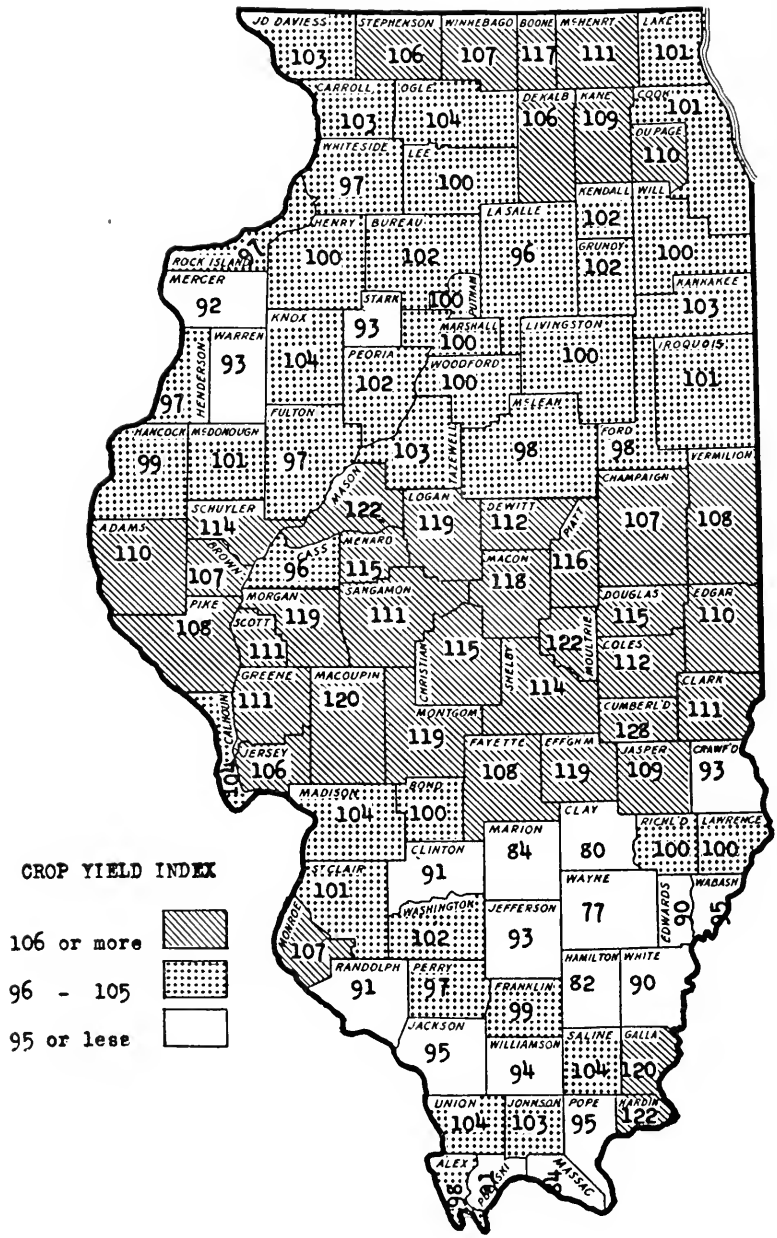


FIG. 1. CROP YIELDS FOR 1953 COMPARED WITH 10-YEAR (1941-1950) AVERAGE YIELDS FOR THE SAME COUNTY. THE INDEXES ARE BASED ON COUNTY YIELDS OF CORN, OATS, WHEAT, AND SOYBEANS. (Data from Illinois Cooperative Reporting Service.)

SUMMARY OF FARM BUSINESS RECORDS ON ILLINOIS FARMS FOR 1953

A. G. Mueller

Returns to capital and management. The returns to capital and management on Illinois farms dropped in 1953 on grain and dairy farms but increased on hog farms. Returns to capital and management as used here include net cash income, inventory, and capital change and farm products consumed less a charge for the family and operator's labor.

The drop in returns to capital and management on 180-259 acre grain and dairy farms in northern Illinois from 1952 to 1953 was 12 percent on grain farms and 8 percent on dairy farms (Table 1). Increases in operating costs and lower grain and dairy prices contributed to this decline in income.

The increase in returns to capital and management on 180-259 acre hog farms from 1952 to 1953 was 67 percent. This higher percentage increase reflects in part the low level of income on hog farms in 1952, and the favorable corn-hog ratio in 1953. Compared to the earnings of the past six years, 1953 returns to capital and management were up 7 percent for hog farms, and down 25 percent and 23 percent respectively for grain and dairy farms.

Effect of price levels on earnings. In 1953, prices received by Illinois farmers dropped with grain and the average of all livestock prices dropping about the same amount. Prices paid by all farmers decreased also but the decline was less than for prices received. In 1953 the ratio of prices received by Illinois farmers to prices paid for supplies was 95 percent of the 1910-1914 base. This ratio was 101 in 1952. The index of prices paid dropped from 287 to 279, while the index of Illinois farm prices decreased from 290 to 264.

Crop yields in Illinois. Crop yields in 1953 were four percent above the 1941-1950 average, but lower than average yields for the three years 1950-1952 (Figure 1). Two areas of the state had yields five percent or more below the 1941-1950 average; three counties in northwestern Illinois where oats yields were low; and 16 counties in the southern one-third of the state. A belt of counties across the central section of the state had average yields well above the ten-year average.

The state average corn yield of 54 bushels per acre was four bushels below the 1952 estimate, but three bushels above the ten-year average. The state average wheat yield of 27 bushels per acre was the highest for a number of years. High wheat yields in the southern part of the state partly offset the lower corn and soybean yields resulting from drought.

TABLE 1. — SELECTED TOTAL FARM ITEMS ON FARMS 180 TO 259 ACRES IN SIZE; 1948-1953

Grain Farms

Items	1948	1949	1950	1951	1952	1953
Number of farms	164	123	129	118	105	112
Size of farm	224	223	223	223	224	223
Soil productivity rating	81	80	81	80	82	83
Total cash income	$16 904	$17 296	$17 090	$17 814	$18 529	$17 537
Total cash expenses	10 388	10 027	10 207	10 550	11 321	10 081
Net cash income	6 516	7 269	6 883	7 264	7 208	7 456
Inventory and capital change	2 339	−335	3 477	4 352	868	−151
Farm products consumed	412	377	312	343	276	268
Returns to unpaid labor, cap. and mgt.	9 267	7 311	10 672	11 959	8 352	7 573
Returns to capital and management	7 315	5 315	8 720	9 771	6 021	5 307
Power and machinery cost	$ 2 734	$ 2 812	$ 2 974	$ 3 191	$ 3 374	$ 3 508
Labor cost	2 579	2 530	2 518	2 677	2 651	2 578
Building and fence cost	653	765	740	738	799	807
Soil fertility cost	425	452	475	588	905	1 110
Capital purchases	3 116	3 011	2 996	2 684	3 533	2 702

Hog Farms

Items	1948	1949	1950	1951	1952	1953
Number of farms	214	130	141	169	157	125
Size of farm	219	219	220	219	219	220
Soil productivity rating	76	72	75	74	75	75
Total cash income	$24 140	$21 433	$24 011	$26 889	$26 849	$28 463
Total cash expense	16 509	14 994	18 156	21 043	20 060	17 600
Net cash income	7 631	6 439	5 855	5 846	6 789	10 861
Inventory and capital change	1 695	−221	6 260	5 193	58	−857
Farm products consumed	470	392	428	472	388	351
Returns to unpaid labor, cap. and mgt.	9 796	6 610	12 543	11 511	7 235	10 355
Returns to capital and management	7 720	4 439	10 382	9 121	4 692	7 853
Power and machinery cost	$ 3 030	$ 3 129	$ 3 391	$ 3 687	$ 3 858	$ 4 088
Labor cost	3 053	3 055	3 026	3 197	3 433	3 280
Building and fence cost	932	891	928	1 028	1 094	1 127
Soil fertility cost	401	408	389	457	666	905
Capital purchases	3 642	3 263	3 225	3 846	2 903	2 987

Dairy Farms

Items	1948	1949	1950	1951	1952	1953
Number of farms	71	57	51	40	47	61
Size of farm	214	216	214	219	216	215
Soil productivity rating	67	65	63	64	65	67
Total cash income	$19 680	$18 244	$17 191	$21 221	$18 179	$19 557
Total cash expenses	13 517	13 397	12 089	13 882	12 993	14 068
Net cash income	6 163	4 847	5 102	7 339	5 186	5 489
Inventory and capital change	929	1 061	2 128	2 367	1 408	792
Farm products consumed	499	427	380	474	397	432
Returns to unpaid labor, cap. and mgt.	7 591	6 335	7 610	10 180	6 991	6 713
Returns to capital and management	5 360	3 868	5 345	7 821	4 285	3 939
Power and machinery cost	$ 3 233	$ 3 351	$ 3 358	$ 3 880	$ 3 903	$ 4 045
Labor cost	3 507	3 582	3 396	3 501	3 697	3 854
Building and fence cost	1 017	1 062	1 055	1 124	990	1 335
Soil fertility cost	391	431	390	465	626	719
Capital purchases	3 763	3 529	2 906	3 343	3 194	3 843

Uses for data from farm accounting farms. Account-keeping farms are in general much larger than the average size of farm in the state and generally are located on better quality soils. Hence, farm or per-acre averages should not be interpreted as representative of all farms. However, farm record data are valuable for many uses. Year-to-year changes in patterns of farm costs and income can be accurately measured by use of selected groups of farms such as in Table 1. Previous studies indicate

that managerial ability of the farm operator, size of farm, quality of soil, cost-price relationships and weather are some of the major factors influencing the level of farm earnings from farm to farm. By grouping farm records according to size of farm, soil quality, and type of farm it is possible to control the effect of several of the above factors. For example, the corn-hog ratio can affect farm earnings but by separating hog and grain farms the same cost-price relationship may affect farm earnings in a different way for each type of farm. Thus, the classification by type of farm will improve farm record data for purposes of comparing earnings and costs on a particular farm.

Returns from livestock. Table 2 presents the returns per $100 feed fed to livestock on Illinois farms for the past 21 years. Since feed represents the major cost item in livestock production, the returns are expressed as a ratio to feed cost. The difference between $100 of feed and the return figure is the margin available to pay for labor, equipment, supplies and profits. Different livestock enterprises require different margins to cover these other costs. Labor and equipment costs are high relative to feed for dairy and poultry enterprises, and low for hogs and feeder cattle. In using Table 2, comparisons should be made with the 21-year average or to a break-even standard in order to appraise the profitableness of any class of livestock in a particular year.

TABLE 2. — RETURNS PER $100 FEED FED TO DIFFERENT CLASSES OF LIVESTOCK

Year	Beef cow herds	Dairy cow herds	Dual purpose herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry	Yearly price of corn
1933	$ 90	$152	$112	$ 97	$...	$...	$128	$217	$ .32
1934	84	145	118	125	...	...	127	198	.58
1935	110	143	141	152	93	163	174	211	.74
1936	85	150	109	96	109	101	155	180	.73
1937	99	159	116	106	123	50	122	157	.91
1938	119	193	151	142	98	153	184	208	.45
1939	146	204	162	131	136	136	144	195	.43
1940	134	198	173	136	142	149	118	177	.54
1941	136	212	162	124	160	122	193	202	.63
1942	127	176	151	136	131	147	201	187	.77
1943	108	160	118	105	93	108	136	169	.97
1944	94	166	120	107	88	136	125	140	1.07
1945	110	174	128	119	117	120	138	159	1.07
1946	130	183	148	135	138	194	154	141	1.39
1947	130	162	147	138	130	131	150	117	1.90
1948	143	183	152	137	138	79	131	137	1.89
1949	132	175	137	136	142	104	144	161	1.16
1950	169	173	173	170	177	182	152	122	1.35
1951	170	187	163	142	171	111	127	137	1.66
1952	99	175	120	86	67	44	116	116	1.65
1953	64	147	71	81	84	113	178	148	1.44
21-year average	118	172	137	124	123[a]	123[a]	147	166	1.03

[a] Average of 19 years only.

Livestock enterprises. The livestock enterprise data taken from farm records in Tables 3 through 7 provide accurate data on rates of

TABLE 3. — DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$170-199	$90-119
Number of farms	400	87	87
Number of cows in herd	17.1	19.6	14.4
Number of milk cows	16.6	19.4	13.8
Percent of milk cows dry	18	16	21
Total animal units in herd	26.0	29.5	22.3
Pounds of beef produced	8 595	10 089	7 548
Total returns from cattle	$6 104	$8 428	$4 032
Value of feed fed to cattle	4 140	4 595	3 732
Returns per $100 feed fed	147	183	108
Returns above feed per milk cow	118	198	22
Total pounds of milk produced	139 006	180 831	101 175
Pounds of milk per milk cow	8 374	9 321	7 332
Pounds of butterfat per milk cow	318	364	278
Pounds of beef per cow in herd	503	515	524
Weight of death loss: pounds	608	848	693
Percent death loss by weight	7.1	8.4	9.2
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.40	$16.31	$21.13
Prices received for each:			
100 lbs. milk produced	3.93	4.08	3.66
100 lbs. cattle sold	14.22	14.52	13.52
Lbs. feed per unit of milk and beef			
Grain	208	196	255
Protein and mineral feeds	58	52	54
Total concentrates	266	248	309
Hay and dry roughage	462	398	564
Hay silage	183	261	114
Corn and other silage	403	269	439
Pasture (pasture days)	17	15	20
Pasture days per animal unit	148	146	157

TABLE 4. — BEEF CATTLE ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$80-119	$0-39
Number of farms	224	52	55
Number of cows in herd	19.3	21.8	17.4
Number of milk cows	.5	.5	.4
Total animal units in herd	31.3	33.9	28.5
Pounds of beef produced	15 347	18 060	12 703
Total returns from cattle	$1 871	$2 982	$644
Value of feed fed to cattle	2 941	3 086	2 698
Returns per $100 feed fed	64	97	24
Total pounds of milk produced	2 666	2 364	1 955
Pounds of milk per milk cow	5 333	4 728	4 888
Pounds of beef per cow in herd	795	828	730
Weight of death loss: pounds	633	607	679
Percent of weight produced	4.1	3.4	5.3
Feed cost per unit (1000 lbs. milk or 100 lbs. beef)	$18.84	$16.87	$20.92
Prices received for each:			
100 lbs. milk produced	3.31	3.44	3.18
100 lbs. cattle sold	19.36	20.42	17.16
Lbs. feed per unit of milk and beef			
Grain	237	232	245
Protein and mineral feeds	21	19	21
Total concentrates	258	251	266
Hay and dry roughage	547	503	603
Hay silage	87	21	80
Corn and other silage	118	104	113
Pasture (pasture days)	38	35	40
Pasture days per animal unit	188	190	183

TABLE 5. — HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$200-229	$130-159
Number of farms	612	110	113
Pounds of pork produced	50 161	46 076	41 288
Total returns from hogs	$11 268	$10 561	$9 036
Total value of feed fed	6 325	4 967	6 140
Returns per $100 feed fed	178	213	147
Returns above feed per litter	154	200	103
Number of litters farrowed	32	28	28
Number of pigs weaned	217	199	180
Pigs weaned per litter	6.8	7.1	6.4
Number that died after weaning	10	7	10
Weight of death loss: pounds	865	638	812
Percent of weight produced	1.7	1.4	2.0
Average weight per hog sold	234	232	233
Average price received	$21.26	$21.39	$21.14
Feed cost per 100 lbs. produced	12.61	10.78	14.87
Lbs. feed per 100 lbs. produced			
Grain	373	317	449
Protein and mineral feeds	48	42	53
Total concentrates	421	359	502
Hay	3.2	2.5	2.4
Pasture (pasture days)	2.0	1.7	2.2

TABLE 6. — POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER $100 FEED FED

Items	All farms	Returns per $100 feed fed	
		$170-199	$100-129
Number of farms	376	72	75
Weight of poultry produced	1 755	2 077	1 824
Total returns from poultry	$1 935	$2 850	$1 719
Total value of feed fed	1 304	1 573	1 446
Returns per $100 feed fed	148	181	119
Returns above feed cost per hen	2.56	4.04	1.12
Average number of hens	246	316	244
Eggs produced per hen	188	216	175
Percent production	52	59	48
Hens in Oct., Nov., Dec.	298	371	327
Percent production in Oct., Nov., Dec.	57	65	54
Feed Req. Units (1 doz. eggs or 1.5 lbs. wt. produced)	5 033	7 086	4 773
Feed cost per unit	$ .26	$ .22	$ .30
Pounds concentrates per unit	7.2	6.2	8.2
Weight of poultry sold	1 226	1 474	1 159
Average price per pound	$ .21	$ .21	$ .22
Price per dozen eggs sold	.46	.47	.45

TABLE 7. — SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms	246	37
Pounds wool and mutton produced	3 652	14 067
Total returns from sheep	$510	$2 552
Total value of feed fed	606	2 267
Returns per $100 feed fed	84	113
Weight of death loss: pounds	606	2 228
Percent of total production	16.6	15.8
Feed cost per cwt. produced	$16.59	$16.12
Price received per cwt.	19.59	20.04
Price paid for sheep bought	17.64	17.64
Lbs. feed per cwt. produced:		
Concentrates	174	441
Hay	491	260
Silage	52	..
Pasture (pasture days)	51	22

production and feed requirements for various kinds of livestock. These data can provide reasonable performance standards for livestock enterprises on all farms. The size of the enterprise given in these tables should not be considered as typical since very small enterprises are intentionally omitted to improve the accuracy of the data. Tables 3, 4, 5, and 6 present different levels in the returns per $100 feed fed and an average of all records. Comparisons of groups of farms with high and low returns per $100 feed fed will indicate the phases of various enterprises that contribute to high or low returns in livestock production.

Grouping of Farm Bureau Farm Management Service records. Data presented in the following tables (Tables 8-14) were taken from Farm Bureau Farm Management Service records. These records were grouped into two areas. Northern Illinois included Adams, Brown, Coles, Edgar, Macon, Morgan, Moultrie, Sangamon, and all counties to the north. Southern Illinois included Bond, Calhoun, Christian, Clark, Clay, Clinton, Crawford, Cumberland, Effingham, Fayette, Greene, Jackson, Jasper, Jersey, Lawrence, Macoupin, Madison, Marion, Monroe, Montgomery, Perry, Pike, Randolph, Richland, Scott, Shelby, St. Clair, Wabash, and Washington counties.

In each of these areas, records were grouped by size and type of farm. Adequate numbers of grain, hog and dairy farm records in northern Illinois were obtained to permit a further grouping by soil productivity rating.

The method of classifying farms by type was based on the value of feed fed and the feed and grain returns. Farms were classified as grain farms if the total feed input was less than one-half of the value of feed and grain returns. The livestock farms were classified as hog or beef cattle farms if those enterprises received one-half or more of the total feed input; as dairy or poultry farms if these enterprises received one-third or more of the total feed input; as mixed livestock farms if none of the requirements were met.

TABLE 8. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF BEEF CATTLE FARMS IN NORTHERN ILLINOIS, 1953

Range in size (total acres) / Number of farms		Under 180 / 70	180-259 / 121	260-339 / 87	340-499 / 76
Average size of farm	1	151	221	301	408
Acres of tillable land	2	136	198	267	332
Soil rating on improved land	3	78	77	78	75
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	1.7	1.4	.9	3.7
Average number of hens	5	68	98	97	67
Average number of milk cows	6	.9	1.4	1.8	2.1
Animal units of "other" cattle	7	43.2	62.3	87.3	97.1
Number of litters farrowed	8	16	19	23	24
Total amounts of feed fed:					
Corn, bushels	9	4 676	6 536	9 136	9 031
Oats, bushels	10	886	1 190	1 636	1 823
Silage, tons	11	60.6	86.8	131.4	164.1
Hay, tons	12	47.7	61.1	77.7	88.5
Pasture, days	13	4 566	6 058	7 899	11 659
Supplement, pounds	14	33 670	45 533	61 898	56 348
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 603	$ 783	$ 1 137	$ 1 640
Buildings and fence	16	970	1 395	1 659	1 924
Machinery and equipment	17	3 152	4 193	5 139	6 200
Labor	18	2 679	3 248	4 273	5 048
Taxes	19	706	916	1 243	1 563
Seed and crop expense	20	456	614	817	954
Livestock and miscellaneous expense	21	340	461	523	584
Capital charge (4 and 5 percent)	22	3 707	5 240	7 127	8 294
Total non-feed input	23	(12 613)	(16 850)	(21 918)	(26 207)
Total feed input	24	11 288	15 523	21 423	22 203
Total farm inputs	25	$23 901	$32 373	$43 341	$48 410
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 397	$ 662	$ 755	$ 713
Feed and grain returns	27	9 695	13 299	18 179	21 160
All livestock returns	28	12 790	17 976	23 643	24 412
Total farm returns	29	$22 882	$31 937	$42 577	$46 285
Net management returns	30	−1 019	−436	−764	−2 125
Total returns per acre	31	151.54	144.51	141.45	113.44
Total inputs per acre	32	158.28	146.48	143.99	118.65
Net management returns per acre	33	−6.74	−1.97	−2.54	−5.21
Net cash income (cash balance)	34	7 833	12 136	18 779	19 923
Inventory and capital change	35	−3 110	−5 354	−10 219	−11 610
Farm products consumed	36	293	366	408	447
Less unpaid labor	37	2 329	2 345	2 604	2 592
Capital and management	38	2 687	4 804	6 363	6 168
Capital and management per acre	39	17.79	21.74	21.14	15.12
Operator's labor and management	40	1 024	1 617	1 274	−38
Value of land (current basis)	41	45 098	65 030	90 110	109 924
Total capital investment	42	83 155	117 795	160 574	187 725
Total capital investment per acre	43	550.70	553.01	533.47	460.11
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 329	$ 2 345	$ 2 604	$ 2 592
Hired labor cost	45	350	903	1 669	2 456
Total months of labor	46	14.9	17.6	22.3	26.7
Labor cost per crop acre	47	23.44	19.72	19.14	18.49
Machinery repairs, supplies, etc.	48	633	889	1 047	1 446
Machinery hire	49	325	379	487	523
Gasoline and oil	50	550	795	1 004	1 296
Total auto cost (farm share)	51	416	432	477	470
Machinery and equipment cost per crop acre	52	27.58	25.46	23.02	22.71
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	44.9	45.0	45.6	43.0
Soybeans	54	3.4	2.9	2.4	4.7
Small grains	55	22.7	23.5	23.4	22.4
All hay and pasture crops	56	28.6	28.4	27.3	29.1
Feed and grain returns per tillable acre	57	70.84	66.59	67.52	62.57
Feed fed per tillable acre	58	83.00	78.40	80.24	66.88
Corn yield, bushels per acre	59	73.5	70.4	72.2	67.9
Soybean yield, bushels per acre	60	24.5	24.7	27.1	24.1
Oats yield, bushels per acre	61	49.5	48.6	48.0	45.8
Wheat yield, bushels per acre	62	37.7	34.1	33.1	35.1

TABLE 9. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF HOG FARMS IN SOUTHERN ILLINOIS, 1953

Range in size (total acres) / Soil rating / Number of farms		Under 180 / 25	180-259 / 28	260-339 / 21	340-499 / 12
Average size of farm	1	147	224	297	395
Acres of tillable land	2	118	179	238	302
Soil rating on improved land	3	44	38	39	42
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	1.9	.6	1.2	2.6
Average number of hens	5	134	128	137	141
Average number of milk cows	6	1.5	3.1	2.8	2.5
Animal units of "other" cattle	7	6.3	15.4	23.2	29.7
Number of litters farrowed	8	22	23	30	41
Total amounts of feed fed:					
Corn, bushels	9	2 361	2 998	4 093	5 854
Oats, bushels	10	398	291	389	450
Silage, tons	11	7.6	28.7	27.6	26.8
Hay, tons	12	17.4	29.8	36.7	63.0
Pasture, days	13	2 627	3 899	5 052	7 278
Supplement, pounds	14	30 395	30 121	40 658	57 082
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 787	$ 1 129	$ 1 484	$ 2 556
Buildings and fence	16	659	662	861	1 145
Machinery and equipment	17	2 677	3 113	3 958	5 911
Labor	18	2 444	2 967	3 299	4 194
Taxes	19	443	502	696	876
Seed and crop expense	20	296	489	553	753
Livestock and miscellaneous expense	21	301	244	434	495
Capital charge (4 and 5 percent)	22	1 760	2 385	3 070	4 173
Total non-feed input	23	(9 367)	(11 491)	(14 355)	(20 103)
Total feed input	24	6 202	7 767	10 269	14 860
Total farm inputs	25	$15 569	$19 258	$24 624	$34 963
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 521	$ 611	$ 572	$ 900
Feed and grain returns	27	6 231	8 239	11 139	17 074
All livestock returns	28	9 889	11 725	16 049	22 061
Total farm returns	29	$16 641	$20 575	$27 760	$40 035
Net management returns	30	1 072	1 317	3 136	5 072
Total returns per acre	31	113.20	91.85	93.47	101.35
Total inputs per acre	32	105.91	85.97	82.91	88.51
Net management returns per acre	33	7.29	5.88	10.56	12.84
Net cash income (cash balance)	34	3 357	6 262	6 532	11 774
Inventory and capital change	35	1 318	−507	1 767	−568
Farm products consumed	36	345	419	478	494
Less unpaid labor	37	2 188	2 472	2 571	2 455
Capital and management	38	2 832	3 702	6 206	9 245
Capital and management per acre	39	19.26	16.52	20.90	23.40
Operator's labor and management	40	2 939	3 218	5 059	6 993
Value of land (current basis)	41	22 527	31 889	43 030	56 992
Total capital investment	42	39 704	54 111	70 014	94 856
Total capital investment per acre	43	270.10	241.57	235.74	240.14
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 188	$ 2 472	$ 2 571	$ 2 455
Hired labor cost	45	256	495	728	1 739
Total months of labor	46	15.3	17.9	21.0	25.3
Labor cost per crop acre	47	24.37	20.70	17.62	16.72
Machinery repairs, supplies, etc.	48	518	630	948	1 532
Machinery hire	49	242	320	305	256
Gasoline and oil	50	475	616	821	1 297
Total auto cost (farm share)	51	295	423	334	587
Machinery and equipment cost per crop acre	52	26.69	21.72	21.14	23.57
LAND USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	33.7	29.5	32.7	36.5
Soybeans	54	14.3	16.4	16.5	17.4
Small grains	55	27.1	25.3	21.1	20.2
All hay and pasture crops	56	22.2	27.9	28.3	25.6
Feed and grain returns per tillable acre	57	52.17	45.40	46.18	55.93
Feed fed per tillable acre	58	52.56	43.39	43.15	49.20
Corn yield, bushels per acre	59	52.9	49.9	55.0	59.0
Soybean yield, bushels per acre	60	20.7	17.9	18.2	21.1
Oats yield, bushels per acre	61	39.1	32.2	35.2	42.7
Wheat yield, bushels per acre	62	30.2	29.8	29.2	29.8

TABLE 10. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF HOG FARMS IN NORTHERN ILLINOIS, 1953

	Under 180 78	180-259 74	260-339 39	340-499 26	Under 180 37	180-259 44	260-339 33	340-499 33
1	145	219	295	390	143	223	298	398
2	132	197	265	323	122	185	233	335
3	84	83	83	82	67	68	69	68
4	7.9	1.5	1.0	1.6	1.1	1.9	2.4	4.1
5	120	83	92	56	74	86	94	67
6	3.0	2.2	2.1	2.5	2.8	4.7	4.1	2.4
7	14.1	22.7	35.5	43.3	11.2	24.8	30.0	35.1
8	38	49	57	66	34	45	49	72
9	4 475	6 091	7 412	8 962	4 068	5 956	6 210	9 596
10	1 240	1 511	1 133	1 778	1 015	1 163	1 466	1 805
11	5.5	16.0	28.7	12.1	12.5	29.0	22.1	38.8
12	35.6	38.0	50.5	60.5	32.1	42.8	57.6	68.7
13	4 160	5 670	7 402	9 698	3 630	6 294	7 659	9 859
14	41 651	48 866	60 226	65 140	35 159	45 610	57 566	82 953
15	$ 650	$ 966	$ 1 260	$ 1 313	$ 576	$ 851	$ 993	$ 1 819
16	996	1 161	1 251	1 777	838	1 152	1 363	1 608
17	3 188	4 275	4 980	5 659	2 748	3 956	4 605	5 957
18	2 676	3 263	3 935	5 399	2 492	3 366	3 835	4 836
19	659	914	1 146	1 563	545	807	971	1 490
20	445	630	740	855	383	580	695	918
21	529	605	633	836	409	586	803	829
22	3 358	4 809	6 450	7 697	2 681	4 004	5 066	6 522
23	(12 501)	(16 623)	(20 395)	(25 099)	(10 672)	(15 302)	(18 331)	(23 979)
24	11 067	14 302	17 271	20 386	9 962	14 107	15 856	22 841
25	$23 568	$30 925	$37 666	$45 485	$20 634	$29 409	$34 187	$46 820
26	$ 433	$ 498	$ 615	$ 584	$ 432	$ 414	$ 546	$ 561
27	8 611	12 888	16 968	20 468	6 847	10 704	13 771	18 268
28	16 802	21 375	25 774	31 038	15 130	21 393	23 482	34 129
29	$25 846	$34 761	$43 357	$52 090	$22 409	$32 511	$37 799	$52 958
30	2 278	3 836	5 691	6 605	1 775	3 102	3 612	6 138
31	178.25	158.73	146.97	133.56	156.71	145.79	126.84	133.06
32	162.54	141.21	127.68	116.63	144.29	131.88	114.72	117.64
33	15.71	17.52	19.29	16.93	12.42	13.91	12.12	15.42
34	8 228	11 853	15 683	19 931	6 714	9 629	12 357	14 820
35	−495	−1 070	−1 362	−3 494	−275	−338	−1 401	416
36	314	346	348	426	264	349	367	391
37	2 411	2 483	2 528	2 561	2 247	2 536	2 644	2 967
38	5 636	8 646	12 141	14 302	4 456	7 104	8 679	12 660
39	38.87	39.48	41.16	36.67	31.16	31.86	29.12	31.81
40	4 349	5 840	7 737	8 631	3 801	5 130	5 712	8 156
41	47 328	70 135	94 866	116 089	35 055	52 590	70 583	95 839
42	76 622	110 841	147 976	177 166	60 632	90 595	115 445	149 610
43	528.43	506.12	501.52	454.27	424.00	406.26	387.40	375.90
44	$ 2 411	$ 2 483	$ 2 528	$ 2 561	$ 2 247	$ 2 536	$ 2 644	$ 2 967
45	265	780	1 407	2 838	245	830	1 191	1 869
46	15.3	18.1	21.4	28.0	14.3	18.9	21.6	26.7
47	24.73	19.85	18.11	20.14	24.75	22.13	19.01	17.80
48	710	922	1 189	1 395	590	867	1 112	1 473
49	306	464	485	529	287	419	506	574
50	551	789	998	1 215	530	757	883	1 222
51	398	468	480	434	342	357	361	501
52	29.46	26.00	22.92	21.12	27.29	26.01	22.83	21.92
53	45.7	47.3	47.4	46.5	43.0	45.5	45.3	45.3
54	2.6	5.5	5.0	5.2	2.7	3.9	3.7	5.0
55	24.2	22.7	21.3	22.9	25.0	22.7	25.8	21.6
56	27.6	24.5	26.0	24.8	28.9	28.0	23.7	26.7
57	64.81	65.04	63.58	62.36	55.48	56.83	57.66	53.79
58	83.84	72.60	65.17	63.11	81.66	76.25	68.05	68.18
59	71.8	68.8	66.7	69.7	64.8	63.8	61.5	57.7
60	27.7	29.3	27.4	26.8	24.5	22.4	21.3	27.0
61	46.9	44.6	44.9	44.7	40.4	39.2	39.0	39.5
62	32.2	37.0	36.8	40.5	22.6	33.9	32.4	31.7

TABLE 11. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE GROUPS OF GRAIN FARMS IN SOUTHERN ILLINOIS, 1953

Range in size (total acres)		Under 180	180-259	260-339	340-499
Soil rating					
Number of farms		10	26	40	30
Average size of farm	1	147	223	299	411
Acres of tillable land	2	133	191	265	331
Soil rating on improved land	3	44	45	41	36
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	1.9	.5	4.0	1.6
Average number of hens	5	70	118	118	145
Average number of milk cows	6	1.8	1.9	1.6	1.8
Animal units of "other" cattle	7	5.6	8.8	12.3	20.6
Number of litters farrowed	8	4	4	8	5
Total amounts of feed fed:					
Corn, bushels	9	708	977	1 273	1 346
Oats, bushels	10	128	153	167	196
Silage, tons	11	6.3	10.3	10.2	24.1
Hay, tons	12	15.4	15.7	22.4	34.7
Pasture, days	13	1 481	1 840	2 720	3 543
Supplement, pounds	14	9 176	12 050	15 307	15 745
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 860	$ 916	$ 1 513	$ 1 936
Buildings and fence	16	521	537	693	808
Machinery and equipment	17	2 993	3 332	4 006	4 729
Labor	18	2 127	2 482	2 911	3 359
Taxes	19	547	587	740	870
Seed and crop expense	20	444	479	650	759
Livestock and miscellaneous expense	21	227	192	209	197
Capital charge (4 and 5 percent)	22	1 759	2 512	3 189	3 781
Total non-feed input	23	(9 478)	(11 037)	(13 911)	(16 439)
Total feed input	24	2 318	2 954	3 794	4 457
Total farm inputs	25	$11 796	$13 991	$17 705	$20 896
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 868	$ 448	$ 522	$ 558
Feed and grain returns	27	7 656	11 446	14 256	15 803
All livestock returns	28	2 965	3 614	4 926	5 053
Total farm returns	29	$11 489	$15 508	$19 704	$21 414
Net management returns	30	−307	1 517	1 999	518
Total returns per acre	31	78.16	69.54	65.90	52.10
Total inputs per acre	32	80.24	62.74	59.21	50.84
Net management returns per acre	33	−2.08	6.80	6.69	1.26
Net cash income (cash balance)	34	3 606	5 851	7 327	6 599
Inventory and capital change	35	−375	−59	−189	−196
Farm products consumed	36	301	304	288	345
Less unpaid labor	37	2 080	2 067	2 238	2 448
Capital and management	38	1 452	4 029	5 188	4 300
Capital and management per acre	39	9.88	18.07	17.35	10.46
Operator's labor and management	40	1 437	3 314	3 865	2 401
Value of land (current basis)	41	24 745	36 700	47 387	57 941
Total capital investment	42	40 132	57 590	73 249	87 213
Total capital investment per acre	43	273.01	258.25	244.98	212.20
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 080	$ 2 067	$ 2 238	$ 2 448
Hired labor cost	45	47	415	673	911
Total months of labor	46	13.3	15.3	17.8	20.7
Labor cost per crop acre	47	17.29	14.17	12.13	11.24
Machinery repairs, supplies, etc.	48	613	649	800	1 063
Machinery hire	49	295	228	325	352
Gasoline and oil	50	501	650	851	1 072
Total auto cost (farm share)	51	282	353	364	388
Machinery and equipment cost per crop acre	52	24.33	19.02	16.70	15.83
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	34.5	31.7	33.5	28.2
Soybeans	54	28.2	23.6	25.3	26.8
Small grains	55	21.3	30.4	25.4	27.0
All hay and pasture crops	56	15.6	14.2	15.4	16.4
Feed and grain returns per tillable acre	57	57.20	59.63	53.54	47.23
Feed fed per tillable acre	58	17.43	15.47	14.32	13.47
Corn yield, bushels per acre	59	61.3	60.2	51.6	48.4
Soybean yield, bushels per acre	60	17.8	20.5	18.4	16.7
Oats yield, bushels per acre	61	59.0	32.1	34.2	31.6
Wheat yield, bushels per acre	62	32.2	32.4	30.4	28.7

TABLE 12. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF GRAIN FARMS IN NORTHERN ILLINOIS, 1953

	Under 180 51	180-259 92	260-339 75	340-499 118	Under 180 15	180-259 20	260-339 33	340-499 28
1	156	223	302	408	150	223	301	409
2	147	209	280	376	135	195	264	341
3	86	86	86	86	69	68	69	71
4	1.9	1.3	.5	2.6	1.2	1.8	.8	1.8
5	79	78	74	74	58	202	120	95
6	1.9	2.2	3.1	2.4	1.4	2.0	2.2	1.5
7	9.5	12.5	17.3	25.7	12.0	12.7	16.9	29.0
8	4	6	9	11	1	5	7	11
9	658	1 053	1 473	1 940	689	786	958	1 957
10	366	373	559	545	173	445	436	392
11	2.6	5.7	7.9	16.1	9.9	...	7.5	2.3
12	22.0	27.5	31.0	40.3	21.9	27.0	32.3	42.5
13	2 618	2 978	3 965	5 893	2 451	3 587	4 226	7 012
14	8 970	10 430	13 047	18 225	7 544	10 777	13 371	17 512
15	$ 814	$ 1 148	$ 1 544	$ 2 181	$ 863	$ 934	$ 1 217	$ 1 663
16	732	833	1 075	1 406	1 029	687	970	1 027
17	2 869	3 597	4 677	5 944	2 841	3 100	4 028	4 777
18	2 412	2 603	3 456	4 659	2 388	2 460	3 144	3 912
19	672	915	1 217	1 570	613	824	1 072	1 243
20	489	609	806	1 084	525	438	676	799
21	230	227	285	345	161	183	232	310
22	3 342	4 429	5 858	7 887	2 801	3 447	4 618	6 308
23	(11 560)	(14 361)	(18 918)	(25 076)	(11 221)	(12 073)	(15 957)	(20 039)
24	2 576	3 387	4 530	5 992	2 402	3 104	3 796	5 890
25	14 136	17 748	23 448	31 068	13 623	15 177	19 753	25 929
26	$ 351	$ 526	$ 665	$ 709	$ 525	$ 423	$ 452	$ 580
27	10 674	14 335	19 831	27 203	9 261	11 900	15 813	20 172
28	3 015	3 930	5 558	6 817	2 604	3 961	5 202	7 022
29	14 040	18 791	26 054	34 729	12 390	16 284	21 467	27 774
30	−96	1 043	2 606	3 661	−1 233	1 107	1 714	1 845
31	90.00	84.26	86.27	85.12	82.60	73.02	71.32	67.91
32	90.62	79.59	77.64	76.15	90.82	68.06	65.62	63.40
33	−.62	4.67	8.63	8.97	−8.22	4.96	5.70	4.51
34	6 306	8 036	10 618	12 579	4 387	4 787	6 694	12 503
35	−1 017	−589	−58	1 193	−885	1 863	1 877	−2 124
36	222	267	311	337	199	272	284	268
37	2 265	2 243	2 406	2 560	2 134	2 368	2 523	2 494
38	3 246	5 472	8 464	11 548	1 568	4 554	6 332	8 153
39	20.81	24.54	28.03	28.30	10.45	20.42	21.04	19.93
40	1 946	3 119	4 634	5 769	585	3 234	3 751	3 914
41	52 616	74 821	100 130	134 800	38 512	56 456	75 821	103 040
42	77 359	103 548	137 194	184 703	63 719	80 222	107 527	146 760
43	495.89	464.34	454.28	452.70	424.79	359.74	357.23	358.83
44	$ 2 265	$ 2 243	$ 2 406	$ 2 560	$ 2 134	$ 2 368	$ 2 523	$ 2 494
45	147	360	1 050	2 099	254	92	621	1 418
46	13.5	14.9	19.2	25.1	13.2	13.9	18.1	21.9
47	18.67	13.96	13.78	13.74	19.95	14.36	13.19	12.99
48	548	737	1 038	1 401	529	649	904	1 017
49	323	385	432	547	372	293	389	372
50	559	738	990	1 304	559	647	754	1 065
51	434	416	465	508	331	382	453	426
52	22.20	19.29	18.66	17.53	23.73	18.10	16.90	15.86
53	46.7	42.7	43.8	43.3	43.0	45.4	43.7	43.1
54	12.3	17.7	18.3	18.4	10.5	9.8	13.0	12.8
55	23.0	23.2	22.4	22.7	28.5	24.4	23.8	24.9
56	17.5	16.2	15.1	14.4	17.3	19.4	17.6	18.4
57	72.44	68.30	70.67	72.04	68.01	60.42	59.27	58.04
58	17.52	16.20	16.18	15.94	17.79	15.92	14.38	17.27
59	70.2	68.0	69.7	67.9	63.2	58.4	56.3	61.4
60	28.4	26.1	27.3	26.0	29.7	21.8	23.2	24.0
61	45.6	40.0	42.5	39.3	42.2	40.2	33.2	33.2
62	38.9	36.7	37.2	37.7	43.9	36.6	36.5	37.5

TABLE 13. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF DAIRY FARMS IN SOUTHERN ILLINOIS, 1953

Range in size (total acres)		Under 180		180-259	
Soil rating		5-35	36-55	5-35	36-55
Number of farms		37	19	35	13
Average size of farm	1	144	130	213	212
Acres of tillable land	2	117	97	173	159
Soil rating on improved land	3	28	44	25	44
PHYSICAL INPUTS PER FARM:					
Animal units of sheep	4	...	.5	.7	...
Average number of hens	5	167	97	163	138
Average number of milk cows	6	15.0	15.9	16.0	18.8
Animal units of "other" cattle	7	1.2	...	.7	3.7
Number of litters farrowed	8	2	5	6	9
Total amounts of feed fed:					
Corn, bushels	9	946	1 045	1 216	1 778
Oats, bushels	10	394	298	302	648
Silage, tons	11	69.3	70.3	74.4	75.0
Hay, tons	12	49.0	50.3	48.1	61.8
Pasture, days	13	2 968	3 931	3 034	5 555
Supplement, pounds	14	28 469	25 821	28 818	34 129
DOLLAR INPUTS PER FARM:					
Soil fertility	15	$ 620	$ 432	$ 878	$ 780
Buildings and fence	16	532	617	593	792
Machinery and equipment	17	2 549	2 409	3 004	3 439
Labor	18	2 601	2 842	2 824	3 389
Taxes	19	360	356	449	664
Seed and crop expense	20	323	276	373	458
Livestock and miscellaneous expense	21	320	489	326	467
Capital charge (4 and 5 percent)	22	1 598	1 799	1 929	2 355
Total non-feed input	23	(8 903)	(9 220)	(10 376)	(12 344)
Total feed input	24	5 406	5 712	5 801	7 695
Total farm inputs	25	$14 309	$14 932	$16 177	$20 039
DOLLAR RETURNS PER FARM:					
Miscellaneous returns	26	$ 505	$ 423	$ 451	$ 568
Feed and grain returns	27	4 838	5 212	6 748	8 285
All livestock returns	28	7 737	9 058	8 256	12 157
Total farm returns	29	$13 080	$14 693	$15 455	$21 010
Net management returns	30	−1 229	−239	−722	971
Total returns per acre	31	90.83	113.02	72.56	99.10
Total inputs per acre	32	99.37	114.86	75.95	94.52
Net management returns per acre	33	−8.54	−1.84	−3.39	4.58
Net cash income (cash balance)	34	3 115	3 557	3 287	5 414
Inventory and capital change	35	−692	−110	−77	578
Farm products consumed	36	376	340	415	430
Less unpaid labor	37	2 429	2 227	2 418	3 096
Capital and management	38	370	1 560	1 207	3 326
Capital and management per acre	39	2.57	12.00	5.67	15.69
Operator's labor and management	40	553	1 607	1 171	2 919
Value of land (current basis)	41	18 018	20 222	25 050	30 250
Total capital investment	42	35 569	40 033	43 591	53 151
Total capital investment per acre	43	247.01	307.95	204.65	250.71
FARM OPERATING COSTS:					
Unpaid labor charge	44	$ 2 429	$ 2 227	$ 2 418	$ 3 096
Hired labor cost	45	172	615	406	293
Total months of labor	46	16.4	17.8	17.9	21.2
Labor cost per crop acre	47	28.61	36.81	20.09	26.39
Machinery repairs, supplies, etc.	48	490	446	586	686
Machinery hire	49	237	245	339	368
Gasoline and oil	50	446	422	519	688
Total auto cost (farm share)	51	262	271	296	353
Machinery and equipment cost per crop acre	52	28.04	31.20	21.37	26.78
LAND-USE AND CROP RETURNS:					
Percent of tillable land in:					
Corn and corn silage	53	25.4	28.6	24.9	30.2
Soybeans	54	11.4	8.9	14.4	14.0
Small grains	55	21.6	21.8	27.7	20.6
All hay and pasture crops	56	40.6	38.9	30.7	34.6
Feed and grain returns per tillable acre	57	40.56	52.29	38.41	50.36
Feed fed per tillable acre	58	46.20	58.89	33.53	48.40
Corn yield, bushels per acre	59	42.0	51.5	41.7	53.3
Soybean yield, bushels per acre	60	14.5	15.8	11.3	16.0
Oats yield, bushels per acre	61	32.1	34.7	26.2	34.5
Wheat yield, bushels per acre	62	28.9	30.5	28.9	29.7

TABLE 14. — SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND SOIL QUALITY GROUPS OF DAIRY FARMS IN NORTHERN ILLINOIS, 1953

	Under 180		180-259		260-339	340-499
	56-75	76-100	56-75	76-100		
	52	31	30	19	22	18
1	140	143	213	221	288	407
2	118	132	173	203	239	318
3	68	83	67	82	70	66
4	.8	1.9	.1	.3	.2	.4
5	123	215	119	123	122	96
6	21.2	19.5	25.2	24.9	29.5	30.1
7	.8	...	.8	6.0	4.7	16.3
8	7	9	8	14	14	15
9	1 344	1 741	1 689	2 684	2 867	3 592
10	1 138	1 253	1 505	1 483	1 697	1 972
11	112.9	52.2	120.1	117.6	137.7	211.2
12	71.0	67.6	88.3	93.5	101.1	108.1
13	5 630	5 628	6 118	5 777	8 450	10 563
14	26 304	32 917	27 131	32 544	38 333	37 374
15	$ 547	$ 604	$ 744	$ 823	$ 779	$ 1 247
16	1 000	1 185	1 376	1 224	1 916	1 981
17	3 311	3 185	4 146	4 421	5 378	6 129
18	3 158	3 244	3 739	4 555	4 440	5 518
19	609	644	840	948	1 058	1 305
20	382	459	600	691	643	799
21	603	611	645	681	737	709
22	2 870	3 352	3 790	4 903	5 463	6 375
23	(12 480)	(13 284)	(15 880)	(18 246)	(20 414)	(24 063)
24	7 662	8 073	9 265	10 894	12 322	14 192
25	20 142	21 357	25 145	29 140	32 736	38 255
26	$ 441	$ 329	$ 459	$ 438	$ 577	$ 417
27	7 749	8 851	10 751	13 721	14 265	18 895
28	11 540	12 589	13 347	16 536	17 327	20 600
29	19 730	21 769	24 557	30 695	32 169	39 912
30	−412	412	−588	1 555	−567	1 657
31	140.93	152.23	115.29	138.90	111.70	98.06
32	143.87	149.35	118.05	131.86	113.67	93.99
33	−2.94	2.88	−2.76	7.05	−1.97	4.07
34	4 560	5 430	4 130	9 847	6 898	8 298
35	81	586	1 748	−1 334	257	2 407
36	397	363	407	442	501	450
37	2 580	2 616	3 082	2 498	2 760	3 123
38	2 458	3 764	3 202	6 458	4 896	8 032
39	17.56	26.32	15.03	29.22	17.00	19.73
40	1 618	2 473	1 540	3 683	1 568	3 778
41	34 695	46 941	50 309	71 192	74 158	95 254
42	64 344	76 422	85 867	112 304	124 074	146 561
43	459.60	534.42	403.13	508.16	430.81	360.10
44	$ 2 580	$ 2 616	$ 3 082	$ 2 498	$ 2 760	$ 3 123
45	578	628	657	2 057	1 680	2 395
46	17.3	18.5	20.8	23.5	23.3	29.8
47	33.70	31.19	25.64	27.89	22.72	20.67
48	625	652	908	855	1 178	1 386
49	358	284	366	543	292	530
50	514	548	750	834	1 050	1 144
51	420	425	440	421	493	462
52	35.34	30.62	28.44	27.07	27.52	22.96
53	33.9	40.7	39.0	40.0	38.3	40.1
54	2.0	3.9	1.4	3.8	5.7	6.5
55	23.3	21.5	24.4	20.4	23.5	22.8
56	40.5	33.8	34.6	35.2	31.1	29.1
57	64.53	66.50	61.10	67.31	58.68	58.44
58	64.93	61.16	53.55	53.66	51.56	44.63
59	67.4	71.0	64.4	72.0	62.9	61.2
60	23.3	30.5	18.6	25.5	20.2	23.6
61	46.4	47.4	43.2	46.1	42.8	42.1
62	39.8	36.7	38.4	49.6	31.5	29.5

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

Ill. 8900, 11-54—10M
Permit No. 1247

PROSPECTS FOR 1954 FARM INCOME

The estimated crop yields for 1954 in the northern two-thirds of the state show substantial increases over 1953 except for wheat yields which are down slightly. Estimated yields for 1954 in the southern part of the state show increases in wheat and oats but sharp declines in corn and soybeans. The estimated average corn yield of 22 to 28 bushels per acre in the southern four crop reporting districts averages 38 percent below 1953 yields.

A favorable corn-hog ratio the first six months of 1954 and substantial price spreads for feeder cattle sold in 1954 indicate, with the exception of the drouth areas of the state, that net farm income on hog farms should approximate that of 1953 and net income on cattle feeding farms should be higher. A low milk-feed price ratio so far in 1954 would suggest that average net income on dairy farms would probably not change or may even be lower.

Income on grain farms is closely associated with crop production. The yield estimates described above indicate that grain farm incomes probably will advance in the northern part of the state and decline in the south-central and southern areas.

In general, prospects for 1954 net farm income will vary according to type of farm and weather conditions. Estimated cash receipts from farm marketings for the entire state were up five percent for the first six months of 1954 but this increase will not apply equally to all farms.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | April, 1955 | Number 222

ARTICLES IN THIS ISSUE

WATER RESOURCES OF ILLINOIS

Water shortages in southern and western Illinois during the last three years have aroused a great deal of interest in water resources. Many people have inquired: are we running out of water? To answer this question, it is necessary to review the occurrence of water.

In its occurrence, water goes through what is called the hydrologic cycle. If we commence to follow the water at any point in the cycle, and pursue it through its travels, we arrive back at the same place in the cycle. Beginning with atmospheric moisture, which is the big primary source of water for Illinois, we find that rainfall over the State does have some variation. It varies in quantity and intensity from day to day, month to month, and year to year, but over a long time, rainfall averages about 34 inches per year in northern Illinois and as much as 46 inches in the hills of southern Illinois. The unit of measurement — inches — refers to the depth of water that would exist on the land if it all stayed where it fell. Obviously it doesn't all stay there.

A substantial part, approximately one-quarter, runs by gravity over the land or through it and appears as streamflow. Streamflow in Illinois varies from about seven inches per year in the west and northeast parts of the State to as much as 16 inches in the hills south of Crab Orchard Lake. A large part of the rainfall soaks into the ground, and some of it

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

moves laterally into the streams of the State. Approximately half of the State's streamflow reaches the streams through the ground rather than overland.

Some of the moisture that arrives at the land as rain or snowfall evaporates promptly back into the atmosphere, but a large part of it soaks into the soils which has space to store as much as 10 or 15 inches of the year's precipitation. This moisture is available for use by vegetation and is drawn on by crops. Some of it, however, is also subsequently lost directly to the atmosphere through evaporation from the land surface. This may amount to about 10 inches of moisture per year. Ordinarily crops require about 24 inches of moisture per year for growth.

Just how the hydrologic cycle functions in Illinois depends on what part of the State you are thinking about. In northern Illinois much of the water supply is obtained from the great sandstones which lie at depths as great as 2,000 feet. These sandstone layers outcrop in parts of northern Illinois and Wisconsin and receive water at these outcroppings. They transmit water slowly, but are permeable enough and thick enough that large-capacity wells can be built in them throughout most of the northern quarter of the State.

According to the Illinois State Geological Survey, the rock in the northern part of the State is covered by deposits of sand, gravel and earth laid down by the glaciers. In places these deposits are several hundred feet thick. There are extensive areas of thick deposits northeast of a line through Mattoon, Decatur, Peoria and Rock Island. These deposits are thinner in western Illinois and in southern Illinois. The glacial deposits do contain some relatively shallow sand and gravel layers that store and transmit water quite well. In the Ozark hills of southern Illinois and southward, these deposits are absent.

At any specific location in the State, the generalizations stated above may not apply. There are areas in northern Illinois where it is difficult to obtain groundwater. The only way to determine conditions is to study these specific locations, making use of well records in the immediate vicinity. The State Water Survey and the State Geological Survey have much information of this type on record now, but a great deal more is needed in order to give a precise answer at every location.

Rainfall the past three years has not been up to the long-term average. The rainfall for the periods April through December of 1952 ranged from 60 to 80 per cent of normal in the southern part of the State. A similar situation recurred in 1953. In 1954 there was some improvement, but precipitation was still well below normal.

As a result, during these years there was little recharge of moisture through the shallow groundwater formation, with the result that many shallow wells in the southern portion of the State dried up and it became

necessary to haul water to farms from the cities. In many cases this cost farmers as much as $30 per month.

Because of these precipitation deficiencies soil moisture was much depleted. Soil moisture is recovering now, but was still deficient in January 1955 in the Mattoon-Pana region.

As a result of the precipitation deficiencies and the attendant soil moisture and groundwater depletion, streamflow in the southern half of Illinois has been very low, ranging down to 0.11 inches per year in parts of the area where runoff of nine inches per year is normal. These extraordinarily low streamflow values have been fairly widespread and have resulted in exhaustion of a number of farm ponds and water supply reservoirs.

There are a number of factors other than the drought that have caused the difficulties in recent years. One of these factors is the growing industrial use of water, which has largely been concentrated in the great industrial areas of the State such as East St. Louis, Peoria, Chicago, and Joliet. These industrial concentrations have affected groundwater levels in their immediate vicinities, but generally these effects do not reach far from the industrial area. The industries are growing and using more water, and their influence may reach somewhat further, although it does not seem likely that these will affect more than a few counties.

Municipal use, too, has grown. There has been some increase in the use of water in each home due to new developments such as the installation of sanitary facilities, garbage grinders, dishwashers, and washing machines. These appear to have had less effect on the amount of water pumped by the city supply than the increasing connection of city residences to the water systems.

There have also been growing agricultural uses on farmsteads. Irrigation, which involved only 9,000 acres in 1951 was applied to nearly 20,000 acres in 1954, and the interest of farm people indicates that it will continue to grow. Use on farmsteads has grown quite rapidly. In Illinois, according to the 1950 census, 51.2 per cent of all farm dwellings have piped water. There is considerable variance in this throughout the State, for example in DuPage County nearly 90 per cent of the farms have running water; in Champaign County, 73 per cent; and in Washington County, 50 per cent. Approximately 35 per cent of the farm homes have flush toilets, and we may expect this proportion to rise rapidly. In some of the counties in northern Illinois, three-quarters of the farm residences have modern plumbing. Because of the installation of piped water systems on farms, there have been increases in stock and garden watering. All these increases in farm use of water have caused complications that many did not anticipate.

Wells have failed in Illinois, and ponds have gone dry. These failures have not all been due to drought conditions. All wells wear out and nearly all ponds become filled with silt. Under the practice in well construction that has prevailed for the last several decades, the median life of municipal wells drilled in sand and gravel formations has been about 17 years. Farm wells may last somewhat longer than this, but they still have limited lives. This was not the case in the days of the old oaken bucket when the demands placed on the well were limited by the energy of the user.

Some farm ponds and many municipal reservoirs have been severely injured by silting caused by erosion from the land. Soil conservation is very intimately connected with water resources in this respect and in others. The customary farming practices in much of Illinois tend to reduce infiltration through reducing the permeability of the soils. They also increase the runoff of water from the land. Increased drainage activities have probably hastened more water away from farmland into the river. There are very definite and valuable improvements to water resources that can be contributed through farm practices such as proper rotations, strip cropping, and grass waterways.

Summing up these problems, we find that our biggest cause of trouble is the rapid growth in use of water on farms and in cities. The problem is complicated by the fact that our water resource facilities do wear out, and the problem is intensified by the current drought.

For all practical purposes, there is as much water available now as there ever was in Illinois, but there are more people needing water, and these people are increasing their demands. The use of water has increased sharply and will continue to increase rapidly for some time. We cannot escape the conclusion that it will be necessary to pay far more attention to the capacity and the maintenance of our water supplies on farms and in the cities if we are to escape future water shortages.

H. E. Hudson, Jr.
Head, Engineering Subdivision
Illinois State Water Survey

IMPLEMENTING THE WATERSHED PROTECTION AND FLOOD CONTROL ACT IN ILLINOIS

On August 4, 1954, the President signed the Hope-Aiken bill, "An act to authorize the Secretary of Agriculture to cooperate with the State and local agencies in the planning and carrying out of works of improvement for soil conservation, and for other purposes." This is cited as the "Watershed Protection and Flood Control Act."

The administration of this law poses several questions. Perhaps the most important one is whether there are local agencies capable of cooperating, and if so which one is best adapted. The act defines "local organi-

zation" as "any State, political subdivision thereof, soil or water conservation district, flood prevention or control district, or combinations thereof, or any other agency having authority under State law to carry out, maintain and operate the works of improvement." Thus defined the following Illinois agencies might be eligible:

The state
Counties
Townships
Drainage or levee districts
Soil conservation districts
River conservancy districts
Surface water protection districts

Some indication of the suitability of a local agency may be gained by considering its power to meet the conditions specified in the law, namely to

1. Acquire without cost to the Federal Government necessary land, easements and rights-of-way.

2. Assume such proportionate share of the cost of installing works of improvement[1] involving federal assistance as the Secretary of Agriculture deems equitable — including the whole construction cost of works other than structures for flood prevention.

3. Make arrangements satisfactory to the Secretary for defraying costs of operating and maintaining works of improvement.

4. Acquire, or provide assurance that landowners have acquired, the necessary water rights.

5. Obtain agreements to carry out recommended soil conservation measures and proper farm plans from owners of not less than fifty per cent of the lands situated in the drainage area above each retention reservoir to be installed with federal assistance.

Obviously the state itself could not function as a local agency within the State. Counties and townships do not appear to be appropriate since watershed protection is not one of their functions, and they would thus lack the legal authority necessary to meet the conditions imposed. Drainage or levee districts operate under statutes which have been strictly construed. It is doubtful if they could meet the conditions imposed in the watershed act. Certainly a special assessment to engage in "agricultural phases" of water conservation would be vulnerable. Also noncoincidence of boundaries would pose a difficult problem.

[1] "Works of improvement" is defined as any undertaking for (a) flood prevention involving structure and land treatment measures, or (b) agricultural phases of the conservation, development, utilization, and disposal of water.

The remaining three agencies — soil conservation, river conservancy, and surface water protection districts — bear closer scrutiny, since all of them have functions and powers closely related to those expressed in the watershed act.

Soil Conservation Districts[1]

The Illinois legislation providing for the establishment of soil conservation districts gives them a broad range of power. There is little doubt that they could meet the conditions imposed by the Federal act. However, there are two serious limitations on their ability to act as the local agency under the law. The most serious is their lack of power to raise funds by taxation or assessment. Hence, their legal power to assume construction costs and to defray costs of operation and maintenance would be an empty power in the absence of authority to procure funds. Conceivably, however, a district acting as intermediary between farm owners and the department might be able to implement a program under which landowners themselves assume all costs other than those which the federal government can legally assume. The ability of the district to meet its obligations under the law would then depend on its contractual relations with cooperating farmers.

Another limitation on the ability of a district to act as the "local agency" is the fact that watershed boundaries are likely to cross district boundaries, and even if they do not, the boundaries of the watershed and district will not be coincident. Interestingly enough the original conception of a soil conservation district was that of an agency established on watershed lines. The first district in Illinois, the Shiloh-O'Fallon in St. Clair County, was organized in this fashion and several additions of territory were made before the idea of county-wide districts prevailed. The latter organization seemed more practical and expedient for several reasons and since districts in Illinois do not have authority to tax or levy special assessments and can adopt regulations affecting land in the district only after approval of three-fourths of all the landowners in the district, no serious questions about what lands should be included or excluded are likely to arise. The fact that watershed boundaries and district boundaries are not coincident is important only because it divides the energies of the directors and of personnel working in the district — how much time shall be devoted to the watershed, how much to other farmers in the district? This is not an insurmountable obstacle but it would call for clear thinking and sound policy determination. Likewise, the fact that a watershed crosses district boundaries is not an insurmountable obstacle because the Illinois law specifically provides that "the

[1] Ill. Rev. Stat., Ch. 5, sec. 106-138.1.

directors of any two or more districts . . . may cooperate with one another in the exercise of any or all functions conferred in this act." The legal authority is clearly provided. The principal question then is just how the directors should go about cooperating. Should they all sit on a joint board of directors for the watershed, should they meet and select a smaller group and delegate functions to it, or should they seek some other means of administration? Perhaps no one pattern is better than another but a plan which might work would be one in which one or two directors from each district plus additional farmers from the watershed constituted the executive body for the watershed, and would operate under an agreed memorandum to which all the districts are a party. Such a memorandum could authorize the executive group to take action on all matters except those involving important policy considerations. The number of farmer members on the executive body for the watershed would be smaller than the number of directors, and official action of the executive body would be taken only by the director members. For example, a watershed in three districts might have an executive body of five — one director from each district and two farmers from the watershed. This would not preclude the calling in of other persons to act in an advisory capacity — the farm planner and farm adviser, for example.

There is a possibility that the principal defects of a soil conservation district as a vehicle for the watershed program — inability to levy taxes and noncoincidence of boundaries — could be remedied by borrowing an idea from drainage law and providing for the creation of sub-districts. These sub-districts could be organized on petition of a stated percentage of landowners in the proposed area. They could be confined territorially to the watershed area and could be given the power to levy assessments either general or special. District directors would also be directors in the sub-districts. Provision could be made for combined board functioning where the watershed in which the sub-district is to be formed crosses district boundaries. State laws would have to be amended to provide for the creation of such sub-districts.

River Conservancy Districts[1]

In 1925 the Illinois Legislature adopted a law on the organization of districts for the control of river systems. The law states that an area may be organized for these purposes:

Unified control of a river system or of a portion of the system
Sanitation
Prevention of stream pollution
Development, conservation and protection of the water supply

[1] Ill. Rev. Stat., Ch. 42, sec. 383-410.

Protection of fish life
Aid to navigation
Promotion of the public health, comfort and convenience

These purposes were enlarged by a 1951 amendment, and the following were added:

Control or prevention of floods
Reclamation of wet and overflowed lands
Development of irrigation
Conservation of soil
Providing domestic, industrial or public water supplies
Sewage and liquid waste collection and disposal
Providing forest, wildlife, park and recreational areas and facilities

The organizational process is commenced by a petition to the county judge by one percent or more of the legal voters residing in the proposed district (if more than one county is involved, the petition goes to the judge in the county containing most of the proposed area). The judge considers the petition to see if it is proper, describes the land correctly and contains the required number of eligible signatures. A hearing is then held on the location and boundaries, and the judge (or judges if more than one county is involved) makes a final determination of the boundary. An election is held at which legal voters residing in the proposed district may vote for or against organization of the district. If a majority of the votes cast on the question favors organization, the district becomes a legally organized public corporation and five trustees are appointed by the county judge for staggered terms of five years. Additional lands may be added by following a procedure set out in the law. The area to be included in such a district need not be contiguous, and it need not be confined to territory within one mile of the center line of the main stream (an original requirement in the Act).

The board of trustees has broad authority to carry out the purpose of the law, including the levying of a tax, issuance of bonds, adoption of ordinances, acquisition of land (by eminent domain if necessary), building of dams, creation of reservoirs for collection and storage of water, operation of pumps and pumping stations and cooperation with other agencies, Federal, State and local. Also, it may construct drains, sewers and similar works by special assessment. Plans for any work done under this law must first be approved by the State Sanitary Water Board and by the State Department of Public Works and Buildings.

Though this act infers that "unified control of a river system" is the prime objective, it further includes "or a portion thereof," thus opening the possibility of establishing a river conservancy district in almost any area. Unless there are hidden defects in this law it would seem to be

suited as a means of establishing a local agency for implementation of the Federal Watershed Law: it can meet all the conditions imposed by the Federal act, is empowered to levy a tax and issue bonds; has a continuous governing body, may cross county lines, has local authority, can be organized to include just the watershed area, can be enlarged to include additional area, and can bring in land that is not even contiguous. Probably the greatest deterrent to its use, from the practical standpoint, is the fact that its organization is likely to be opposed. Also there is a possibility that it might not be kept closely tied to the leadership and program of the Soil Conservation Districts involved. This might prove detrimental to the program, at least in some cases.

Surface Water Protection Districts[1]

In 1953 the Illinois General Assembly adopted legislation permitting the organization of special districts to be known as "Surface Water Protection Districts." These districts are empowered to construct and maintain ditches and a wide range of structures regarded as necessary for ". . . the collection of surface waters within the district boundaries, and the subsequent conveyance and disposal of such waters at suitable points of discharge. . . ." These functions are almost identical with those performed by a drainage district, and though this law was apparently adopted with the idea of providing a ready means of protecting a municipality from surrounding surface waters, it does not seem to be limited to situations involving municipalities.

Organization of a Surface Water Protection District is initiated by a petition to the county court signed by 50 or more legal voters (a majority if there are fewer than 100 in the proposed district). The proposed area must be contiguous and in not more than two counties. It cannot contain territory in another Surface Water Protection District, and must be so situated that the construction and operation of facilities by the district will ". . . conduce to the promotion and protection of the health, safety, welfare and convenience of the public."

Following the petition there is notice, hearing and an election. If a majority of the votes cast at the election favor organization, the county court enters an order organizing the district. Five trustees are then appointed by the county court.

The district may borrow money and issue bonds. The trustees may levy and collect a tax of .125 percent or, if approved at an election, a tax of .25 percent.

There are three apparent and very important differences between these districts and drainage districts — the latter can be organized only on

[1] Ill. Rev. Stat., Ch. 42, sec. 448-471.

petition of one-half the landowners owning a third of the land (or a third of the owners owning one-half of the land); they can secure funds only by levying a special assessment, and they can include only lands benefited by the drainage works; surface water protection districts have none of these limitations.

Though the functions of these districts are more broadly defined than those of drainage districts, it does not appear that they have all the powers needed to enable them to meet the conditions imposed by the Federal Act. Also under present law they cannot lie in more than two counties.

Conclusion Regarding Suitability of a Local Agency

Of all the agencies examined it would appear that only soil conservation districts and river conservancy districts would be suitable local agencies. Both have certain advantages and disadvantages. Soil conservation districts have been operating for many years and are directly connected with watershed works, but they are helpless when it comes to raising funds or undertaking any project which would require the district to furnish funds — unless the law is amended, or the sub-districts idea is adopted. River conservancy districts on the other hand can levy assessments and raise money, but the organizational process would be slow and difficult.

One feasible plan might be for the soil conservation district or districts involved to "carry the ball" until the planning stages are completed, then establish a conservancy district or sub-district of the soil conservation district (if the law were amended) to cover the particular watershed area. Though policy guidance might still come partially from the districts, there would eventually be an entity which could raise funds and with which other agencies and farmers could contract. Some financial help might be available under the Water Facilities Act, as amended: apparently loans up to $250,000, repayable over periods as long as 40 years, may be made to associations.[1]

Another problem in the implementation of the law arises out of the following language: "In order to assist local organizations in preparing and carrying out plans for works of improvement, the Secretary of Agriculture upon application of local organizations *if such application has been submitted to, and not disapproved within 45 days by the State agency having supervisory responsibility over programs provided for in this act, or by the Governor if there is no State agency having such responsibility. . . .*" may cooperate with such local organization.

The Act creating the Illinois State Water Resources and Flood Con-

[1] U.S.D.A. Memo. 2236-54.

trol Board[1] states that the Board shall ". . . represent and act for and in behalf of the state of Illinois, subject to the approval of the Governor, in matters concerning any project for the improvement of navigation, flood control or any other purpose on any of the rivers, waters or watersheds of Illinois by the United States or any agency thereof." This would seem to settle the question of what State agency should review applications. However, there are two technical points: the Act itself makes review by the board "subject to the approval of the Governor." So if the Governor withheld his approval, it would not be empowered to review watershed proposals. Also the Federal Act states that applications shall be reviewed by the State agency ". . . having supervisory responsibility over programs provided for in this Act. . . ." It is probable that the United States Department of Agriculture would assume that the Water Resources and Flood Control Board has "supervisory responsibility" within the meaning of the law, though as a question of fact, it might be debatable.

Assuming that the Water Resources and Flood Control Board became the reviewing agency, there is a further question of how to give applications the broad and experienced consideration they should receive. The Board itself is composed of six code department directors, some of whom have no activities in their departments closely related to the watershed program, and all of whom are busy with the administration of their departments. A practical suggestion would be for the Board to establish a review committee composed of representatives from State agencies, the College of Agriculture and Agricultural Extension Service, Soil Conservation Service, Association of Soil Conservation District Directors, farm organizations and other interested groups. Other possibilities would be for the State Soil Conservation Districts Advisory Board to act as the reviewing agency; for the State Department of Agriculture to act as the reviewing agency; or for the Governor or legislature to designate or create a separate review board.

Regardless of what entity is finally given review authority it should establish policies and standards which will be helpful to the local agencies attempting to establish a watershed program.

H. W. Hannah

CURRENT WATERSHED PROGRAMS IN ILLINOIS

In 1953 the 83rd Congress, first session, appropriated five million dollars and authorized the United States Department of Agriculture to start a program of small pilot watershed projects. The United States Soil Conservation Service was given the job of carrying out the pilot watershed program. Some 60 small watersheds were selected under the pilot

[1] Ill. Rev. Stat., Ch. 127, sec. 200.1-200.4.

program. Three were in Illinois — Hadley Creek in Pike and Adams Counties, Money Creek in McLean County, and Old Tom Creek in Warren and Henderson Counties.

Objective of the pilot demonstration watershed program. The over-all objectives of the small pilot watershed projects were to (1) determine ways of developing a local-state-federal partnership in planning and carrying out a watershed-protection and flood-prevention program, (2) demonstrate costs and benefits of such work, (3) reduce as far as possible damages resulting from floodwater and sediment in the watershed and downstream, (4) test the effectiveness of control measures under highly variable conditions in different sections of the country and where such effectiveness can be readily observed by local people and (5) accumulate and analyze data on precipitation, streamflow, sediment loads and flood peaks as the treatment program progresses.

The pilot watershed program. The three Illinois pilot watersheds are sponsored by the local soil conservation districts concerned. In carrying out the watershed program, the farmers and local, state and federal agencies are working together. The Extension Service representatives have worked with the Soil Conservation Service and soil conservation district officers at the start of the program and during the development of the plans. A watershed work plan is developed before work is started to formulate a program and to ascertain the economic feasibility of the proposed project. The work plans show in general (1) inventory of physical land conditions, (2) inventory of present land use, (3) expected soil and other losses, (4) recommended land-use program and soil treatment practices, (5) recommended water disposal system including structures, terraces, waterways, etc., and (6) estimated costs and benefits, including what should be applied and who should bear the expenses. The federal government may bear up to 50 percent of the total cost of the pilot watershed program, paying, chiefly, for dams and sediment-control structures which provide primarily flood-prevention benefits. The value of conservation and flood prevention measures installed by farmers and local interests, plus the value of easements and rights-of-way for government-installed structures must equal or exceed the contribution of the federal government. The watershed work plans detail two principal types of measures. "A" measures designed primarily for silt retarding and flood prevention and producing benefits that are largely "off-site." These measures may be financed primarily by the federal government. "B" measures are land treatment practices used for the conservation of soil and water within the watershed and which contribute to flood prevention. These are financed by farmers and other local interests.

Evaluation of watershed programs. Congress, in appropriating $5,000,000 in fiscal 1954 to start the pilot watershed projects which they estimated would cost the federal government $28,000,000 over a five-year period, requested that an evaluation of the effects of the watershed protection program in both physical and economic terms be made. This evaluation is to serve as a guide for future watershed work, that is, to show how successful watershed projects can be developed by local people with the help of agencies of government and also to show the obstacles to this type of approach. To evaluate properly the effects of the watershed program, measures are to be made of physical and economic factors including changes in run-off characteristics, flood and sediment damages, and production resulting from soil and water conservation improvements. A general evaluation is planned for the Money Creek and Old Tom Creek watersheds. The Hadley Creek watershed is one of eight pilot watersheds in the United States designated for detailed evaluation studies. The evaluation plans for the Hadley watershed include determination of (1) reduction in peak flow resulting from floodwater retarding structures and the land treatment program above the structures, (2) sediment detention in the reservoirs created by the structures and effects on stream channel below the structures, (3) rainfall-run-off relation, (4) effect of the program on ground-water levels, and (5) the economic effect (production, costs and benefits) of the program on the farms in the watershed. Cooperating in these evaluations are the Illinois Agricultural Experiment Station, the Illinois State Water Survey, U. S. Geological Survey, U. S. Department of Agriculture, U. S. Weather Bureau, U. S. Corps of Engineers, local soil conservation districts and farm bureaus, and local farmers.

Hadley Creek. The Hadley Creek watershed is located in the west-central part of Illinois, with approximately 33 percent of its area in Adams County and 67 percent in Pike County. It is approximately triangular in shape with points of the triangle at Baylis and Kinderhook in Pike County and Kingston in Adams County. Approximately 240 farms are in the watershed, comprising 72.3 square miles or 46,272 acres.

Hogs, beef cattle and cash grain are the principal sources of income in this general farming area. Active sheet erosion, gully erosion, streambank cutting and floodplain scour have created severe erosion problems. Three years of drouth in a row have depleted vegetation, added to the erosion hazard and intensified economic problems.

Old Tom Creek. Old Tom Creek watershed is located in Warren and Henderson Counties, extending approximately three miles north, three miles east and five miles west from Kirkwood. This watershed consists of 24 farms in Henderson County and 41 in Warren County, comprising 18 square miles or 11,520 acres.

Although sheet and gully erosion are taking a heavy toll, the soil is inherently productive and responsive to treatment, good land use and practices. General livestock and grain farming predominates in the area. Over-intensive land use in corn and soybeans has contributed to excessive runoff. The soil varies from nearly level to strongly sloping. Flooding and silting problems led local leaders to adopt a program designed to create interest in controlling floods in this watershed. The slogan "Let's Tame Old Tom" was adopted.

Money Creek. Money Creek watershed is located in McLean County north and east of Bloomington. Money Creek is a tributary of the Mackinaw River and has a drainage area of 43,088 acres or 67.3 square miles above the dam which creates Lake Bloomington. There are 217 farms in the watershed. Heavy rains occur frequently during the growing season, causing serious sheet and gully erosion damage to the large proportion of cropland. The watershed is gently undulating to rolling. The soils are derived from loess varying in depth from two to seven feet and underlain with a heavy clay till.

Money Creek is in a cash-grain farming area. A high proportion of the cropland is annually planted to corn and soybeans. Approximately 60 percent of the farms and two-thirds of the acreage is tenant operated. Principal adjustments needed are improved crop rotations and water disposal practices.

Progress to date. Accomplishments to date in the three Illinois pilot watersheds are creditable. In the Hadley watershed approximately 80 percent of the landowners have signed initial agreement with the soil conservation districts requesting a complete soil and water conservation plan for their farms and indicating their intentions to cooperate in the watershed program. Conservation planning is progressing and many farmers are applying conservation measures. Three years of drouth and consequent low farm income plus badly eroded conditions leading to high conservation improvement costs prevent farmers from proceeding as rapidly as they desire. In one sub-watershed conservation measures have been applied on most of the farms and four government-financed structures are being completed. As part of the economic evaluation, detailed farm records (land use, soil treatment, production, costs and income) were obtained from a random sample of 55 watershed farms for 1954. Year-to-year data will be secured on these farms during the establishment of the watershed program. Application of conservation measures on the land in the Old Tom Creek watershed is progressing on a high proportion of the farms. Much farmer interest is manifest. Several of the government-financed structures have been installed. Progress in the Money Creek watershed has not kept pace with the other two pilot watersheds.

Experiences to date in the three watersheds show the importance of local leadership. Remarkable progress has been made where local people have taken a keen interest in their problems and have made use of technical assistance to develop a sound improvement program. Working together, with the incentive that a community undertaking provides, much can be accomplished. In the final analysis, the success or failure of the watershed approach depends upon the individual farmer. It is essential that each farmer in the watershed use his land within its capabilities and treat it according to its needs. A good conservation plan requires financial as well as technical assistance, particularly when the plan calls for a change in the system of farming followed. The federal government provides two sources of some funds for this purpose — loans administered by the Farmers' Home Administration to finance the costs of making improvements directly related to soil and water conservation, and limited payments through the Agricultural Conservation Program for carrying out specific practices. A sound plan of farm operations must consider the farmer's personal capabilities in order to maximize his returns.

The Watershed Protection and Flood Prevention Act. Following appropriations for the pilot demonstration watershed program in 1953, Public Law 566, 83rd Congress, second session, also known as the Watershed Protection and Flood Prevention Act, was passed in 1954 to help local people with their small watershed problems. The act (1) places responsibility in local organizations to initiate programs, adapt plans to local requirements, share in costs, and make provisions for the plan's application and maintenance; (2) gives farmers a specific means to get U. S. Department of Agriculture technical help to work out watershed treatment plans; (3) provides for federal cost sharing on small waterflow retarding dams and other flood-prevention and water-management measures; and (4) gives the Secretary of Agriculture new opportunities to serve local small watershed groups. The act places the initiative for this program in local organizations. Assistance can be provided by the federal government only after a qualified local organization has prepared an application, submitted it to the state agency having supervisory responsibility over programs provided for in this act, or to the Governor if there is no such agency, and the application has either been approved or not disapproved within 45 days from the date of its submission. Illinois is in the process of developing enabling legislation under which local interests may avail themselves of federal assistance under the new Watershed Protection and Flood Prevention Act. (See "Implementing the Watershed Protection and Flood Control Act in Illinois" by H. W. Hannah, this issue of Illinois Farm Economics.) To date no applications have been approved in Illinois for transmission to Washington.

E. L. Sauer and W. H. Henneberry

FEDERAL AID IN THE ESTABLISHMENT OF SOIL CONSERVATION MEASURES AND FACILITIES FOR FARM WATER STORAGE AND UTILIZATION

In 1937 a federal law on facilities for water storage and utilization was passed, but with the limitation that it apply to only the "arid and semiarid areas of the United States." In 1954 the law was revised to include the whole United States. The declaration of policy in the amended law states that ". . . the wastage and inadequate utilization of water resources on farm, grazing and forest lands resulting from inadequate facilities for water storage and utilization contribute to the destruction of natural resources, injuries to public health and public lands, drouths, periodic floods, crop failures, declines in standards of living, and excessive dependence upon public relief. . . ."

To effectuate this law the Secretary of Agriculture is authorized to:

(1) Establish projects for the construction and maintenance of facilities for water storage or utilization.

(2) Sell or lease projects which have been established.

(3) Cooperate or enter into agreements with, or furnish financial or other aid to, any agency, governmental or otherwise, or any person, subject to such conditions as he may deem necessary for the purposes of the act.

(4) Obtain rights in land or water necessary to carry out the purpose of the act.

As a condition to extending benefits under this act the Secretary of Agriculture may require the enactment of state and local laws providing for soil conserving land uses and practices, and the storage, conservation and equitable utilization of waters; maintenance agreements or convenants and contributions in money, services, materials or otherwise from recipients of federal benefits.

The 1954 amendment to this law enlarged the Secretary's powers by authorizing him ". . . upon such terms and conditions as he shall prescribe, to make loans for the purpose of financing the improvement of farm land by soil or water conserving or drainage facilities, structures or practices, improvement of soil fertility, establishment of improved permanent pasture, sustained yield afforestation or reforestation, or other erosion preventatives, and such other related measures as may be determined from time to time by the Secretary."

In addition to making direct loans the Secretary is also authorized to insure loans made by private lenders, under such terms and conditions as he may prescribe — including the right to service insured loans or to purchase them when they are not in default. The insurance fund created by the Bankhead-Jones Farm Tenant Act is to be utilized in discharging

obligations under insurance contracts made pursuant to this act. The Farmers' Home Administration has been designated by the Secretary as the agency to administer the loan program.

Specifically, loans will be made for farm irrigation systems, farmstead water supplies and soil conservation. They will be made, either direct or insured, only when the applicant is unable to obtain the credit he needs at reasonable rates and terms from other sources. Private lenders will receive four percent on insured loans and the borrower will pay an additional one percent for insurance. Direct loans will be at five percent.

Applications for all loans will be made at county offices of the Farmers' Home Administration and eligibility of the applicant certified by the three-member county committee.

In a mimeographed release under date of August 30, 1954 (USDA 2236-54), the Department spelled out many of the details with regard to the program. Following are pertinent extracts from this memorandum:

"Loan funds may be used to pay the cash costs for materials, equipment and services directly related to the application or establishment of measures for soil conservation, water development, conservation and use, and drainage. This will include the construction and repair of terraces, dikes, ditches, ponds, and tanks, the establishment and improvement of permanent pastures, basic application of lime and fertilizer, tree planting, well drilling, and the purchase of pumps and other irrigation equipment. Loans will be made to carry out only the types of soil and water conservation practices that are recommended by the Extension Service and the Soil Conservation Service.

"Soil and water conservation loans will not be available for annual applications of fertilizer in the production of corn, cotton and other crops or for any other annually recurring costs that are generally considered a farm operating expense.

"Non-profit associations such as incorporated water associations, mutual water and drainage companies, irrigation and drainage districts, and soil conservation districts are eligible for a loan when they are unable to obtain adequate credit elsewhere and meet certain other conditions. For example, associations to be eligible must be primarily engaged in extending to their members services directly related to soil conservation, water conservation and use, or drainage of farm land.

"The loans will be scheduled for repayment within the shortest period consistent with the ability of the borrower to repay. No loan will be scheduled for repayment over a period which exceeds the useful life of the improvement or the security, whichever is less. In no case will the repayment period on loans to individuals exceed 20 years. Loans to associations will be repaid on the same basis as individual loans but in

exceptional cases can be amortized over periods up to 40 years. Each borrower will be required to refinance the unpaid balance of his loan when he is able to obtain a loan at reasonable rates and terms from other sources.

"Individuals can borrow amounts up to $25,000. It is expected that the average loan to a farmer will be less than $5,000. Water facility loans last year averaged $4,500. Loans to associations have a ceiling of $250,000. All loans will be secured by the best lien obtainable on chattels or real estate to the extent necessary to adequately protect the Government's investment.

"Applicants will obtain whatever engineering assistance they need from the Soil Conservation Service, Extension Service, other agencies, individuals and firms. Technical assistance of this sort from the Farmers' Home Administration will be limited to a review of the engineering and economic soundness of the improvements to be financed. The Farmers' Home Administration will also take whatever steps are necessary to make sure that loans are used for authorized purposes and that the construction carried on with loan funds meets required standards.

"When necessary, farmers who use loan funds to finance major land use adjustments and extensive reorganization of their farm business will receive assistance from the county supervisors of the Farmers' Home Administration in the development and execution of sound farm and home plans."

The policy underlying this legislation is well stated in letters from the Undersecretary of Agriculture to the Speaker of the House and to the Chairman of the House Committee on Agriculture. To the latter he stated:

"We believe that legislation to provide such credit of suitable term and with adequate supervision to assure sound physical conservation and economic feasibility is desirable. There presently is a gap in available credit facilities both as to purpose and length of term of loans to effectively meet the needs of many farmers in this field.

"The problems of bringing about shifts in land use resulting from acreage diverted from allotted crops (corn, cotton, and wheat) places increased stress on the need for this type of assistance. Technical assistance under the Soil Conservation Service program and cost sharing for installing conservation measures under the Agricultural Conservation Program Service is inadequate where desirable changing in land use involves capital investments, such as livestock, equipment, and buildings.

"Most of the farmers who would be likely to benefit by enactment of such legislation would be those who cannot finance a shift to a soil-conserving system of farming, either by their own resources or through

existing commercial credit channels. We must also recognize that the income from some farms may drop during the transition period. Legislation of this type should therefore permit a loan large enough to cover all of the costs and the necessary period involved in an important land-use adjustment."

The objectives of the legislation were stated quite clearly in the House Report (2290) on the bill (S.3137):

"In addition to its great importance in advancing conservation work, the loan program authorized by this legislation should (1) materially assist in facilitating long-needed land use adjustments; (2) aid substantially in bringing about desirable uses of acres diverted from the production of surplus crops; and (3) relieve the impact of drouth conditions in various areas of the Nation."

In view of the fact that $11,500,000 has been appropriated for fiscal 1955 and that the Farmers' Home Administration is authorized to insure loans up to a total of $25,000,000 each fiscal year, the program has more than a fair chance for success. Its ultimate value in terms of sound and lasting improvement will depend largely upon the wisdom with which loans are made and supervised. Though the responsibility rests primarily with the Farmers' Home Administration, other agencies have a tremendous educational and service challenge — especially the Agricultural Extension Service, the Soil Conservation Service, and the soil conservation districts.

H. W. Hannah

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Penalty for private use
payment of postage

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension
Work. Acts of May 8 and June 30, 1914

Ill. 8900, 4-55—11M
Permit No. 1247

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director.* Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

R. C. Ross, Editor | June, 1955 | Number 223

ARTICLES IN THIS ISSUE

PRICES AND MARKETS IN VIEW OF RECENT CHANGES IN AGRICULTURAL LEGISLATION[1]

The new developments lie in two areas: (1) new legislation; (2) the administrative decisions and actions of the Secretary and Department of Agriculture.

The developments in both fit a pattern: the market will be more important in determining farmers' incomes and governmental action will be less important.

The farmer will judge the wisdom of the changes by his answer to this question: can I trust the market or must I depend on government action to maintain my market?

Congress, in moving toward a lower level of price support for the six basic commodities, decided in effect that farmers were increasingly saying: "we can trust the market," or "the costs and disadvantages of what goes with price supports exceed the advantages from the supports."

These costs and inconveniences take the form of:

1. Reduction in acreage of the crops that do best in particular areas.
2. The necessity to substitute second best crops.
3. Large government stocks set effective price ceilings.

[1] A talk given at University of Illinois Farm and Home Week, January, 1955.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

The farmers in the Corn Belt seemed to be more aware of these costs for basic crops than farmers in other producing areas. The reasons for these differences in attitude are:

1. The Corn Belt produces feed crops; corn the best of all. Whenever acreages in other basic crops are reduced, the land goes into feed crops. This was clearly demonstrated in 1954. Acreages in oats, soybeans, barley, and grain sorghums were all increased as those of cotton and wheat were cut. The Corn Belt farmer says: "why cut acreage in corn and increase other feed crops? What sense does a general program make which cuts acreages in other crops and then puts all released land into feed crops? This merely makes more competition for me."
2. The end products of Corn Belt agriculture — cattle, hogs, poultry, and eggs have no price supports. So the bulk of our income is not supported. And how in the long run can the price of corn be out of line with its feed value?
3. The present inequalities of corn allotments among farms in the same community also influence the attitudes of some farmers.

As long as price supports involved no acreage reductions, as was generally true from 1942 to 1953, there was little objection to them. As soon as supports involved acreage reduction, sentiment began to crystallize for a change.

Whatever the basic causes, more Corn Belt Congressmen voted for flexibility in 1954 than on previous occasions when the issue was up for vote. For the first time the Corn Belt did not line up with the Cotton Belt on this issue. The recent election did not indicate that the rural areas in the Midwest were disposed to punish them for this attitude.

The changes in the Act of 1954 were minor. The Act is important as a symbol of a change in sentiment rather than for its effects.

The effects of administrative decisions are larger. These took three forms:

1. Reduction in level of price supports for the nonbasics which are subject to administrative decision: oats, barley, etc.
2. A more aggressive selling policy for accumulated stocks.
3. An abortive effort to establish generalized acreage controls.

1. Beginning with cottonseed in 1953 there has been a general scaling down in price supports for nonbasics. This has included soybeans, flaxseed, oats, barley, rye, grain sorghums, and the manufactured dairy products.

The most important of these decisions in 1954 was for dairy products. In April, the level of price support for butter, cheese and dried skimmed milk was cut from 90 percent to 75 percent of parity. The results: lower prices in the market, a lower rate of accumulation by the CCC, some in-

crease in use, particularly of butter, and some curtailment in output. Illinois farmers are milking three percent fewer cows than a year ago. Milk production is also down in Iowa and Minnesota. Such adjustments depend on available alternatives. Some men who were milking cows found alternatives.

A year ago there was much concern about the probable effects of a lower support price on soybeans. The 1954 crop of soybeans sold above the loan, in spite of the large increase in soybean acreage and output.

Recently the Secretary of Agriculture has announced a generally lower level of price supports in 1955 for the nonbasic grain crops. This is in line with the trend.

2. The administration found itself with an accumulation of stocks of farm products which totaled 6-7 billion dollars, or one-fifth of a year's annual sales of all farm products. It initiated an aggressive sales program and found spots where the markets would absorb certain of these accumulated stocks. The following stand out:

a. Sales of about 200 million bushels of corn — chiefly old 1948-1949 corn largely in the domestic market. This was replaced by take-over corn. The principal effects were to freshen up the CCC stocks and to set an effective ceiling on corn prices in the summer of 1954. Sales of corn have continued but more slowly since November 1.

b. Sales of 400-500 million pounds of dried skimmed milk for feed in the domestic market. This was at a time when supplies of protein feed were short because of the small 1953 soybean crop.

c. Sales of large quantities of cottonseed oil in world markets. The gap in world supplies seems to be so large that the CCC will likely get rid of its entire stock of accumulated cottonseed oil. The effect of this program was to lower world prices of competing oils but not the United States level. When this liquidation is completed it will leave the way open to sell soybean oil abroad — a much more natural export than cottonseed oil.

d. Efforts to sell wheat in 1954 were not so successful. Some additional wheat was pushed out as feed but world crops of wheat were so large that it was hard to move extra wheat. Sales efforts with this commodity will be more successful in 1955 as world market conditions for wheat have been altered by 1954 crop developments.

All these sales cost the Treasury money as they were made below the cost of these commodities. They have been aided a little by legislation which permitted sales for foreign currencies, etc. But basically the sales reflect the discovery of holes in domestic or foreign supplies which could be supplied by aggressive selling.

The remaining stocks are still very large. The policy of selling where

opportunities can be uncovered will tend to reduce stocks. But do not forget that such sales will often tend to lower the current level of prices that would otherwise prevail. For example, whether corn is sold in the domestic market or abroad every bushel sold from CCC stocks merely replaces a bushel which might be sold by a farmer. This is one of the prices the producers of corn for sale pay for price support, once stocks are accumulated. CCC sales are generally not net additions to total sales.

In the long run I believe a policy of not restricting over-all crop production is wise. I doubt if a general restricted program could be enforced. But is it wise for the producers of a select list of basic crops to be given high price protection and then to allow them to export their surplus problem to other areas, i.e., to those which produce feed crops? I doubt if this policy can survive. The logical alternative is a lower level of price support.

A change in the 1954 Act that may have long run significance is the putting of acreage allotments for wheat on a "harvested acreage basis." This may permit a more flexible wheat program. In the fall of 1954 the acreage of wheat sown was eight percent over allotments; in Illinois it was 13 percent. This rule permits wheat to be used for winter cover, provides some insurance against winter killing, and allows wheat to be disposed of as pasture or hay. Out of this a more flexible wheat program may develop.

To go back to the beginning the basic question is: can farmers trust the market? For the more important Corn Belt products they have to do so. There are no supports for cattle, hogs, poultry or eggs; for dairy products the support is now below the level at which production equal to use will be maintained. Soybeans have always sold above supports. For Illinois this leaves the question applying only to corn and other feed grains. In 1951 sales of corn and oats represented about 22 percent of our farm income.

The economic answer to this question depends on elasticity of use and demand. For wheat there is little elasticity in its use for food and its value as a feed is considerably below its current market price based on supports. With a lower support price the market price for wheat will be considerably lower. But the principal use of corn is to feed livestock. The market price has not been far above its feeding value. From 1948 to 1953 the rate of accumulation was marginal: only three percent of total crops. More feed grains can be consumed and consumers can use the resulting meats and eggs.

The elasticity of demand for animal products may well be close to unity or even a little higher over time. What does this mean? That over a period of time the total value of a larger supply of livestock products may sell for as much or even a little more than a smaller supply. The reluc-

tance of the Corn Belt and of the whole country to reduce outputs of feed crops can be justified in income terms only on the assumption that the elasticities for animal products favor expansion. Our growing population and high level of consumer incomes will absorb more products.

The developments in 1954 indicate that the market in 1955 will play a larger role in farm income than it has for the last few years. Many farmers seem to be accepting this fact as a better alternative than a program of attempting to reduce supply through acreage curtailment.

Price supports at 90 percent of parity did not prevent a decline in prices of nearly 25 percent since the peak was reached in February 1951 — nor did they prevent a decline in over-all farm income. The Act of 1954 had nothing to do with declines in prices during the past year. Administrative decisions regarding levels of support had some effect, particularly in dairy products. It will be interesting to see what the direction of prices will be under the moderately lower level of support provided in the 1954 Act. For the commodities which determine a large part of Illinois farmers' incomes, it will make little difference.

L. J. Norton

INFLUENCING FOOD SALES AT RETAIL

Retail food stores have three basic tools that can be used to influence consumer acceptance and purchases. They are:

1. *Knowledge of local acceptance factors.* The food store operator by his choice of location, size of unit, type of facilities and specialized services has in fact established an operating plan to appeal to given ethnic or economic groups. He also has made decisions regarding allocation of space by types of commodities, the grades, or quality levels to be handled, as well as the possible selection of the quantity and forms of commodities by stocking given branded items and sizes of units, and finally, store pricing policies. Variation in any of these commodity and service factors — qualities, conveniences, varieties, selections, or prices — will be reflected in sales, product acceptance, and even store traffic.

2. *Newspaper and other off-location advertising.* Food store advertising, often criticized by professionals because of format, lack of white space, and general organization, is also acknowledged as having the highest percentage of advertising readership and impact. Hand bills and mailed pieces featuring selections, services, and prices are also used extensively by the retail food trade to reach consumers. Both methods, applied locally, are usually followed by measurable increases in sales for the products featured. Advertising alone, however, is recognized as having little or no continuing sales effect. Continuity of such types of advertising is neces-

sary to maintain sales levels. Consumers by their readership and purchase responses however have established localized food advertising as the most effective and acceptable form of market news reports.

3. *Point-of-sale methods and materials.* An estimated 90 million people shop in the nation's retail food stores each week. The latest Du Pont studies of consumer food shopping habits indicate that nearly 80 percent of all purchases are determined in the grocery store. Simplified, visualized, and dramatized sales messages at point of sale not only have immediate sales effect but have been proven to have longer carry-over results with customers. The ideal combination to achieve sales results is newspaper advertising plus point-of-sale promotion.

Standardized methods, such as mass display, prominent pricing, related item sales displays, and color contrasts of perishables have served to sell ideas of food combinations as well as individual products. Store window banners, store streamers, heralding some seasonal market situation or event, and other attention-getting devices, are also well known and effective sales stimulants. Most food stores are now utilizing more island and dump type displays for featured items or even for low margin, traffic items as a method of gaining attention and lowering costs of handling and display building. Newer and larger stores are providing special areas for the regular scheduling of mass promotions of foods. Store demonstrations and utilization of consumer information on packages, labels, or inserts are other positive approaches at point of sale.

Merchandising and consumer education programs, by public or private agencies, to be effective must have application of material and information at the store level. Adult educational approaches need the possibility of immediate application. This goal can best be realized by stimulating the interest of those who contact the most people in real life situations. In food marketing this can best be done by developing practical help to people for use at point of sale. Mass media, such as newspaper advertising, can serve to precondition some of the buying public.

Experimental educational results of this approach with nine central Illinois food stores indicates this possibility for affecting sales. The procedure involved first analyzing the potential market situation. With the facts determined there followed discussion and planning of the use of the selected food items, as a week's feature, by cooperating stores in their advertising and at point of sale.

Consumers in the area were introduced to the availability, general price level, quality characteristics, uses and methods of preparation of the selected items, by television programs. The television programs were presented on succeeding Tuesdays during February and early March and were restricted in subject matter to single classes of commodities. In order,

five, 15 minute programs dealing with vegetables, pork, beef, cheeses and frozen foods were presented by the University of Illinois, Agricultural Extension Service. Subject matter presentation and demonstration for this series was provided for the most part by qualified specialists from food trades associations and business. Cooperating stores included the selected products as part of their regular Wednesday advertising. On Thursdays, special point-of-sale cards were placed on regular displays indicating prices per unit or pound and the additional notation that the item was a "U of I, TV Special."

Incomplete data, the advent of the Lenten season and the wider promotion of a group of commodities by one of the grocery companies, during one week, discounted any accurate analysis of sales results. While management indicated that sales were strong and that even the limited assistance provided them increased movement of the selected commodities, only one week's results seem worthy of report. This particular test involved relatively minor fresh vegetables. The items were escarole, endive, broccoli and cauliflower. Sales in nine stores over a three day period totaled 1320 consumer units. Of the total store traffic 7.9 percent made purchases of one or more of the recommended items in fresh form. The items sold were all prepackaged by cellophane over-wrap, as were all fresh produce items in the stores, and had an average unit value of 29 cents.

Since the rate of sale of these items was well over average sales expectations, for the period, we must infer that some additional factors influenced consumer decision to buy. If we completely discount the effect of educational television, since it would have no effect during the time period if supplies were not available locally, we must logically conclude that the factors influencing consumer purchases, in addition to availability, were newspaper advertising and special point-of-sale cards.

No additional stores in the area advertised the recommended items. None but cooperating stores made point-of-sale notice of the Agricultural Extension Service's recommendation.

It would seem, from existing information and our own limited trials, that public agencies can affect consumer food purchasing habits most effectively by intensive efforts to work with the existing structure of the grocery trade. This activity should be on a basis that is realistic for local situations. Obtaining greater utilization of the food trade's most effective tools — newspaper advertising and point-of-sale emphasis — for educational purposes, can be a productive approach to the common problems of producers, processors, distributors, and consumers.

W. F. Lomasney

CONSUMER ACCEPTANCE OF LEAN PORK CHOPS

Much attention is being given to problems in production and marketing of hogs. There is evidence of widespread interest in meat-type hogs.

The meat-type hog program arose in part because of the reduction in the value of lard. Before 1940 lard sold for about the same price per pound as live hogs; for the past five years it has sold for about two-thirds as much. The decline in price of lard has resulted from the increased competition of substitutes of which vastly expanded soybean production has been the main source.

At the same time that the price of lard has declined, the price of the four lean cuts of pork, (Boston butts, picnics, hams and loins) — especially of hams and loins, has increased. As a result, attention has centered on securing a higher percentage of the four lean cuts and less lard. USDA grade standards have been set up which reflect the higher percentage of the four lean cuts in the higher grade hogs.

There are indications, however, that problems in marketing pork are greater than just the lard problem. Recent studies of prices indicate that the demand for pork has declined relative to that for beef. Retailers say that excessively fat pork is a problem in retail sales. Further evidence has been provided by various surveys in which consumers were asked to indicate the kind of pork cuts they liked best. Selections were made from samples of different cuts which contained various fat-to-lean ratios. In these surveys, the leaner samples of the various cuts were preferred by most of the people interviewed. Much of our pork production is not as satisfactory to our customers as would be desirable.

Procedure of sales studies. These studies were undertaken to obtain information on consumer preferences regarding fat-to-lean ratios of pork cuts. In practice consumers express their preferences for different items by the prices they will pay for them. Thus the pricing system performs a useful function by transmitting consumer preferences back to producers. In these studies relative prices were used as a measure of consumer preference.

The grading of pork in the wholesale market has been wholly on the basis of weight. This practice doubtless reflects some difference in the fat-to-lean ratio, since the heavier cuts normally have a higher percentage of fat, but considerable variation occurs. At the retail level, however, usually the customer's only choice is to buy or not to buy.

For these studies cooperation of a retailer and a meat packer was secured and most of the results were secured at one local store, which was fairly representative of the trade in Champaign, Illinois.

In testing consumer preference two lots each of pork loin chops and rib chops were used. One lot of each kind of chops was cut from well-muscled, lean loins, and was labeled "Extra Lean Chops." The other lot

of each kind was from regular loins and carried more fat. The corresponding lots were packaged alike and were displayed side by side in self-service meat departments. The leaner lots were priced at various premiums above the regular or fatter lots. Some variations were used from week to week in price, display, and trim. Trim is an important problem in the sale of pork chops; usually the same proportion of trim was removed from lean lots as from regular ones.

Excess fat is probably more objectionable in pork cuts such as Boston butts and rib ends of the loins than in center cuts of loins on which much of the fat is external and can be controlled by trimming, whereas the other cuts have more internal fat which cannot be trimmed.

Results of Sales Experiments

These studies covered intervals in a period of four months in the winter and spring of 1953-54. The following table indicates the results for representative periods.

Sales of Pork Chops for Representative Weeks

	Lean				Regular				Total sales for week	
	Rib chops		Loin chops		Rib chops		Loin chops			
	Price	Percent of week's sales	Price	Percent of week's sales	Price	Percent of week's sales	Price	Percent of week's sales	Lean	Reg.
1st week December	$.83	20	$.89	31	$.73	17	$.83	32	51	49
2nd week December	.85	27	.95	38	.75	14	.85	21	65	35
2nd week January	.89	15	1.03	47	.79	21	.89	17	62	38
3rd week February	.89	24	1.09	30	.77	19	.91	27	54	46
1st week March	.89	33	1.05	36	.79	10	.93	21	69	31
1st week April	.89	32	1.05	29	.79	16	.93	23	61	39

The total pounds of pork chops sold per week remained about the same for the entire period. Usually at a 10-cent premium for the "lean" chops the sales ratio was about two pounds of lean chops to one pound of the regular. As the premium was increased, sales of "lean" chops decreased. At an 18-cent premium sales of the two lots were about equal. In every week greater quantities of the lean lots were sold. For the total period using premiums of 10 to 18 cents "lean" chops outsold the regular or fatter ones by a ratio of three pounds of "lean" to two pounds of the regular chops. The regularity of sales over this period would seem to indicate that many repeat sales were made and that it was not a matter of a single purchase to try something different.

Next an attempt was made to use USDA carcass grades as a basis of selection. In the limited studies on this basis, differences in fat-to-lean

ratios in loins were less than with the direct selection of loins. Meatier type hogs provide leaner cuts, but there appears to be considerable variation in the extent of muscling within grades. Thus it was not possible to secure sufficient uniformity of difference in the lots of pork chops by using only this means of selection of cuts.

From these limited studies, it would seem that many consumers have a marked preference for lean pork chops. Thus, as leaner, well-muscled, meat-type hogs are produced it should be possible to sell increased quantities of pork at the same price or the same quantity at a higher price, or both.

M. B. KIRTLEY

UNITED STATES EXPORT MARKET FOR EDIBLE FATS AND OILS

An important surplus commodity of Midwest agriculture is edible fat. This is chiefly lard from hogs and oil from soybeans. Both of these products are a part of the feed-livestock structure of the corn belt. Lard is a by-product of hog production and soybean oil is a joint product with soybean meal. Soybean meal has been the source of protein on which rapid advances in animal nutrition have been based during the past 20 years. What then is the nature of the market for our surplus fats?

Certain basic facts about United States production and use of edible fats and oils dominate the marketing problem. First, production of edible fats is larger than domestic requirements. Four fats comprise 90 percent of the U. S. production. The average amounts of each produced in the five crop years beginning October 1, 1949, were: butter, 1,581 million pounds; lard, 2,334 million pounds; cottonseed oil, 1,729 million pounds; and soybean oil, 2,614 million pounds, for an average annual total of 8,258 million pounds. The total edible fats and oils produced for these five years averaged 9,086 million pounds.

Average domestic disappearance of the four major fats for the above five-year period was about 6,858 million pounds, or 83 percent of production. The difference between production and disappearance was 1,400 million pounds or 20 percent of domestic disappearance. Production and disappearance are increasing at about the same rate.

Second, production of edible fats is not readily adjustable. Butter production appears to be declining very slowly. Because of the great difference in price between butter and the other edible fats butter production does not respond to the over-all supply situation. Cottonseed oil is a by-product of cotton production. The volume of oil production depends upon cotton production which, in turn, is not related to supplies of fats and oils. Lard is a by-product of hog production. The price of lard has very little effect on hog production.

Soybean oil is a joint product with soybean meal. We have a rapidly

expanding market for soybean meal in the U. S. We apparently need more high protein concentrates than we now have. Soybean oil production is stimulated by soybean meal requirements, and more recently by the price support program for cotton, wheat, and corn. The latter is likely a passing influence.

Third, domestic demand for edible fats is inelastic; that is, consumption changes very little in response to changes in price. We require a minimum quantity of fats in our diets and want this much badly, but any more is objectionable. Food use of all fats and oils has remained stable at about 43 pounds per capita for the past 20 years. We can expect, therefore, that the domestic utilization of fats and oils for food uses will increase at about the same rate as population.

These three facts lead to one definite conclusion: we must either export our surplus fats or move them into nonfood uses. It is not clear that the nonfood uses could absorb them. Certainly it would take a drastic price reduction to move them into the lower value uses.

The key market for U. S. edible fats and oils is the world market. U. S. production is an integral part of world production, and the balance between world production and requirements is as important to Illinois soybean producers as is that in the United States. We are a part of the world fats and oils market.

World production of all fats and oils is increasing at about the same rate as population. Currently, production per capita is about the same as in 1934-38. During the five years immediately following World War II, per capita production was sharply below the prewar rate. Most of the deficiency was in coconut oil, butter, and lard. Per capita production was restored to the prewar level in 1951 and has held about constant since then.

The five principal kinds of fats and oils, with their approximate proportions of total production and main uses are:

Kind of fat	*Percent of production*	*Use*
Edible vegetable oils	33	Food
Palm oils	14	Food and nonfood
Industrial oils	11	Nonfood
Animal fats	39	Food and nonfood
Marine oils	3	Food and nonfood

A fairly accurate division of the individual fats into food and nonfood uses may be made for all except the palm oils. Of the latter the two most important are coconut and palm oils; both are used for both food and nonfood purposes. By classifying these two rather arbitrarily the food and nonfood fat production since 1935 may be estimated as follows:[1]

[1] Foreign Crops and Markets, Volume 70, No. 5, January 31, 1955.

	(Thousands of short tons)		
	Food uses	*Nonfood uses*	*Total*
Average 1935-39	17,372	6,323	23,695
Average 1945-49	15,520	6,465	21,985
1951	19,302	7,433	26,735
1952	18,610	7,713	26,323
1953[1]	19,143	7,782	26,925
1954[1]	19,097	7,968	27,065

Food fat production has increased from prewar by ten percent while total fats have increased by 14 percent. Per capita food fat production is still below prewar levels. This deficiency can be made up in part by the use of nonfood fats, but it indicates a need for a more rapid increase in food fat production than in population.

The change in production of food fats outside of the United States is much more striking than the total. The average food fat production in the U. S., 1935-39 was 2,762,000 short tons and in 1949-54, 4,543,000 short tons, an increase of 65 percent. World food fat production outside the U. S. was 14,610,000 short tons for the 1935-39 average, and 14,804,000 in 1954. This indicates a sharp reduction per capita. The world is heavily dependent on U. S. edible fat production.

Total world exports[2] of fats and oils are now approximately the same as before World War II, or about 6,500,000 short tons. This is about 35 percent of world production. But again the totals are not accurately descriptive. Prewar, about 73 percent of exports were food fats, but in 1954 only 65 percent.

There have been major changes within the total volume of exports. Prewar averages (1934-38) compared with estimates for 1954 are:

	(Thousands of short tons)		
	Prewar	*1954*	*Change*
United States	111	1,579	+1,468
Other America	789	480	− 309
Philippines	387	533	+ 146
Africa	1,249	1,628	+ 379
India and Ceylon	654	200	− 454
Malaya	147	122	− 25
Indonesia	588	417	− 171
Australia and Oceana	403	352	− 51
China and Manchuria	824	180	− 644
Other (including Europe)	761	562	− 199
Whale oil	563	503	− 60
Total	6,476	6,556	+ 80

[1] Preliminary.

[2] Data on world exports are adapted from an address by J. C. A. Faure at the International Oil Seed Crushers Congress, Cannes, France, June, 1954.

The increase in Africa is mainly in palm, palm kernel, and peanut oils. Africa has increased in importance as a supplier of European edible oils. The decrease in "other America" is mainly in flax and linseed oil from Argentina and Uruguay. The decreased trade within Europe reflects changed political structure and the tightening of supplies of fats and oils.

The great shift has been from Asia to the United States as the supplier of European food fats and oils. The decrease in India and Ceylon was mainly in peanut oil and flaxseed. The decrease in China and Manchuria was mainly in soybeans and cottonseed oil. The bulk of the increase in United States exports was in soybeans and cottonseed oil. The export of cottonseed oil in 1954 was unusual; normally little is exported. The cottonseed oil that was exported replaced soybean oil that would have been shipped.

During 1935-39 the United States was a net importer of edible fats and oils. We are now the world's most important supplier. The change in our position is about equal to the oil produced from 250 million bushels of soybeans.[1] *The United States soybean crop has replaced Manchurian soybeans and Indian peanuts in world trade.*

What is the future of our export market? Several things indicate that the U. S. export market will continue large and will expand further.

1. World production of edible fats per capita is still below prewar levels.

2. Outside of the U. S., population appears to be increasing faster than production of edible fats.

3. In many countries there is a pressure for better diets.

In India, oil exports have decreased because of population increase and pressure for better diets. In China, population has increased requiring more fats. But more importantly, China is attempting to industrialize and the hard labor involved cannot be done on the limited per capita supplies of food fats that China has had.

There are indications that Russia is seriously short of edible fats. She was able to obtain large amounts from China in 1953. This movement resulted in a food oil crisis in China and apparently no shipments have been made since. It is likely that a considerable amount of the cottonseed oil that the United States has exported in the past year has found its way indirectly to Russia or has replaced other kinds of food fats that have gone to Russia.

Two things seem clear: (1) we must export and (2) the world needs our surplus production. In order to export any commodity three conditions must be met: (1) there must be a need, (2) the importing

[1] This computation omits inedible fats and oils.

countries must be able to pay, and (3) the price must be right. With fats and oils these conditions exist. Our exports in the crop year 1953-54 were large enough to reduce our total inventory by 150 million pounds. It appears that our inventories of edible fats and oils will be reduced by about 500 million pounds in 1954-55.

From 1951 to early 1954 under our cottonseed price support program we priced our fats and oils out of the world market, and huge inventories were built up. Since February 1954 we have priced these products in line with world prices and our "surplus" is rapidly disappearing.

For the past year our exports have been greater than can be maintained from current production levels. It looks as if the world is basically short of fats and oils. This indicates rising oil prices as long as current high levels of economic activity are maintained.

T. A. Hieronymus

THE ILLINOIS BROILER INDUSTRY

The growth and development of the Illinois commercial broiler industry has been part of a rapid national expansion due in large part to economic factors such as (1) high consumer demand; (2) broiler-meat prices more favorable than red-meat prices; (3) liberal credit available to producers; (4) improved marketing procedures and facilities; (5) lower costs; and (6) lack of alternative opportunities.

Broiler producers. A study made in late 1953 and early 1954 revealed that approximately 700 persons in Illinois are engaged in growing 10½ million broilers. Production has become quite general over the state with the heaviest concentration in the vicinity of Chicago, Peoria, and St. Louis, and in Franklin and Williamson counties in southern Illinois. These areas have more than 50 percent of all growers.

Forty-four Illinois hatcheries produced broiler chicks in 1953. Of these, thirty-four, or 77 percent, operated the year around to supply their customers. The forty-four hatcheries reported an output of 22,060,000 chicks of which 42 percent were sold to Illinois growers, at an average cost of 15.5 cents. Approximately 70 percent of all chicks hatched were White Rocks; New Hampshires were second.

Records on 300 lots of broilers containing 2,048,731 chicks were obtained from 84 growers in central Illinois. The average size lot started was 6,829 chicks of which 6,390 were raised. The broilers were produced under a variety of conditions ranging from small backyard town lots, housed in a variety of temporary and remodelled buildings to modernly designed and recently constructed specialized broiler plants.

One-third of the 84 growers were farmers who had included broiler production as another enterprise on the farm. Twenty-eight occupations

were engaged in by the growers, of whom fifty-one percent grew broilers as a sideline. The average length of experience was 2.9 years.

Investment in broilers. The average investment in fixed capital, including land, buildings, and equipment was $7,635 or $1.15 per bird housed. The average investment in operating capital, including chicks, feed, labor, and materials, was $4,266, or 63 cents per bird. The average total investment in both fixed and operating capital was $11,901 or $1.78 per bird, of which fixed capital amounted to 64 percent and operating capital 36 percent.

Costs and returns. The average cost of production per bird for all lots was 74.7 cents and the average cost per pound was 24.8 cents. Of the total costs feed accounted for 60.7 percent, chicks 22.1 percent, labor 5.4 percent, fixed charges 5.0 percent, and miscellaneous items 6.8 percent.

The average gross return per pound was 28.1 cents. Net returns averaged 3.3 cents per pound, but ranged from a loss of 19.4 cents to a profit of 10.3 cents. Net return per bird was 10 cents. Returns per $100 of input were $113; net returns per hour of labor averaged $3.48.

Production efficiency factors. Some factors which influence costs and returns in broiler production were examined. As size of lot became larger, mortality increased; feed efficiency was lowered; hours of labor per 1,000 birds decreased; and returns per hour of labor increased. The New Hampshire breed had the lowest mortality, the best feed conversion, and the best daily rate of gain. Spring lots of broilers had the lowest mortality, the best feed conversion, and the greatest net return per pound. Lowest net returns were received from the fall lots, largely because of lower prices received in late November and in December of 1953. The average mortality for all lots was 6.4 percent. Higher mortality was accompanied by higher production costs and lower net returns. The greatest cause of death loss was air sac disease, which accounted for 27.3 percent of the birds that died. Of the 300 lots, 226 or 75.3 percent, were reported as having suffered losses from disease.

Pounds of feed required to produce a pound of broiler ranged from 2.55 to 6.95 with an average of 3.08 pounds. As the broiler-feed ratio increased from 2.55 to 6.95, the total costs per pound increased, feed costs per pound increased, and net returns decreased from a profit of 7.2 per pound to a loss of 6.0 cents.

The average weight of all birds sold was 3.01 pounds. Broilers were most profitable when sold before or during the tenth week. Beyond this point the longer the birds were kept, the less the average daily rate of gain, the poorer the feed conversion, and the higher the mortality rate.

Approximately 255 hours of labor, of which 85 percent was family labor, were required to grow an average lot of 6,390 broilers. The average

labor requirement per 1,000 birds for all lots was 40.1 hours. As hours of labor increased, total cost per pound increased and net returns per pound decreased.

Nineteen brands of all-mash feed were fed at an average cost of $4.86 per 100 pounds. The feed source having the highest net returns per pound and one of the best ratings in all measures was a "home-mixed" feed. Only three growers prepared, or had prepared, their own mash using home-grown grains.

Financing broiler operations. The average investment in fixed and operating capital was $11,901. Of the 84 growers, 21.4 percent had borrowed money for building purposes and the purchase of equipment. Approximately 56 percent used credit for the purchase of feed and chicks. Of the growers 44 percent financed themselves for operating capital. Feed dealers financed 48.8 percent, and 7.1 percent borrowed from commercial banks. The most common financing plan among feed dealers was to include a finance charge per ton of feed sold. This amount ranged from 50 cents to $2.00 per ton and covered the total period the birds were on feed. The interest rate thus varied from 4 to 16 percent per annum. When broilers were grown under contract, the finance charge, in some cases, was as high as 20 percent.

Marketing broilers. Illinois broiler growers have reasonably good markets for their finished birds. There is only one processor in the state, however, with capacity large enough to take all the birds from a large house at one time. As a result, for nearly two-thirds of the broilers sold the growers received only one bid. Approximately 92 percent were sold directly to processors. The average age of the birds sold was 71 days and the average weight was 3.01 pounds. The number of birds marketed each month was very irregular, a fact which makes it difficult for a large processing plant to get sufficient birds at all times to keep the plant operating at full capacity. The only alternative is to purchase live broilers from other states. At present Illinois growers are supplying only about one-half of all broilers consumed in the state. Most broilers produced in Illinois are sold in smaller cities down state.

Processing and distribution of dressed broilers. Most processors in Illinois are relatively small operators. Of 32 processors interviewed nearly two-thirds processed less than 100,000 birds each during the year. Most processors bought live birds and sold the dressed product within a radius of 50 miles of their plants. The largest plant processed 41 percent of the broilers produced in Illinois. Approximately 50 percent of the processors sold directly to consumers from their dressing plants, disposing of one-third of the birds locally. Very few were sold outside the

state. Apparently, not many of the larger cities in the state are supplied by locally grown and processed broilers. Interviews in the larger cities with ten firms dealing in dressed, ice-packed, trucked-in broilers from Georgia indicated strong competition with Illinois broilers.

RALPH A. BENTON

QUANTITY DISCOUNTS AND EFFICIENT STORE DISTRIBUTION OF MILK

The greatest opportunity for increasing per capita sales of milk is to reduce distribution costs, reduce retail prices, and then to advertise. Lower costs can be obtained by initiating mass distribution with a store differential ranging from two- to six-cents a quart. Furthermore it is desirable to keep reducing gross distribution margins in stores where sales are already large. Vigorous store competition is also the key to more efficient distribution of milk to homes.

The National Association of Food Chains has about 15,000 member stores; the Independent Grocers' Association, 6,000. Many of these stores have demonstrated their ability to merchandise dairy products efficiently. The dairy industry should capitalize on this knowledge to expand the sale of milk in food stores throughout the United States.

For more than two decades food stores in the United States have been the pace-setters in getting milk to consumers at lower prices, thereby helping to increase per capita consumption. In 1930, stores in the United States handled less than ten percent of milk sold to consumers. By 1952, this proportion had increased to 45 percent; during the next decade it is expected to increase to about 60 percent. In some markets, such as Chicago and New York, store sales are higher than 60 percent. In 1930, stores in Chicago handled six percent of the milk sold to consumers; in 1952, about 70 percent.

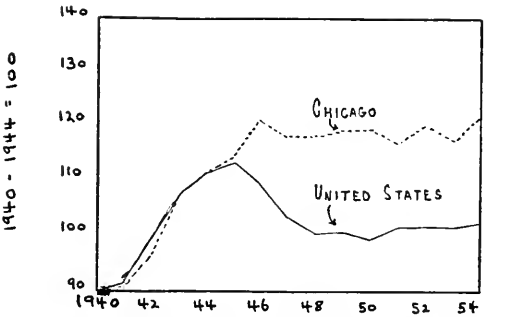


FIG. 1. INDEXES OF PER CAPITA SALES OF MILK, CHICAGO AND UNITED STATES, 1940-1954

Per capita sales in Chicago in 1954 averaged six percent *above* those of 1945 (Fig. 1), but for the United States they averaged 11 percent *less*. The higher milk sales in Chicago resulted from higher consumer income, quantity discounts for half-gallons and gallons, the introduction of new products such as low-fat milk and flavored milk drinks,

and aggressive merchandising. In spite of high increases in per capita sales and a high proportion of stores sales in Chicago, the volume of milk per route and per store is considerably below that of some other markets.

How Can Milk Sales Through Stores Be Increased?

1. Improve quality. One of the larger food chains purchases only milk which has a low bacteria count, a good flavor, and a minimum fat content of 3.8 percent. This company has frequent laboratory check-ups of milk in the store. Dairymen who produce the highest quality milk are paid a premium of ten cents a 100 pounds above the usual price. Milk sales in all stores of this chain average 400 quarts per day.

2. Low retail prices are associated with higher per capita sales. Scientific studies indicate that people use more milk when prices are reduced. The extent that sales change with a change in price, however, varies with the market.

In a study of milk sales in 4,508 stores in the New York markets, Blanford found that a 3.3-percent change in consumption in low-income families . . . was associated with an opposite change in price of ten percent.[1]

In a study of several Connecticut markets, Brinegar found that a one-percent change in the price of milk was followed by about a .48-percent change in consumption in the opposite direction. . . .[2]

In a subsidized experiment in Washington, D. C., Stiebeling and others found that a 58-percent decrease in price followed a 62-percent increase in milk sales to low-income white families, and an 84-percent increase to Negro families.[3]

In a 13-year study of the Chicago market, income and price were the two principal causes of changes in milk sales ($r = .989$).[4] In the Kansas City market, a 12.9-percent decrease (2.6 cents a quart) in the price of milk from 1952 to 1954, was accompanied by a 12.8-percent increase in milk sales.[5] Part of this increase can be attributed to the excellent promotional work of the American Dairy Association which accompanied this price decrease.

3. Encourage store differentials and quantity discounts. Studies

[1] Cornell University Agr. Exp. Sta. Bulletin 765, 1941.

[2] Storrs Agr. Exp. Sta. Bulletin 280, July, 1951.

[3] USDA Circular 645, May 1942.

[4] *Illinois Farm Economics,* June 1953, pp. 1,484-1,487. The Beta coefficient for per capita milk sales and adjusted disposable income (other variable being held constant) was + .714. The Beta coefficient for per capita milk sales and adjusted retail price (other variable held constant) was — .528.

[5] Based upon changes in milk sales in the marketing area as obtained from the Federal Market Administrator. Sales were adjusted for changes in population.

show that the wider the store differential, the higher the milk sales per store. In one market, sales of milk in 181 stores in 1952 averaged 467 quarts daily. For several years the store price in this market has been three cents less per quart than the home-delivered price, and three and one-half cents less when two quarts or more were purchased. In 1952, the gross margin for receiving, processing, packaging, storing, delivery and sale of milk through stores in this market averaged 6.1 cents per quart, or 3.2 cents *less* than the average in 24 cities of 300,000 or more.

In Chicago, the lowest reported prices charged by food chain stores on a gallon basis has ranged from 6 to 8 cents less per quart than the home-delivered price per single quart.

In Cleveland, Columbus, and Detroit, in which the greatest increases in sales occurred in 1953 for cities of comparable size, the gallon or half-gallon price at stores in November was between 4.5 and 5.0 cents a quart less than the home-delivered price.[1]

In January 1954, 49 of 132 markets reporting,[2] or 37 percent, sold store milk in half-gallons or gallons at prices lower than for single quarts. In the Chicago market, 67 percent of all milk is sold to consumers in half-gallons or gallons. The number of markets in the United States using quantity discounts in January 1954, was three times that of January 1951. In spite of this increased use of quantity discounts, it is estimated that three-fourths of the cities and villages in the United States have either a one-cent store differential or charge as much for milk at stores as for home-delivered milk.

4. Reduce unit costs by large-volume operations. Some of the most efficient milk distributors bottle 50,000[3] quarts of milk daily in one plant; deliver 6,000 quarts of milk daily per man per route;[4] and sell more than 400 quarts daily per store.

5. Keep the store margin low; not more than two cents per quart. A low margin makes possible a lower price to consumers and a higher volume per store. Milk, meat, and bread are traffic builders. Unit costs of handling milk are low since the capital invested turns over 25 times per month. Hence, it is possible to make money on milk and still keep low the gross handling margin. A study of 109 markets[5] in January 1954, showed that the margin to stores averaged 2.02 cents per quart. Of these ten

[1] *Illinois Farm Economics,* March 1953, pp. 1,509-1,512.

[2] USDA Fluid Milk and Cream Report, January 1954.

[3] Illinois Agr. Exp. Sta. Bulletin 560, November 1952, p. 21.

[4] Data from research studies of the Bureau of Milk Control, California State Department of Agriculture.

[5] From USDA Fluid Milk and Cream Report, January 1954. Included all markets with sufficient data for computing the store margin. The store margin is the difference between the store price and the reported wholesale price per quart.

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension
Work: Acts of May 8 and June 30, 1914

Ill. 8900, 6-55—10M
Permit No. 1247

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director*. Acts approved by Congress May 8 and June 30, 1914.

markets had a store margin of only one cent while 64 had a margin of two cents or less.

6. **Have only one brand of milk; keep low the number of items handled.** Stores handling the highest volume of milk have only one brand and not more than ten items of milk products. A food chain in one large market handles the following items: four items in quarts, regular homogenized milk, Vitamin D homogenized milk, buttermilk, and chocolate drink; half-and-half in pints; table cream; whipping cream; sour cream in half-pints; and 12-ounce packages of cottage cheese, large or small curd.

7. **Advertise in newspapers, by radio and television.** Food chains with the highest sales per store advertise dairy products frequently along with other food items. They have good products and let the public know about it.

The key to prosperity in the dairy industry is in mass production and distribution of milk at low prices.

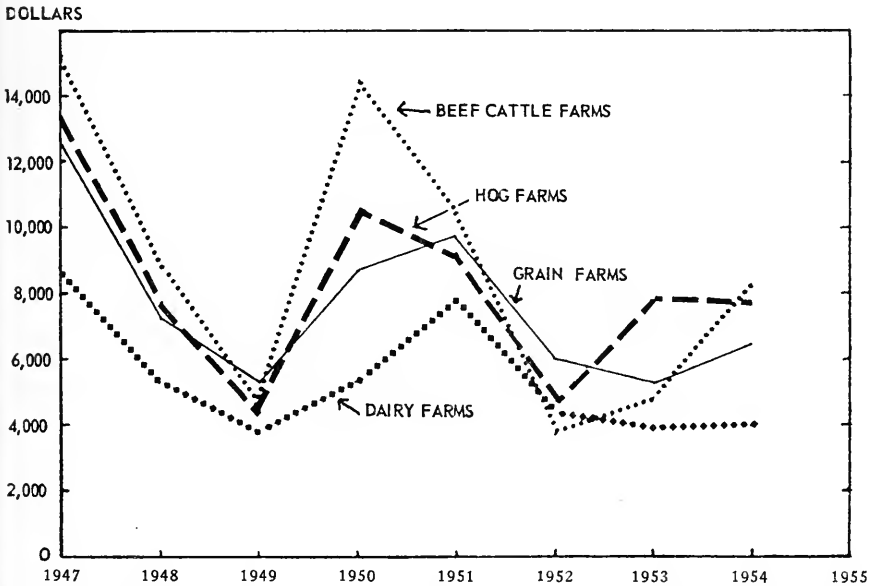
R. W. Bartlett

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

L. H. Simerl, Editor | January, 1956 | Number 224

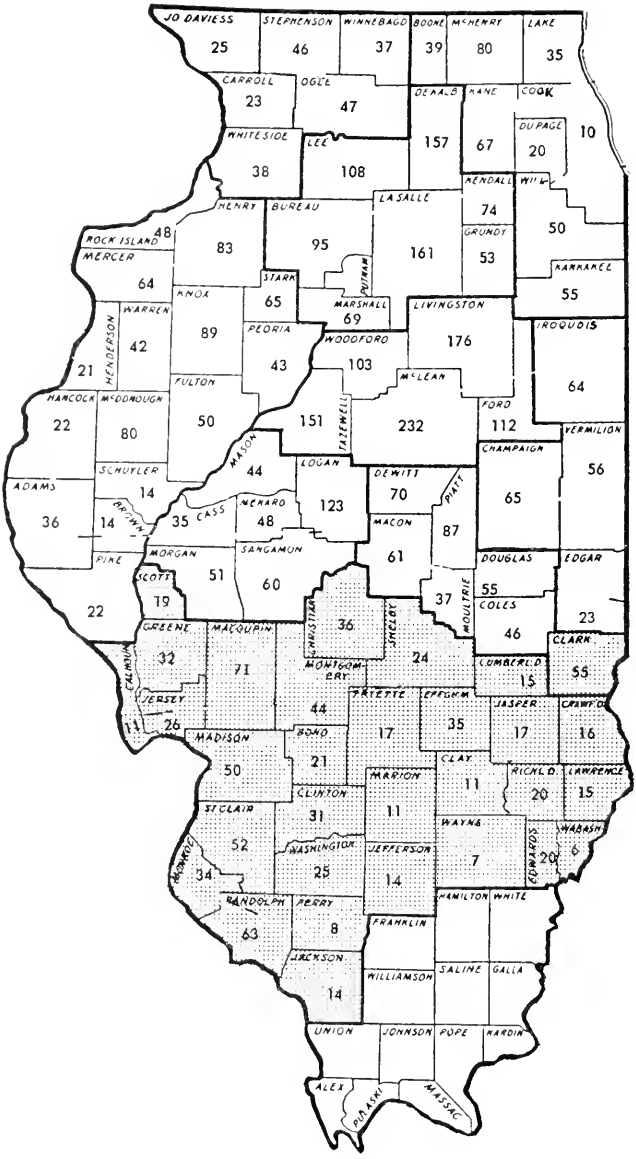
Summary of Annual Farm Business Reports on Illinois Farms For the Year 1954



RETURNS TO CAPITAL AND MANAGEMENT ON 220 ACRE FARMS IN NORTHERN ILLINOIS, 1947-1954

Net farm earnings, as measured by returns to capital and management, have shown a wide variation the past eight years on different systems of farming in northern Illinois. Earnings dropped in 1948 and 1949, recovered in 1950 and 1951 during the Korean conflict and then dropped again during the 1952-1954 period. Livestock-feed price ratios cause earnings to vary considerably on different systems of farming in any one year although all systems show the same general trend of earnings.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.



The map above shows numbers of farm account cooperators by counties in 1954. Total cooperators numbered 4501 in 89 counties. Farms in the shaded counties comprise the southern Illinois group listed in this report.

SUMMARY OF FARM BUSINESS RECORDS ON ILLINOIS FARMS FOR 1954

Farm income. The returns to capital and management on 180 to 259 acre farms in northern Illinois in 1954 averaged 19 percent below the earnings in 1947 to 1949. Returns on dairy farms declined most, 32 percent. Returns on grain farms declined 24 percent, beef cattle farms 14 percent and hog farms 8 percent. Data in Tables 1 through 4 show trends in production, expenses and income for these four systems of farming from 1947 through 1954.

Returns to capital and management on farms in southern Illinois dropped sharply in 1954, largely because of drouth in this area. Dairy farms experienced net operating losses, and returns on grain and hog farms were only one-fourth to one-third of the earnings in the high income year of 1951. Tables 5 through 7 show production, expenses and income on 180-259 acre farms for the years 1951 through 1954. Southern Illinois data are for farms in the shaded counties shown on the opposite page.

TABLE 1. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE BEEF CATTLE FARMS IN NORTHERN ILLINOIS, 1947-1954

Items	1947	1948	1949	1950	1951	1952	1953	1954
Total acres	220	224	221	223	226	219	221	224
Soil productivity rating	74	77	74	77	79	78	77	79
Value of production	$23,529	$18,475	$13,223	$24,205	$21,186	$15,095	$16,414	$20,804
Operating expenses	6,210	7,465	6,519	7,823	8,535	8,996	9,266	10,090
Farm family earnings	17,319	11,010	6,704	16,382	12,651	6,099	7,148	10,714
Less unpaid labor	2,008	2,082	1,973	1,943	2,180	2,387	2,344	2,368
Returns to capital and management	15,311	8,928	4,731	14,439	10,471	3,712	4,804	8,346
Less interest on investment	2,635	3,355	3,050	3,287	4,889	5,476	5,240	5,044
Management returns	12,676	5,573	1,681	11,152	5,582	−1,764	−436	3,302
Cash income	44,934	43,817	36,178	41,801	42,921	42,873	36,986	36,766
Cash expenditures	38,354	36,886	27,979	34,028	38,508	33,865	24,850	29,302
Cash balance	6,580	6,931	8,199	7,773	4,413	9,008	12,136	7,464

TABLE 2. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE GRAIN FARMS IN NORTHERN ILLINOIS, 1947-1954

Items	1947	1948	1949	1950	1951	1952	1953	1954
Total acres	233	224	223	223	223	224	223	221
Soil productivity rating	81	81	80	81	80	82	83	82
Value of production	$19,365	$14,458	$12,715	$16,345	$18,746	$15,357	$15,007	$16,205
Operating expenses	4,711	5,191	5,404	5,673	6,787	7,005	7,434	7,622
Farm family earnings	14,654	9,267	7,311	10,672	11,959	8,352	7,573	8,583
Less unpaid labor	2,038	1,952	1,996	1,952	2,188	2,331	2,265	2,174
Returns to capital and management	12,616	7,315	5,315	8,720	9,771	6,021	5,308	6,409
Less interest on investment	2,318	2,461	2,560	2,526	3,652	4,354	4,254	4,095
Management returns	10,298	4,854	2,755	6,194	6,119	1,667	1,054	2,314
Cash income	18,089	16,904	17,296	17,090	17,814	18,529	17,537	16,550
Cash expenditures	9,436	10,388	10,027	10,207	10,550	11,321	10,081	9,759
Cash balance	8,653	6,516	7,269	6,883	7,264	7,208	7,456	6,791

Farm operating expenses. Operating expenses as used in Table 1 through 7 include depreciation and all cash operating expenses except purchased feed and livestock. Operating expenses increased from 1953 to 1954 on all types of farms in northern and southern Illinois and were at the highest level ever recorded for the years included in this summary. The increase in operating expenses is explained by two factors. Prices paid by farmers for operating items have increased. Also, indications are that farmers are purchasing more fertilizer and spending more for machinery items and buildings. Farm wage rates have increased during the past eight years, but the months of labor per farm have decreased. Average 220-acre account-keeping farms in northern Illinois used about two months less labor in 1954 than in the 1947-1949 period.

Associated with the increase in operating expenses during the past eight years has been an increase in production per farm in northern Illinois. Total value of production increased on grain, hog, and beef cattle farms even though prices received for farm products were lower. Physical

TABLE 3. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE HOG FARMS IN NORTHERN ILLINOIS, 1947-1954

Items	1947	1948	1949	1950	1951	1952	1953	1954
Total acres	218	219	219	220	219	219	220	218
Soil productivity rating	76	76	72	75	74	75	75	77
Value of production	$20,978	$16,035	$12,944	$19,239	$19,479	$15,868	$19,692	$19,728
Operating expenses	5,614	6,239	6,334	6,696	7,968	8,633	9,337	9,553
Farm family earnings	15,364	9,796	6,610	12,543	11,511	7,235	10,355	10,175
Less unpaid labor	2,169	2,076	2,171	2,161	2,390	2,543	2,502	2,408
Returns to capital and management	13,195	7,720	4,439	10,382	9,121	4,692	7,853	7,767
Less interest on investment	2,366	2,627	2,517	2,606	3,993	4,524	4,291	4,309
Management returns	10,829	5,093	1,922	7,776	5,128	168	3,562	3,458
Cash income	24,860	24,140	21,433	24,011	26,889	26,849	28,461	28,587
Cash expense	14,746	16,509	14,994	18,156	21,043	20,060	17,600	20,403
Cash balance	10,114	7,631	6,439	5,855	5,846	6,789	10,861	8,184

TABLE 4. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE DAIRY FARMS IN NORTHERN ILLINOIS, 1947-1954

Items	1947	1948	1949	1950	1951	1952	1953	1954
Total acres	215	214	216	214	219	216	215	218
Soil productivity rating	69	67	65	63	64	65	67	72
Value of production	$17,432	$14,501	$13,406	$14,661	$18,798	$15,405	$17,040	$17,013
Operating expenses	6,541	6,910	7,071	7,051	8,618	8,414	10,327	10,352
Farm family earnings	10,891	7,591	6,335	7,610	10,180	6,991	6,713	6,661
Less unpaid labor	2,280	2,231	2,467	2,265	2,359	2,706	2,774	2,633
Returns to capital and management	8,611	5,360	3,868	5,345	7,821	4,285	3,939	4,028
Less interest on investment	2,110	2,278	2,283	2,265	3,457	3,575	3,696	4,252
Management returns	6,501	3,082	1,585	3,080	4,364	710	243	−224
Cash income	18,960	19,680	18,244	17,191	21,221	18,179	19,557	19,942
Cash expense	11,967	13,517	13,397	12,089	13,882	12,993	14,068	15,515
Cash balance	6,993	6,163	4,847	5,102	7,339	5,186	5,489	4,427

production per farm increased, but not by enough to offset the higher costs. Drouth in southern Illinois reduced production per farm in 1953 and 1954.

TABLE 5. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE HOG FARMS IN SOUTHERN ILLINOIS, 1951-1954

Items	1951	1952	1953	1954
Total acres	220	219	224	221
Soil productivity rating	35	38	38	42
Value of production	$11,664	$10,282	$12,808	$10,525
Operating expenses	5,157	6,287	6,634	7,217
Farm family earnings	6,507	3,995	6,174	3,308
Less unpaid labor	2,336	2,446	2,472	2,247
Returns to capital and management	4,171	1,549	3,702	1,061
Less interest on investment	2,003	2,381	2,385	2,408
Management returns	2,168	−832	1,317	−1,347
Cash income	13,756	16,345	17,937	16,529
Cash expense	10,105	12,551	11,675	12,549
Cash balance	3,651	3,794	6,262	3,980

TABLE 6. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE DAIRY FARMS IN SOUTHERN ILLINOIS, 1951-1954

Items	1951	1952	1953	1954
Total acres	213	214	213	213
Soil productivity rating	33	32	30	31
Value of production	$13,283	$12,035	$10,646	$ 9,046
Operating expenses	5,762	6,231	6,264	6,611
Farm family earnings	7,521	5,804	4,382	2,435
Less unpaid labor	2,804	2,873	2,602	2,549
Returns to capital and management	4,717	2,931	1,780	−114
Less interest on investment	2,060	2,208	2,043	2,369
Management returns	2,657	723	−263	−2,249
Cash income	14,803	15,636	13,116	12,521
Cash expense	10,384	10,434	9,253	10,006
Cash balance	4,419	5,202	3,863	2,515

TABLE 7. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259 ACRE GRAIN FARMS IN SOUTHERN ILLINOIS, 1951-1954

Items	1951	1952	1953	1954
Total acres	217	217	223	223
Soil productivity rating	43	48	45	42
Value of production	$14,123	$12,593	$12,554	$11,625
Operating expenses	5,556	6,129	6,458	7,375
Farm family earnings	8,567	6,464	6,096	4,250
Less unpaid labor	2,156	2,246	2,067	2,171
Returns to capital and management	6,411	4,218	4,029	2,079
Less interest on investment	2,222	2,496	2,512	2,455
Management returns	4,189	1,722	1,517	−376
Cash income	14,121	14,651	14,614	14,240
Cash expense	8,857	9,755	8,763	9,862
Cash balance	5,264	4,896	5,851	4,378

Selected cost items. Tables 8 through 11 present selected per-acre cost items on different type and size classifications of farms in northern and southern Illinois. These data may be used for comparison of costs on farms that do not have complete farm records. Farmers and other persons may find these costs useful in farm planning.

Cost items of soil fertility, buildings, and machinery include depreciation and cash expense items. Labor costs include hired labor expense and all family and operator's labor charged at $175 per month in northern Illinois and $160 per month in southern Illinois.

TABLE 8. — SELECTED COST ITEMS ON GRAIN AND HOG FARMS IN NORTHERN ILLINOIS, 1954

Type of farm	Grain farms		Hog farms	
Size of farm	Under 260 acres	260-499 acres	Under 260 acres	260-499 acres
Per acre cost items:				
Soil fertility	$ 4.79	$ 4.72	$ 4.36	$ 4.53
Buildings	4.76	3.50	6.46	5.17
Machinery, total	16.60	14.07	20.56	16.76
Machinery repairs	3.15	3.04	4.58	4.14
Gas and oil	3.26	2.90	3.60	3.20
Labor	13.09	10.82	16.70	13.27
Purchased feeds	5.25	5.24	32.20	23.89

TABLE 9. — SELECTED COST ITEMS ON BEEF AND DAIRY FARMS IN NORTHERN ILLINOIS, 1954

Type of farm	Beef farms		Dairy farms	
Size of farm	Under 260 acres	260-499 acres	Under 260 acres	260-499 acres
Per acre cost items:				
Soil fertility	$ 4.24	$ 4.88	$ 3.84	$ 3.84
Buildings	7.77	5.68	7.53	6.73
Machinery, total	21.47	17.09	22.75	18.14
Machinery repairs	4.43	4.00	4.84	4.00
Gas and oil	4.01	3.33	3.90	3.30
Labor	15.70	13.14	20.17	15.63
Purchased feeds	27.03	25.34	13.21	10.48

TABLE 10. — SELECTED COST ITEMS ON GRAIN AND HOG FARMS IN SOUTHERN ILLINOIS, 1954

Type of farm	Grain farms		Hog farms	
Size of farm	Under 260 acres	260-499 acres	Under 260 acres	260-499 acres
Per acre cost items:				
Soil fertility	$ 6.76	$ 4.57	$ 5.30	$ 4.92
Buildings	2.70	3.00	3.78	3.23
Machinery, total	15.84	16.75	18.41	13.16
Machinery repairs	3.04	2.39	3.60	2.82
Gas and oil	3.19	3.50	3.22	2.71
Labor	11.78	11.15	13.97	10.71
Purchased feeds	3.86	3.38	25.97	22.49

TABLE 11. — SELECTED COST ITEMS ON DAIRY AND ON BEEF AND MIXED LIVESTOCK FARMS IN SOUTHERN ILLINOIS, 1954

Type of farm	Beef and mixed livestock farms		Dairy farms	
Size of farm	Under 260 acres	260-499 acres	Under 260 acres	260-499 acres
Per acre cost items:				
Soil fertility	$ 4.57	$ 5.75	$ 4.23	$ 3.82
Buildings	4.06	4.33	3.84	2.57
Machinery, total	15.80	13.22	16.92	13.30
Machinery repairs	3.09	2.61	3.21	2.88
Gas and oil	2.82	2.55	3.02	2.89
Labor	14.32	10.34	15.90	11.13
Purchased feeds	17.42	13.55	13.26	10.75

Building, machinery, labor, and purchased feed costs per acre are usually higher on livestock farms where the volume of business per acre is greater. Costs, particularly labor and machinery costs, also vary according to size of farm. In general, the larger farms are less intensive and are able to spread certain fixed labor and machinery costs over more acres of land.

Returns from livestock. Table 12 presents the returns per $100 feed fed to livestock on Illinois farms for the past 22 years. Since feed represents the major cost item in livestock production, the returns are expressed as a ratio to feed cost. The difference between a $100 of feed

TABLE 12. — RETURNS PER $100 FEED FED TO DIFFERENT CLASSES OF LIVESTOCK

Year	Beef cow herds	Dairy cow herds	Dual purpose herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry	Yearly price of corn
1933	$ 90	$152	$112	$ 97	$ ..	$ ..	$128	$217	$ .32
1934	84	145	118	125	..	..	127	198	.58
1935	110	143	141	152	93	163	174	211	.74
1936	85	150	109	96	109	101	155	180	.73
1937	99	159	116	106	123	50	122	157	.91
1938	119	193	151	142	98	153	184	208	.45
1939	146	204	162	131	136	136	144	195	.43
1940	134	198	173	136	142	149	118	177	.54
1941	136	212	162	124	160	122	193	202	.63
1942	127	176	151	136	131	147	201	187	.77
1943	108	160	118	105	93	108	136	169	.97
1944	94	166	120	107	88	136	125	140	1.07
1945	110	174	128	119	117	120	138	159	1.07
1946	130	183	148	135	138	194	154	141	1.39
1947	130	162	147	138	130	131	150	117	1.90
1948	143	183	152	137	138	79	131	137	1.89
1949	132	175	137	136	142	104	144	161	1.16
1950	169	173	173	170	177	182	152	122	1.35
1951	170	187	163	142	171	111	127	137	1.66
1952	99	175	120	86	67	44	116	116	1.65
1953	64	147	71	81	84	113	178	148	1.44
1954	95	141	95	126	97	119	154	104	1.46
22-year average	117	171	135	124	122	123	148	163	1.05

cost and the return figure is the margin available to pay for labor, equipment, and supplies and to provide a profit margin. Different livestock enterprises require different margins to cover these other costs. Labor and equipment costs are high relative to feed costs for dairy and poultry enterprises, and low for hogs and feeder cattle. In using Table 12, comparison should be made with the 22-year average to appraise the profitableness of any class of livestock in a particular year.

Livestock returns per $100 feed fed have fluctuated widely since 1952. The lowest return figures for the 22-year period were in 1952 for sheep and hogs, in 1953 for beef and dual purpose herds and feeder cattle, and in 1954 for dairy and poultry. These fluctuations in livestock returns explain part of the year-to-year variation in farm earnings from different systems of farming.

Definitions of Selected Terms

Value of Production includes total cash receipts from grain, livestock and other income, inventory change in grain and livestock and value of products consumed in the household, less cash purchases of feed and livestock.

Farm Family Earnings includes cash balance, inventory and capital change, and value of products consumed in the household. No deductions have been made for family and operator's labor or interest on investment.

Interest on Investment is a charge for use of capital invested in the farm business. Bare land is charged at 4 percent and all other investments at 5 percent.

Soil Productivity Rating. Soil types are rated according to inherent productivity, ranging from 100 for the best land down to 5. Soil productivity rating is calculated from the soil types on each farm.

A. G. Mueller

LANDLORD-TENANT SHARES

Tenancy and type of lease are important considerations in making an economic analysis of the farm business. This is particularly true under present high land values and high operating capital requirements. The type of lease and leasing arrangements employed determine the extent to which the landowner contributes to the business and the extent to which he may participate in the management of it.

High levels of operating capital contributed by tenants are shown in Table 1. The values given for capital items subject to depreciation are remaining cost values. To replace these items at their original cost would likely require an investment half again as high or more. Interest and depreciation on the capital supplied by the tenant add substantially to his

TABLE 1. — AVERAGE BEGINNING-OF-YEAR CAPITAL INVESTMENTS BY TENANTS AND LANDLORDS ON ALL-RENTED FARMS RANGING FROM 180 TO 339 ACRES IN SIZE ENROLLED IN THE FARM BUREAU FARM MANAGEMENT SERVICE IN 1954[a]

Items	Soil productivity ranges			
	100-76	75-56	55-36	35-5
Farms Operated Under Crop-Share Leases				
Number of farms[b]	98	84	9	15
Average size of farm	260	253	234	243
Tillable acres per farm	239	218	209	199
Average soil productivity rating	84	69	48	25
Tenant's investments:				
Machinery, equipment, etc.	$ 8,287	$ 7,192	$ 7,593	$ 6,013
Livestock, feed, grain and seed	11,475	9,968	7,578	7,306
Total tenant capital	$ 19,762	$17,160	$15,171	$13,319
Landlord's investments:				
Land inventory	$ 81,701	$61,846	$37,553	$27,195
Buildings, fences, etc.	11,967	10,661	5,018	6,502
Feed, grain and seed	4,607	3,508	859	894
Total landlord capital	$ 98,275	$76,015	$43,430	$34,591
Total farm investment	$118,037	$93,175	$58,601	$47,910
Percent owned by tenant	17	23	26	28
Farms Operated Under Livestock-Share Leases				
Number of farms[b]	73	89	.....	.....
Average size of farm	249	242	.....	.....
Tillable acres per farm	224	210	.....	.....
Average soil productivity rating	83	69	.....	.....
Tenant's investments:				
Machinery, equipment, etc.	$ 7,541	$ 7,494	.....	.....
Livestock, feed, grain and seed	12,625	10,735	.....	.....
Total tenant capital	$ 20,166	$18,229	.....	.....
Landlord's investment:				
Land inventory	$ 77,082	$61,113	.....	.....
Buildings, fences, etc.	17,129	15,679	.....	.....
Feed, grain and seed	12,494	10,618	.....	.....
Total landlord capital	$106,703	$87,410	.....	.....
Total farm investment	$126,869	$105,639	.....	.....
Percent owned by tenant	16	17	.....	.....

[a] The data are for farms grouped according to the average productivity rating of their tillable land.
[b] This is not the total number of such farms in the FBFM Service. Samples of farms were used to limit the number of records handled to obtain these data.

contribution to offset the landlord's contribution in land and fixed improvements. On a tillable-acre basis the tenant's capital inputs show less variation by quality of soil than the landlord's land and capital contribution. This explains why the rent share under crop-share leases drops from a one-half share on the best land to a two-fifths share on less productive land and on down to a one-third share on the poorest land.

The landlord's high improvement capital inputs under livestock-share leases are both cause and effect. Where the farm has a superior set of buildings, fences, and other livestock facilities the landlord will seek to rent the farm on a livestock-share lease in order to share in the returns and thus recover his cost from these investments. Where a livestock-share lease is already in existence the landlord is likely to be more willing to make additional capital improvements for efficient livestock production.

The tenant's total capital input does not differ greatly on a livestock-share lease from that on a crop-share lease. (See Table 1.) Many crop-share leases are used on livestock farms. However, the livestock volume is usually much greater under a livestock-share lease. The extra labor and management required from the livestock-share tenant usually is offset by the landlord's greater input in buildings, fences and operating expenses.

Cash Differences

Table 2 shows striking differences in cash inputs between tenants and landlords under a crop-share lease, and also between landlords under crop-share and under livestock-share leases.

Of every dollar of cash income received by tenants in the northern half of Illinois in 1954, 75¢ was spent to pay farm operating expenses and to maintain capital investment. Thus only 25¢ of each dollar received by tenants was available to meet living expenses, pay income taxes, meet interest charges and to reduce debts. There was no important difference in the cash income-expenditure ratios between livestock-share and crop-share tenants.

In contrast, of each dollar received by crop-share landlords only around 40¢ was spent for farm expenses. Livestock-share landlords, sharing more fully in operating costs, had cash income-expenditure ratios nearer that of tenants, since of each dollar received they had about 68 cents of farm expenditures.

Their high ratio of expenditures to cash income makes tenants much more affected by a cost-price squeeze than either a crop-share landlord or a debt-free owner-operator.

Table 2 shows a much greater participation in operating costs by livestock-share than by crop-share landlords. This is partly due to custom

TABLE 2. — AVERAGE CASH INCOME AND CASH EXPENDITURES BY TENANTS AND LANDLORDS ON ALL-RENTED FARMS GROUPED ACCORDING TO TWO LEVELS OF SOIL PRODUCTIVITY AND OPERATED UNDER TWO LEASE TYPES[a]

Items	Soil productivity ratings			
	100-76		75-56	
	Crop-share leases	Livestock-share leases	Crop-share leases	Livestock-share leases
Number of farms	98	73	84	89
Average size of farm	260	249	253	242
Tillable acres per farm	239	224	218	210
Average soil productivity rating	84	83	69	69
Tenant's cash income	$16,108	$19,466	$13,748	$14,217
Tenant's cash expenditures[b]	12,202	14,568	11,244	10,549
Percent expenditures are of income	76	75	82	74
Landlord's cash income	$ 7,454	$18,721	$ 5,967	$13,519
Landlord's cash expenditures[b]	2,719	12,983	2,433	9,085
Percent expenditures are of income	36	69	41	67
Cash expense for machine hire:				
Tenant's share	$ 302	$ 253	$ 339	$ 228
Landlord's share	61	231	57	203
Cash expense for gasoline, fuel, and oil:				
Tenant's share	$ 842	$ 716	$ 747	$ 610
Landlord's share	....	212	....	236
Cash expense for annual fertilizers:				
Tenant's share	$ 434	$ 291	$ 432	$ 354
Landlord's share	416	319	334	410
Cash expense for building repairs and farm improvements:				
Tenant's share	$ 102	$ 44	$ 96	$ 49
Landlord's share	99	532	222	551

[a] Data are for the year 1954 from farms enrolled in the Farm Bureau Farm Management Service and ranging from 180 to 339 acres in size.

[b] Cash expenditures include purchases of capital items, feeder and breeding livestock and all cash operating expenses.

and traditional methods of equalizing tenant and landlord contributions under livestock-share leases and partly to the need for the livestock-share landlord to contribute more than land and fixed capital to offset the tenant's labor, capital, and other operating inputs.

Livestock-share landlords have traditionally shared in the fuel and oil costs because in the days of horse-drawn machinery the horses were fed out of undivided grain grown on the farm. To maintain the same balance of inputs with the introduction of tractor power, some landlords assumed a share of the fuel and oil bills. There is, however, no need for a landlord to pay part of the gas and oil costs if he is able to make up his proportionate share of the business input some other way.

Fertilizer Costs

Fertilizer costs are a good example of the general rule which is that added expenses should be shared in the same way as the added income produced by the expense. According to Table 2, the farms in our sample divide fertilizer costs approximately equally.

F. J. REISS

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

FREE — Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 1-56—11M
Permit No. 1247

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

L. H. Simerl, Editor | August, 1956 | Number 225

ARTICLES IN THIS ISSUE

ILLINOIS LAND CHANGES SHOWN BY THE CENSUS

Changes in farm sizes, land use, land value and tenure in Illinois during five or more years up to November 1954 have been full of meaning. In some of these aspects changes differ widely from one part of the state to another.

Farm sizes and numbers. Increases of 14.6 acres, or 9.2 percent over 1949, in the size of the average Illinois farm are shown by the latest federal farm census. The 173.2 acres shown for the average farm in 1954 exceeded by 26 percent the average size in 1934 (136.9 acres) and by 39 percent the average size in 1899 (124.2 acres). In 1954 Mason County, Illinois had the largest average farm size (255 acres). Twenty-one other counties had averages above 200 acres, all in central Illinois except for one, Gallatin, in southern Illinois.

Compared with 55 years ago (census of 1900) only one county, DuPage, in the Chicago suburban area, shows a decrease in average size of farm. All others show increases. The increases averaged about one-fifth in northern Illinois, two-fifths in central Illinois and one-half in southern Illinois.

A larger proportion (39.4 percent) of Illinois farms were of 180 acres and over in 1954 than in 1949 (34.6 percent). Farms of 100-179 acres were 28.1 percent in 1954 compared with 28.9 percent in 1949. Farms under 10 acres were 7.2 percent in 1949 but fell to 6.4 percent in 1954. Farms 10 to 99 acres were 29.3 percent in 1949 but decreased to 26.1 percent in 1954.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

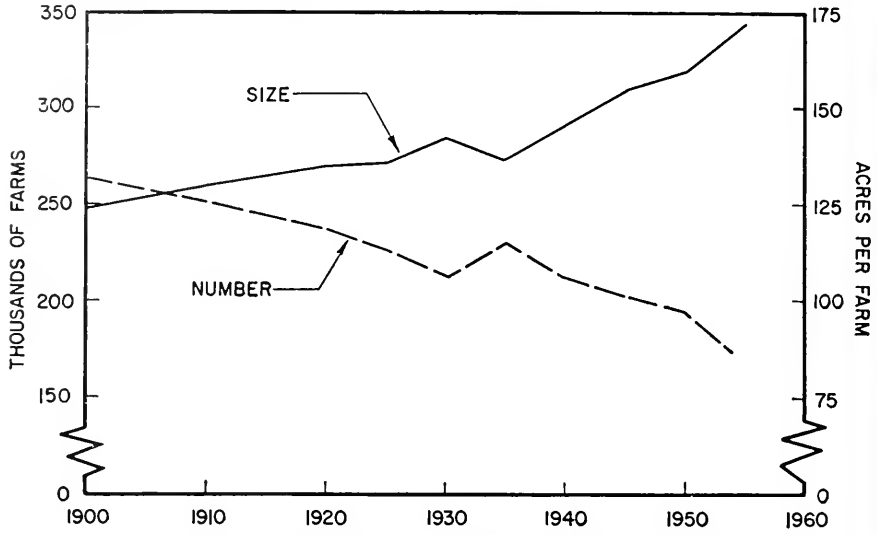


Fig. 1. Size and Number of Farms, Illinois, 1900 to 1954.

While farms of 180 acres and over were 39 percent of all farms in Illinois in 1954, they were only 23 and 27 percent of all farms in two southern Illinois farming-type areas, and 48 and 50 percent in two cash-grain areas of central Illinois.

Farms under 10 acres in 1954 comprised nearly 12 percent of the farms in the area nearest Chicago and well above the 6-percent state average in several southern Illinois areas. Farms under 10 acres were in fairly even proportion in the various parts of the state both in 1954 and 1949. Some shrinkage in the number of these small farms was notable in the northwestern dairy area.

Farms of 10 to 99 acres in size showed percentages twice as high in southern Illinois as in central Illinois. Farms of from 100 to 179 acres conformed more consistently to the state average in 1954 and in 1949 than any other farm size. Rapid increase in farms of 180 acres and over is clearly indicated as a major Illinois farm fact.

About 16 percent of all Illinois farms fell in the "less-than-commercial" group in 1954. (Commercial farms are those with a year's sales of $1,200 or more, plus farms with sales of $250 to $1,200 where the operator worked off the farm less than 100 days and the operator and members of his family received less from nonfarm sources than the total value of all farm products sold.) There was a decrease in the proportion of these subcommercial farms in the latest five-year period in 17 of the 102 counties in Illinois: Cook, Fulton, Macoupin, Shelby, Fayette, Madison, Clay, Marion, Wayne, Franklin, Hamilton, Jefferson,

Williamson, Saline, Jasper, Johnson and Union. Of these counties Union was the only one having fewer than 200 residential farms. Altogether there were 27 counties that had 200 or more residential farms in 1954.

This latest census points to continued importance of part-time farms, some decline in residential farms, and a growing prominence of large-scale commercial farms.

Land tenure. The number of farm owner operators in Illinois decreased during the four and one-half years ended in November, 1954. Nearly 60 percent of the farm acreage in Illinois at this later date was operated under lease. The number of tenants in 1,000 farm operators was 345 in 1950 and 346 in 1954. In 1954 there 218 part owners in every 1,000 farmers, compared with 204 in 1950. There were 432 farms per 1,000 operated by full owners in 1954, compared with 446 in 1950. Salaried managers operated fewer than five farms in 1,000 in either 1950 or 1954.

For 50 years the average size of farms operated by full owners has increased less rapidly than the average size of other farms. In 1900 the average size of a full-owner farm was 119 acres, which was 96 percent of the state average of all farms. In 1950, however, this figure had dropped to 93 acres, which was only 59 percent of the then-average size of all farms.

Farm tenants, on the other hand, operated farms which were two percent smaller than average in 1900 but 27 percent larger than average in 1950. Part owners, like tenants, have gone out for larger acreages than have full owner operators.

Owner operators have continued to be concentrated in the areas where farms are smaller and cost less per acre.

There were over 60 tenants in 100 operators in Piatt, Ford and Logan counties in the central part of the state. Of 18 counties in the cash-grain farming area of central and eastern Illinois, only Piatt and Moultrie had actual increases in tenant numbers, but all of the counties in this area had increased percentages of tenant farmers in 1954 compared to 1950. The percentage of rented land in this area has reached proportions equalled in few areas of more than minor size in the entire United States.

In contrast there are areas of southern Illinois where rented land is much less prominent, in fact, almost negligible in many cases. In Johnson and Franklin counties, for example, only six farmers in 100 were tenants in 1954. Other counties in which fewer than ten in 100 farmers were tenants included Williamson (7), Massac (8), and Hardin (9). On the other hand, part owners are twice as numerous as tenants in five farming-type areas of southern Illinois.

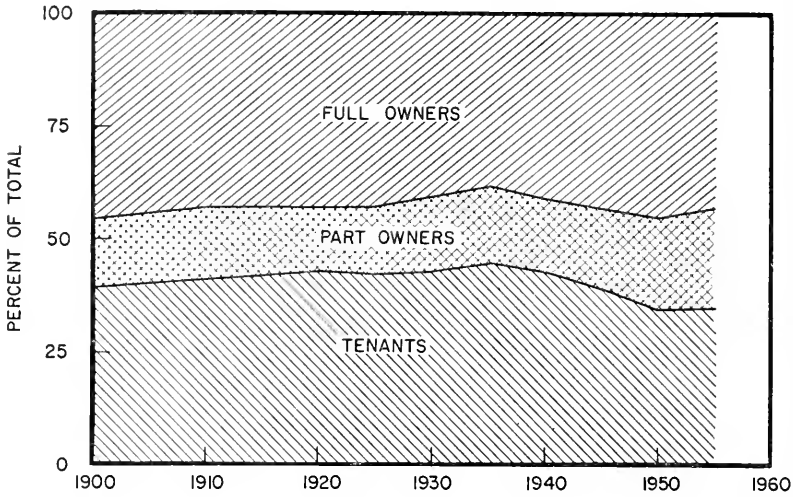


Fig. 2. Percent of Farms Operated by Owners, Part-Owners and Tenants, Illinois, 1900 to 1954.

Part owners do not overshadow tenants in numbers or land leased in central or eastern Illinois, but they have been occupying an even more prominent place in cash-grain farming.

In summary, it is clear that farmland leasing is increasing in Illinois.

Land prices. Value of Illinois farmland and buildings increased about 30 percent in the four and one-half years ended in 1954. The average price of farmland in Illiinos was $228 an acre at the time the 1954 census was taken. That is an increase of $54 an acre from the average value reported to the 1950 census.

The average value of farmland in the 18 counties in the cash-grain area of central and eastern Illinois surpassed the state average by 60 percent. The $383 per acre average in this highly-productive area was $45 an acre higher than the next high-area average, that of the northeast dairy section, even though the latter reflects the very high values around Chicago.

No county in Illinois showed a lower dollar value per acre of farmland in 1954 than in 1950. Increases in two counties in the southern tip of the state were very small. In Pope County the average value in 1954 was $44.81 an acre, which was an increase of $2.39, or less than 6 percent of the 1950 value. In Massac County, where the average land price was $54.44 in 1954, the increase was less than 40 cents an acre. There were 14 other counties in southern Illinois in which the average value of farmland in 1954 was still less than $95 an acre.

At the highest end of the scale was Cook County, with an average

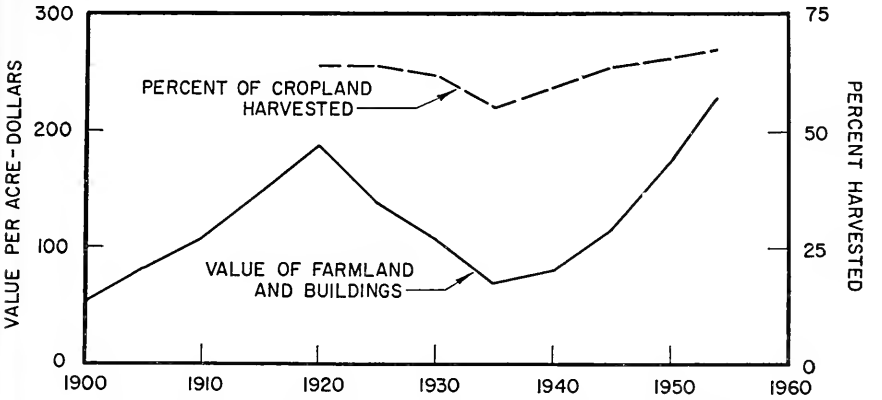


Fig. 3. Value of Farmland and Percent of Cropland Harvested, Illinois, 1900 to 1954.

value of $626 an acre (46 percent increase since 1950). Other counties with very high land values were: Champaign, $437 (34 percent increase); Piatt, $435 (29 percent increase); Douglas, $410 (36 percent increase); DuPage, which adjoins Cook County on the west, $404 (20 percent increase); Macon, $402 (28 percent increase); Logan, $387 (29 percent increase); McLean, $377 (30 percent increase) and Moultrie, $365 (29 percent increase). Of the nine counties with the highest average land prices, seven were located in the cash-grain area.

By contrast with January 1935, the values reported for 1954 showed a remarkable increase throughout the state. In 35 counties the rate of increase was between 250 and 370 percent. Nearly half of these 35 counties were in southern Illinois, a nearly equal number in central Illinois, and only one in northern Illinois. Counties with highest rates of increase were Montgomery (369 percent); Effingham (368 percent); Jasper (361 percent); Bond and Cumberland (359 percent each); Hardin (345 percent); and Christian (343 percent). In addition to Christian County, Champaign and Douglas were the only central Illinois counties in which the increase exceeded 300 percent in the nineteen and one-half year period.

Probable reasons why increases were so general in southern and central Illinois are now listed provisionally. Prices of land in many of these counties, especially in southern Illinois, slid to extremely low levels in the middle 1930's. Mechanical power gave farmers on most Illinois land opportunity for handling the land for crop production to better advantage. Interest in enlarging farms and in applying savings from farm operations and from other occupations to purchase farmland was

shown in many parts of the state. As in most major agriculture regions of the nation, price-cost relationships were favorable to high net returns from farming during much of the period from 1935 to 1951. Returns to farming have been less strikingly favorable in recent years. Nevertheless, there has been a persistent desire to enlarge farms in order to make more efficient use of equipment and labor supplies. The supply of farmland available for purchase has not been large for many years. High capital-gains taxes have been among the influences that have reduced the motives of owners to sell.

Land use. Over two-thirds of the land in farms in 1954 was in harvested crops. This indicates a degree of intensified use of land greater than for 1949 or any earlier census crop year. In the same five-year period in which harvested cropland in Illinois was increasing 185 thousand acres, the total area in farms decreased 560 thousand acres. Suburban expansion, highways and developments alongside, forest reservations, and other permanent or temporary nonfarm uses have taken land from farms. Much former pastureland has been put into crops. Between 1949 and 1954 the number of harvested crop acres in 100 acres of farmland increased from 66 to 68.

The remainder of Illinois farmland requires special classification. About 5.4 percent of Illinois farmland was in house lots, roads, wasteland, and the like. Most of the remaining 27 percent of the farmland was used for pasture. Illinois pasture is of three types in nearly equal proportions: cropland used for pasture only (8.2 percent of all farmland), woodland pastured (6.4 percent), and other pasture (6.9 percent). The remaining farmland was woodland not pastured (3.2 percent), and cropland not harvested and not pastured (2.3 percent). In Illinois each of these six subordinate uses showed a smaller percentage in 1954 than in 1949.

While two acres in three were harvested cropland in the entire state, only two in five were in harvested crops in eight counties in the extreme southern end of the state. But in this southern area, harvested cropland as a percentage of all farmland increased from 38.8 in 1949 to 40.5 in 1954. By contrast, in east-central Illinois (cash-grain area) there was little change from 80.2 percent in harvested crop uses in 1949 to 80.5 percent in 1954.

Taking the eight-county area farthest south in Illinois as an illustration of difference from the commercial corn belt, 32 percent of the farmland was still in the three pasture uses and 27 percent was not pastured at all. This stands in contrast with 13 percent of farmland in the three pasture uses in the cash-grain area of east-central Illinois and with 6 percent in neither crop nor pasture use in the latter area.

The trend toward very high proportion of the Illinois farmland in harvested crops has been not solely of the period since 1949 nor has the trend always been toward harvested crop uses of Illinois land.

Let us compare 1924, for example, with 1934. There was an increase in land in farms from 1924 to 1934, but a decrease in the number of acres in harvested crops and the number of harvested acres per 100 acres of farmland declined from 64 to 55. The great depression apparently accounted for reduced accent on use of land in crop production, especially in central and northern Illinois.

In the ten years following 1934 there was a rapid return toward the cropland picture that preceded the depression. In one area of east-central Illinois, the proportion of farmland in harvested crops became higher by 1954 than in 1924.

In the total period between 1934 and 1954 the acres of land in farms decreased about 4 percent, while the area of harvested cropland increased 17 percent.

Taking a still longer view, the area in farms in Illinois stood at its highest figure as reported by the 1900 census at nearly 33 million acres. From the 1899 peak, farm acreage declined in 55 years 7.3 percent. The longest stretch over which a change in harvested crop area can be traced is from 1919 when it stood at 20.3 million acres to 1954 when it was 20.5 million acres.

For nearly half a century the total area in farms in Illinois has been decreased each year by an average area equal to the size of two survey townships. From 1945 to 1955, however, the decrease was at an average annual rate of five townships. All this time, however, the total harvested crop area changed very little.

C. L. Stewart and G. W. Shafer

TRENDS IN ILLINOIS RURAL POPULATION

During the past fifty years Illinois population has increased by more than eighty percent. In 1900 there were 4,821,550 persons in the state and by 1950 the number has increased to 8,712,176. The state's population growth has continued at a rapid rate since 1950. Recent estimates by the Bureau of the Census places the 1955 population at 9,361,000.

While the state's population has grown rapidly during the past fifty years there were marked differences in the extent to which the various residential groups shared in this upsurge. Figure 1 shows the growth of the urban, rural-nonfarm and farm segments of the population. It is readily apparent that the urban population has absorbed most of the total growth. Starting with 2,616,368 in 1900 the population of Illinois cities increased by 99.5 percent to 6,683,673 in 1950. While the urban popu-

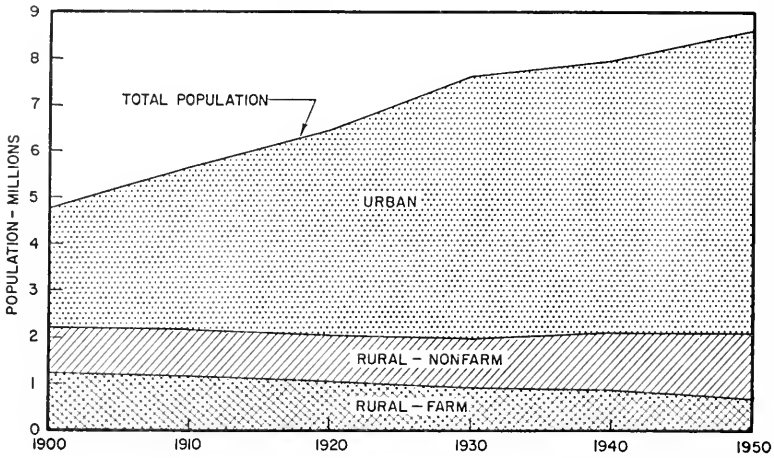


Fig. 1. Illinois Population, Total, Urban, Rural-Nonfarm, and Rural Farm, 1900 to 1950.

lation increased tremendously during this period, the number of persons living in rural territory (i.e., places with less than 2,500 inhabitants) remained constant. In 1900 the rural population numbered 2,505,182 and fifty years later 2,225,503, representing a slight increase of 20,301 or about one-half percent. The marked urbanization of the state's population during the first half of the present century has been a significant trend.

Classification of Population. Under Provisions of the Constitution, the Bureau of the Census has been counting people in this country since 1790. However, it was not until 1920 that a distinction was made between the residents of farms and other rural residents. Generally the farm population includes all persons residing on farms regardless of occupation. The rural-nonfarm population embraces all other persons living outside of centers with more than 2,500 inhabitants. The remainder is classified as urban.

Although there is no official count of rural-farm and rural-nonfarm population for the decades prior to 1920, estimates have been made of

Table 1. — Trends in Illinois Rural, Rural-Farm, and Rural-Nonfarm Population 1900 to 1950

Census	Total rural	Percent	Rural-farm		Rural-nonfarm	
			Number	Percent	Number	Percent
1950	2,125,503	100	765,277	34.4	1,460,226	65.6
1940	2,087,591	100	968,103	46.4	1,119,488	53.6
1930	1,994,927	100	991,401	49.6	1,003,625	50.4
1920	2,081,603	100	1,090,736	52.4	990,867	47.6
1910	2,158,656	100	1,158,296*	53.7	1,000,360	46.3
1900	2,205,182	100	1,214,566*	55.1	990,616	44.9

* Estimated.

the number of persons in these groups. The purpose of this study is to discuss some of the significant trends in the rural, rural-farm and rural-nonfarm population of the state from 1900 to 1950. This fifty-year period represents an area during which marked changes have taken place in the distribution of our rural population. Furthermore, this period also is one in which the majority of the state's population has been classified as urban. In 1900 for the first time in history of the population census, Illinois had a greater proportion of people classified as urban than rural, when 54.3 and 45.7 percent were reported as urban and rural respectively. In 1950 urban represented 74.5 percent and rural 24.5. It is noteworthy that Illinois became urbanized earlier than the nation. The United States population did not become more urban than rural until 1920.

Table 1 has been prepared showing the relative growth of the rural population and its component parts from 1900 to 1950. It has been noted previously that the total rural population remained relatively stable in this fifty-year period. During that same time, however, there were significant changes in the trend of the rural-farm and rural-nonfarm segments. In 1900, the 1.2 million persons on Illinois farms represented about 55 percent of the state's rural population and 990,000 rural-nonfarmers accounted for about 45 percent. Fifty years later the proportions of farm population had dropped to about one-third (34.4 percent) of the rural and the rural-nonfarm constituted about two-thirds (65.6 percent). Thus in fifty years the farm population passed from a majority to a minority of the rural residents and were outnumbered two to one by their rural-nonfarm neighbors. Furthermore, the farm population declined by 449,289 or 37 percent in fifty years. In the same period rural-nonfarm residents increased 469,610 or 47.7 percent. Although figures are not available for a date later than 1950, it is estimated that the rural-farm population continued to decline and reached about 688,000 persons on the first of July 1955.

Table 2. — Trends in Number of Farms and Illinois Farm Population 1900 to 1955

Census year	Number of farms	Decrease over preceding census	Population	Decrease over preceding census	Percent of state total population
1955	175,543	−10.1	687,953*	−11.8	7.3
1950	195,268	− 8.5	765,277	−21.0	8.8
1940	213,439	− 0.5	968,103	− 2.3	12.2
1930	214,497	− 9.6	991,401	− 9.1	12.9
1920	237,181	− 5.8	1,090,736	− 5.8	16.8
1910	251,872	− 4.6	1,158,296	− 4.6	20.5
1900	264,151	.....	1,214,566	.....	25.2

* Farm population estimated as of July 1, 1955, based on 9,361,000 population for Illinois. United States Bureau of the Census, *Current Population Reports, Population Estimates.* Census Series P-25, No. 129, Washington, D.C., January, 1956.

A major factor in the trend in Illinois farm population is the decline in the number of farms. Table 2 has been prepared showing the trend in the number of farms and farm population from 1900 to 1955. It is obvious from this table that the decline in the number of farm persons was more rapid than the decrease in the number of farms. During each period since 1900 the number of farms has declined but the rate of decline has not been too drastic. On the other hand, farm population has been decreasing at an increasing rate since 1900, with the exception of the decade ending in 1940 when the decline amounted to 2.3 percent. An important factor in arresting the farm population decrease at this time was the widespread depression of the thirties when vast numbers of farm boys and girls were unable to find employment in urban centers and remained on the home farm. This period was also characterized by reverse migration from cities to farms.

Starting late in the 1930's and continuing to the present, the farm population shows a precipitious decline. Between 1940 and 1950 Illinois farm population decreased 202,826 or 21 percent. Evidence indicates that this rate of decrease continued to 1955. It is interesting to note that the farm population has become a smaller and smaller proportion of the state's total population during each successive decade of the present century. In 1900 about one-fourth of our poulation resided on farms and by 1950 the proportion had dropped to about one-twelfth (8.8 percent). Hence, not only is the farm population a minority of all rural persons but in 1955 represented about seven percent of the total population.

The downward trend in farm population reflects the extent to which agriculture responded to the substitution of mechanization and electric power for human labor on farms. As farms decreased in number and increased in size, tractors and other power equipment have made it possible for fewer and fewer people to operate the agricultural plant at increasing efficiency. In many respects this development has made it possible for the average farm operator to be almost self-sufficient in his labor requirements.

Changes by counties. Because there was such a precipitious decline in farm population between 1940 and 1950, it is of interest to examine the changes in the counties. All counties experienced losses in farm population between 1940 and 1950. In absolute numbers county losses varied from 289 persons in Boone to 5,212 in Fayette. The average (median) county loss was 1,685 represented by Wabash. This means that 51 counties lost more than this amount and 51 lost less than this. See Table 3.

Percentage losses in farm population for each of the counties is shown in Figure 2. Losses varied from 5.4 percent of the 1940 population in Boone to 41.4 percent in Alexander. In addition to Alexander County,

TABLE 3. — CHANGES IN ILLINOIS RURAL-FARM POPULATION, BY COUNTIES, 1940 TO 1950

County	Farm population		Change 1940 to 1950	
	1950	1940	Number	Percent
Adams*	11,646	14,478	−2,832	−19.6
Alexander	2,910	4,970	−2,060	−41.4
Bond	5,066	6,785	−1,719	−25.3
Boone	5,022	5,311	− 289	− 5.4
Brown	3,618	4,635	−1,017	−21.9
Bureau	11,508	13,281	−1,773	−13.3
Calhoun	4,055	5,643	−1,588	−28.1
Carroll	5,641	7,054	−1,413	−20.0
Cass	4,152	5,446	−1,294	−23.8
Champaign	12,174	16,195	−4,021	−24.8
Christian	9,204	11,703	−2,499	−21.3
Clark	7,022	9,635	−2,613	−27.1
Clay	6,485	8,868	−2,383	−26.9
Clinton	6,990	8,442	−1,452	−17.2
Coles	7,520	9,317	−1,797	−19.2
Cook*	12,284	17,307	−5,023	−29.1
Crawford	6,753	8,399	−1,646	−19.6
Cumberland	5,699	7,264	−1,565	−21.5
DeKalb	9,599	10,555	− 956	− 9.1
DeWitt	5,098	6,595	−1,497	−22.7
Douglas	5,307	6,948	−1,641	−23.6
DuPage*	5,747	6,993	−1,246	−17.8
Edgar	7,845	9,529	−1,684	−17.7
Edwards	3,125	4,109	− 984	−23.9
Effingham	7,569	9,402	−1,833	−19.5
Fayette	9,766	14,978	−5,212	−34.8
Ford	5,551	6,560	−1,009	−15.4
Franklin	8,471	10,065	−1,594	−15.8
Fulton	10,813	14,780	−3,967	−26.8
Gallatin	3,549	5,729	−2,180	−38.1
Greene	6,699	8,622	−1,923	−22.3
Grundy	4,813	6,077	−1,264	−20.8
Hamilton	6,284	9,271	−2,987	−32.2
Hancock	10,139	12,337	−2,198	−17.8
Hardin	2,818	4,317	−1,499	−34.7
Henderson	4,112	4,855	− 743	−15.3
Henry*	11,700	12,812	−1,112	− 8.7
Iroquois	13,300	16,210	−2,910	−18.0
Jackson	7,874	10,983	−3,109	−28.3
Jasper	7,279	9,152	−1,873	−20.5
Jefferson	10,855	13,075	−2,220	−16.2
Jersey	4,981	5,834	− 853	−14.6
Jo Daviess	7,940	8,580	− 640	− 7.5
Johnson	4,736	7,137	−2,401	−33.6
Kane*	10,114	10,816	− 702	− 6.5
Kankakee*	9,675	11,339	−1,664	−14.7
Kendall	4,630	5,481	− 851	−15.5
Knox	9,439	11,179	−1,740	−15.6
Lake*	7,899	8,560	− 661	− 7.7
LaSalle	14,893	18,910	−4,017	−21.2
Lawrence	5,340	8,574	−3,234	−37.7
Lee	9,438	11,041	−1,603	−14.5
Livingston	12,894	15,548	−2,654	−17.1
Logan	7,314	9,099	−1,785	−19.6
McDonough	8,034	9,786	−1,752	−17.9
McHenry	11,391	12,075	− 684	− 5.7
McLean	15,325	18,952	−3,627	−17.0
Macon*	7,570	11,057	−3,487	−30.3
Macoupin	11,398	12,907	−1,509	−11.7
Madison*	12,030	14,294	−2,264	−15.8
Marion	8,992	13,155	−4,163	−31.6
Marshall	4,821	5,656	− 835	−14.8
Mason	4,307	5,979	−1,672	−27.9
Massac	3,635	5,244	−1,609	−30.7
Menard	3,823	4,834	−1,011	−20.9
Mercer	7,339	8,646	−1,307	−15.1
Monroe	5,186	6,278	−1,092	−17.4
Montgomery	9,451	11,625	−2,174	−18.7
Morgan	6,684	9,685	−3,001	−30.9
Moultrie	4,786	6,433	−1,647	−25.6
Ogle	10,780	12,163	−1,383	−11.4
Peoria*	8,520	11,485	−2,965	−25.8
Perry	5,832	7,050	−1,218	−17.3
Piatt	5,361	6,436	−1,075	−16.7
Pike	9,241	12,590	−3,349	−26.6
Pope	3,342	5,560	−2,218	−39.9
Pulaski	4,557	6,077	−1,520	−25.0
Putnam	1,778	2,291	− 513	−22.4
Randolph	7,512	9,646	−2,134	−22.1
Richland	5,280	7,112	−1,832	−25.8
Rock Island*	6,686	8,367	−1,681	−20.1
St. Clair*	9,206	12,094	−2,888	−25.2
Saline	6,384	9,484	−3,100	−32.7
Sangamon*	11,528	16,108	−4,580	−28.4
Schuyler	4,906	6,456	−1,550	−24.0
Scott	3,060	4,067	−1,007	−24.8
Shelby	11,269	14,121	−2,852	−20.2
Stark	3,557	4,466	− 909	−20.4
Stephenson	10,055	10,849	− 794	− 7.3
Tazewell*	8,330	10,838	−2,508	−23.1
Union	6,426	9,989	−3,563	−35.7
Vermilion	11,909	15,106	−3,197	−21.2
Wabash	2,876	4,561	−1,685	−36.9
Warren	6,923	8,140	−1,217	−15.0
Washington	6,824	8,490	−1,666	−19.6
Wayne	10,551	14,026	−3,475	−24.8
White	5,936	9,257	−3,321	−35.9
Whiteside	10,001	11,704	−1,703	−14.6
Will*	12,575	13,803	−1,228	− 8.9
Williamson	8,512	10,514	−2,002	−19.0
Winnebago*	7,873	9,044	−1,171	−14.9
Woodford	7,560	8,818	−1,258	−14.3
Total	765,227	968,103	−202,826	−21.0

* Based on the 1940 definition of urban.

fifteen others had losses in excess of 30 percent. It is interesting to note that with the exception of Macon and Morgan, counties losing excess of 30 percent were south of Lawrence County along the southeastern boundary and in southern Illinois. Boone, DeKalb, Henry, Jo Daviess, Kane, Lake, McHenry, Stephenson, and Will counties in northern Illinois had losses of less than ten percent.

The relatively small decreases in counties in the vicinity of the largest metropolitan center may reflect the increase in the number of part-time and residential farmers. Between these extremes in farm population

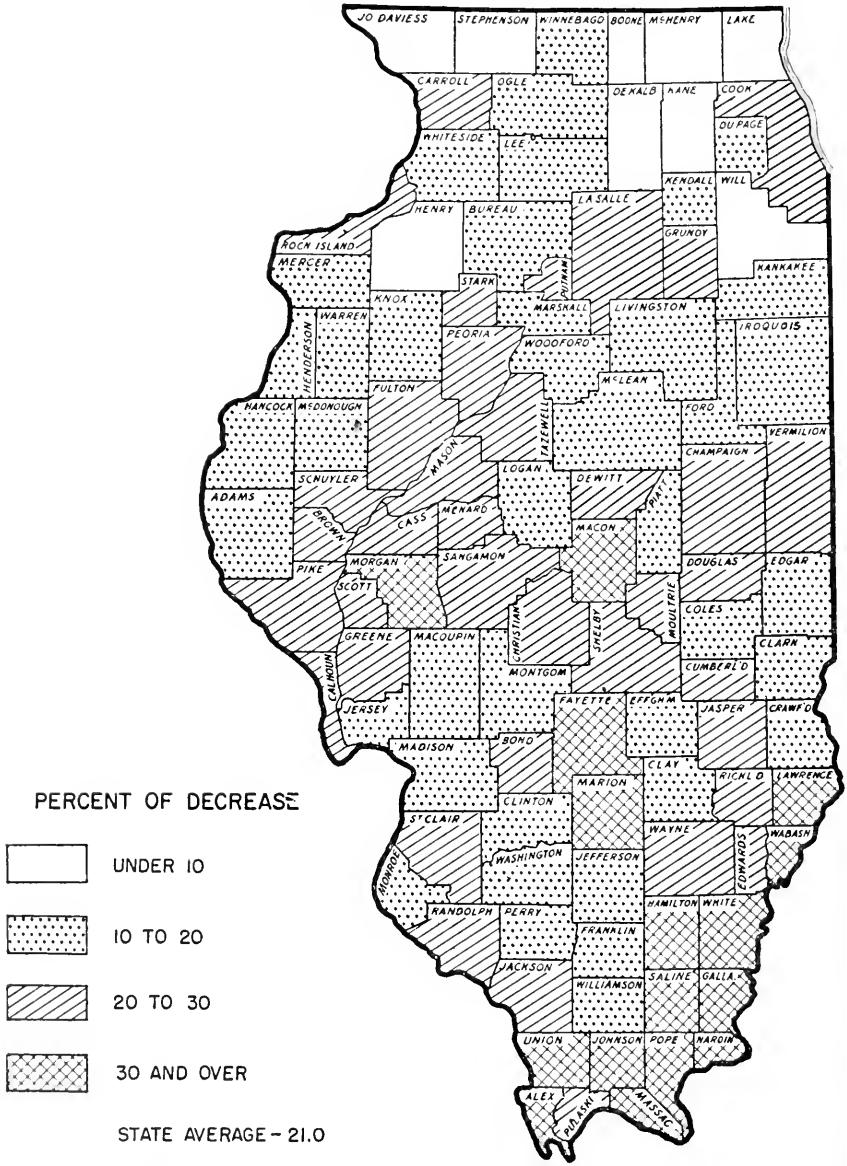


Fig. 2. Decreases in Illinois Rural-Farm Population, 1940 to 1950.

losses, 39 counties lost between 20 and 30 percent, and 38 between 10 and 20 percent. In general, the counties tend to form a fairly well defined pattern in farm population losses, probably reflecting differences in major type of farming.

Changes make problems. The changes and trends in farm population in Illinois in a large measure reflect some of the basic changes that are taking place in the agricultural economy of the state. Professional and other leaders who are concerned with problems of program planning for agriculture should carefully consider trends in rural population and particularly that of farm residents. Many rural community and institutional problems in some measure reflect the changes, and trends that have occurred in the farm population. Providing such facilities as schools, churches, medical and dental care, and a host of services for farm people is more difficult and costly with a decreasing number of farm people.

C. L. Folse

SOME RECENT TRENDS IN ILLINOIS AGRICULTURE

One of the dominant characteristics of Illinois agriculture is continued change. With bigger and more efficient farm machinery, improved plants and animals, and increased use of fertilizers and other agricultural chemicals, farmers produce much more than formerly in each hour of work. With increased prices of materials and equipment adding to their costs, farmers are finding it essential to increase the size of their business to maintain a satisfactory income.

Preliminary reports of the agricultural census of 1954 indicate some of the adjustments farmers are making. Family-sized farms that provided an adequate income only a few years ago are being replaced by larger units. This trend is more prominent in Illinois than in adjoining states, as shown in Figure 1.

In Illinois, farms of 200 acres and over increased from 48,090 in 1950 to 50,680 in 1954. As a substantial number of fairly large farms

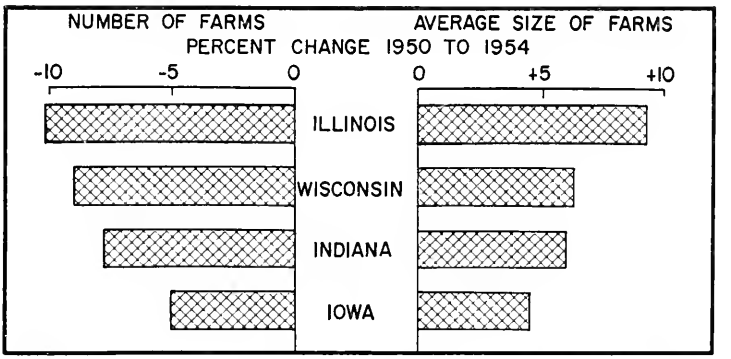


Fig. 1. Decreases in Numbers and Increases in Size of Farms in Four States, 1950 to 1954.

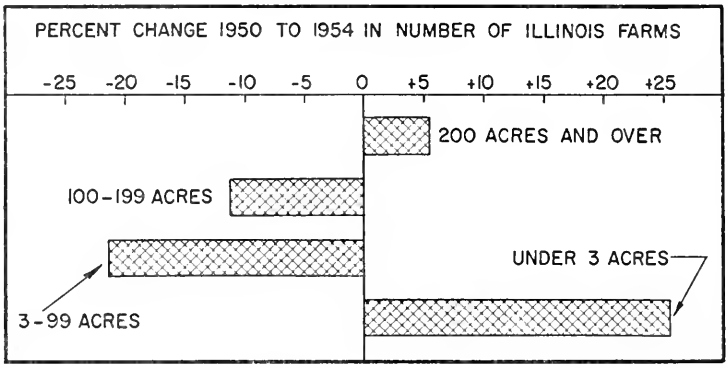


Fig. 2. Changes in Number of Farms by Size, 1950 to 1954.

became larger, the number of medium and small farms decreased. The 100 to 199 acre farms decreased from 76,115 to 67,709 and 3 to 99 acre farms decreased from 68,401 to 53,795. The number of farms of less than three acres increased from 2,662 to 3,341. Figure 2 shows the percent change in number of farms of different sizes.

In addition to operating larger farms, farmers are specializing more as a means of increasing efficiency and reducing costs per unit of output. The proportion of general farms — having less than one-half of their sales in any one type of commodity — declined from 1950 to 1954. The proportion of farms receiving most of their income from the sales of crops increased sharply. All other types of farms decreased, with the number of general farms showing the greatest decrease. A farm is classified as being a livestock farm, dairy farm, or field-crop farm if half or more of its sales are of one of these groups of products. See Figure 3.

Figure 4 shows the distribution of farms by economic class in 1950

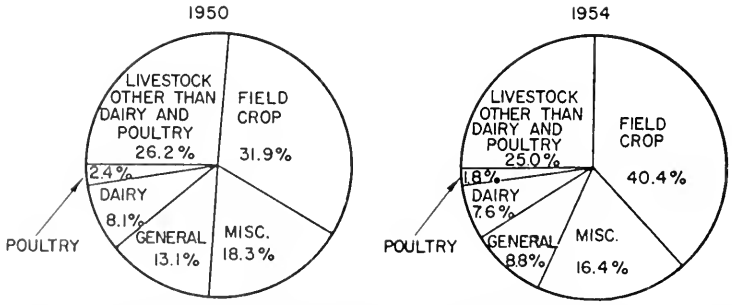


Fig. 3. Percent of Different Types of Farms in Illinois, 1950 and 1954.

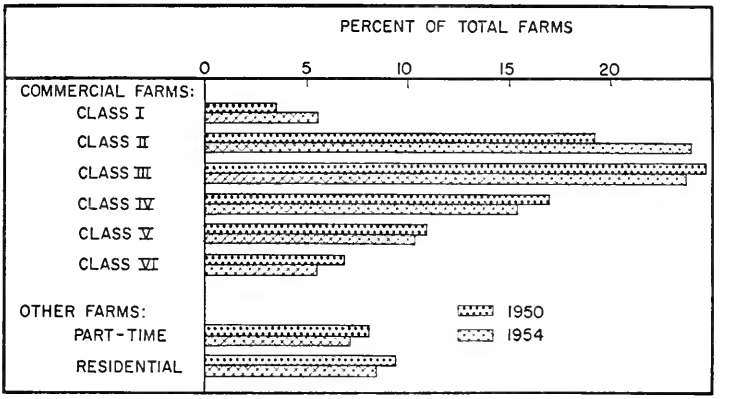


FIG. 4. PERCENT OF TOTAL FARMS BY KIND AND CLASS, ILLINOIS, 1950 AND 1954.

and 1954. Farms are classified by the census as follows: Commercial farms :

Class	*Value of products sold*
I	$25,000 or more
II	10,000 to $24,999
III	5,000 to 9,999
IV	2,500 to 4,000
V	1,200 to 4,499
VI	250 to 1,199[1]

Other farms:

Part time. Farms with a value of sales of farm products of $250 to $1,199, provided the farm operator reported (1) 100 or more days of work off the farm or (2) the nonfarm income received by him and members of his family was greater than the value of farm products sold.

Residential farms. All farms except abnormal farms with a total value of sales of farm products of less than $250.

Abnormal farms. Public and private institutional farms, community enterprises, experiment station farms, grazing associations, etc. (Small number, not shown in chart.)

The number of commercial farms with value of products sold of $10,000 and over increased from 1950 to 1954, but numbers of other commercial farms decreased.

The proportion of Illinois farms by tenure of operator changed slightly from 1950 to 1954. The percentage of full owners decreased

[1] Provided the farm operator worked off the farm less than 100 days and provided the income the farm operator and members of his family received from nonfarm sources was less than the value of all farm products sold.

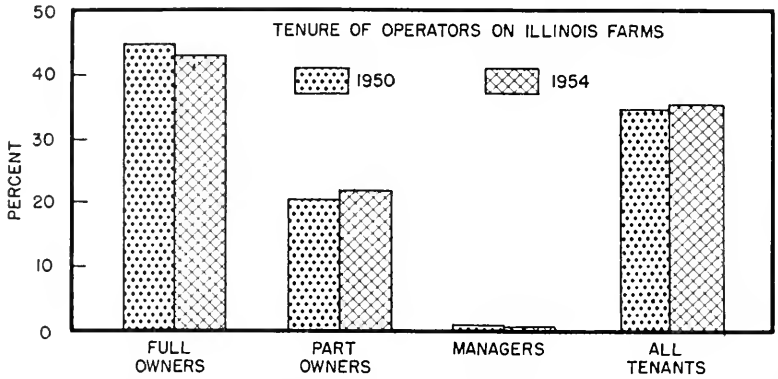


Fig. 5. Percent of Farms by Tenure of Operator, Illinois, 1950 and 1955.

slightly but they remained the largest group. The percentage of part owners increased as more owners rented additional land and tenants bought some land. The percentage of tenant operators increased slightly as more owners retired and rented their farms. See Figure 5.

More farmers worked off their farms in 1954 than in 1950, but fewer worked off the farm as much as 100 days or more. This indicates an increase in the number of operators doing seasonal or irregular off-farm work, as those working more than 100 days off farm are likely to have full-time jobs. Increased use of labor-saving equipment on the farm and increased off-farm job opportunities have encouraged farm operators to supplement their income by working off their farms. See Figure 6.

The increasing capital requirements of farming is evidenced by the

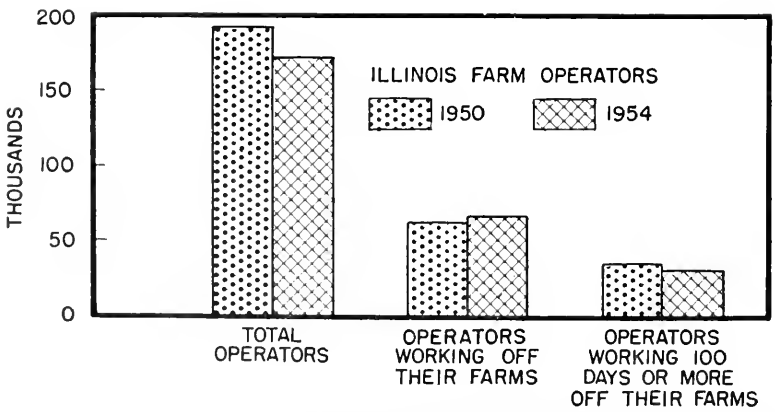


Fig. 6. Total Farm Operators and Numbers Woking Off Farms, Illinois, 1950 and 1954.

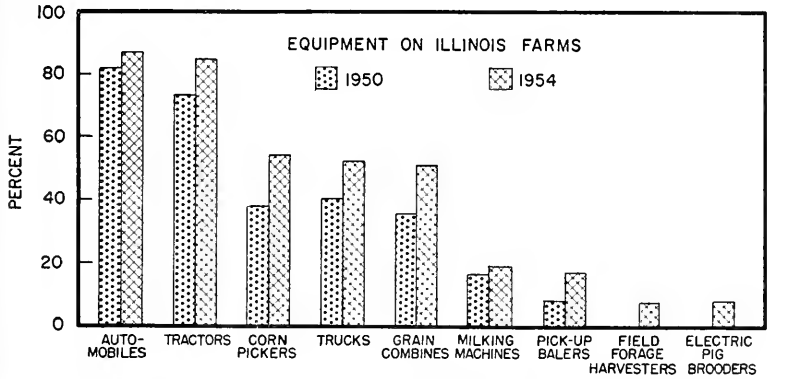


FIG. 7. NUMBER OF FARMS HAVING STATED TYPES OF EQUIPMENT, ILLINOIS, 1950 AND 1954.

expanded use of mechanized equipment. Illinois farmers continue to use more standard items like trucks, tractors, corn pickers, and grain combines, and are rapidly acquiring such newer items as field forage harvesters, and electric pig brooders. This equipment enables farmers to expand their business and to improve the timeliness and efficiency of their work. Figure 7 shows the proportion of farms having indicated equipment items in 1950 and 1954.

The trend toward greater mechanization also extends to the farm home. Numbers of farms having electricity, telephones, running water, television and home freezers increased from 1950 to 1954. These services and appliances contribute to comfortable farm living. The percentages of farms having stated services and appliances are shown in Figure 8.

These trends indicate that fewer, larger, better-equipped and more

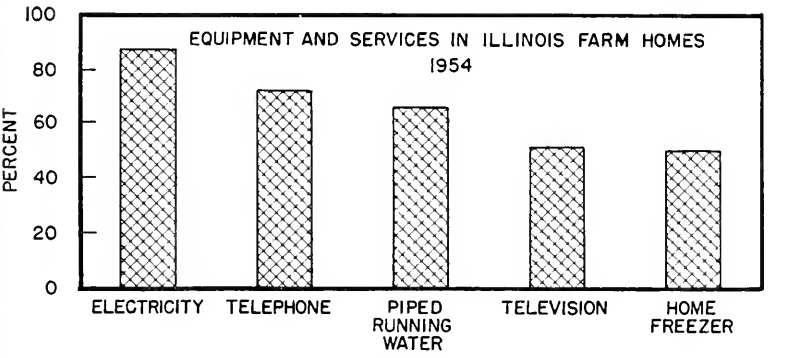


FIG. 8. NUMBER OF FARM HOMES HAVING STATED SERVICES AND APPLIANCES, ILLINOIS, 1954.

specialized farms, manned by fewer workers, are a result of persistent economic forces. Change in the pattern of agricultural production and organization is a part of the process of economic development or progress. It enables us to create higher and higher levels of material welfare.

W. L. Wilson

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 8-56—11,500
Permit No. 1247

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

L. H. Simerl, Editor | November, 1956 | Number 226

SUMMARY OF FARM BUSINESS RECORDS ON ILLINOIS FARMS FOR 1955

Farm income. Incomes from different systems of farming in northern Illinois dropped sharply in 1955. Farm and family earnings on 180-259 acre hog farms dropped from $10,175 in 1954 to $3,284 in 1955, a decline of 68 percent. Earnings on beef-cattle farms dropped 81 percent, on grain farms 28 percent and on dairy farms 45 percent. (Tables 1-4.) Farm and family earnings represent the returns above cash expenses and depreciation charges. This return figure is the amount available to the farm for unpaid labor, return on investment in real estate, equipment and inventories and return for management. Landlord and tenant shares are combined on rented farms.

Farm and family earnings increased on dairy and grain farms in

TABLE 1. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259-ACRE BEEF CATTLE FARMS IN NORTHERN ILLINOIS, 1951-1955

Items	Beef cattle farms				
	1951	1952	1953	1954	1955
Number of farms	68	92	121	103	120
Total acres	226	219	221	224	224
Soil productivity rating	79	78	77	79	76
Total capital investment	$110,291	$122,803	$117,795	$113,544	$117,418
Cash sales of farm products					
Feed and grain	$ 3,255	$ 3,646	$ 4,096	$ 4,369	$ 4,402
Livestock and livestock products	38,731	38,202	31,836	31,258	27,798
Miscellaneous income	470	585	662	670	541
Inventory change					
Feed and grain	1,316	−266	−830	1,231	−2,167
Livestock	4,442	−3,725	−4,467	1,620	−249
Value of farm products consumed	461	408	366	311	271
Gross farm income	48,675	38,850	31,663	39,459	30,596
Less purchased feed and livestock	27,489	23,755	15,249	18,637	18,490
Value of farm production	$ 21,186	$ 15,095	$ 16,414	$ 20,822	$ 12,106
Cash operating expenses	5,998	6,332	6,362	6,936	6,902
Annual depreciation	2,537	2,664	2,904	3,172	3,125
Farm and family earnings	$ 12,651	$ 6,099	$ 7,148	$ 10,714	$ 2,079
Unpaid labor charge	2,180	2,387	2,344	2,368	2,459
Returns to capital and management	10,471	3,712	4,804	8,346	−380
Interest on investment	4,889	5,476	5,240	5,026	5,186
Management returns	5,582	−1,764	−436	3,320	−5,566
Total cash income	$ 42,921	$ 42,873	$ 36,986	$ 36,766	$ 33,237
Total cash expenditures	38,508	33,865	24,850	29,302	29,266
Cash balance	4,413	9,008	12,136	7,464	3,971

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 2. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259-ACRE GRAIN FARMS IN NORTHERN ILLINOIS, 1951-1955

Items	Grain farms				
	1951	1952	1953	1954	1955
Number of farms	118	105	112	112	103
Total acres	223	224	223	221	226
Soil productivity rating	80	82	83	82	83
Total capital investment	$90,932	$101,340	$99,383	$95,521	$105,540
Cash sales of farm products					
Feed and grain	$10 216	$ 12,072	$11,503	$11,384	$ 11,808
Livestock and livestock products	6,991	5,654	5,286	4,389	4,350
Miscellaneous income	474	482	507	520	542
Inventory change					
Feed and grain	2,874	24	−30	1,551	−394
Livestock	1,017	−426	−568	138	−311
Value of farm products consumed	343	276	268	228	209
Gross farm income	21,915	18,082	16,966	18,210	16,204
Less purchased feed and livestock	3,169	2,725	1,959	2,005	2,218
Value of farm production	$18,746	$ 15,357	$15,007	$16,205	$ 13,986
Cash operating expenses	4,814	4,943	5,279	5,354	5,364
Annual depreciation	1,973	2,062	2,155	2,268	2,449
Farm and family earnings	$11,959	$ 8,352	$ 7,573	$ 8,583	$ 6,173
Unpaid labor charge	2,188	2,331	2,265	2,174	2,479
Returns to capital and management	9,771	6,021	5,308	6,409	3,694
Interest on investment	3,652	4,354	4,254	4,095	4,515
Managment returns	6,119	1,667	1,054	2,314	−821
Total cash income	$17,814	$ 18,529	$17,537	$16,550	$ 16,916
Total cash expenditures	10,550	11,321	10,081	9,759	9,969
Cash balance	7,264	7,208	7,456	6,791	6,947

southern Illinois in 1955 over low levels in 1954 caused by drouth conditions. Earnings on southern Illinois hog farms dropped in 1955, even though crop conditions were much improved. (Tables 5-7.)

TABLE 3. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259-ACRE HOG FARMS IN NORTHERN ILLINOIS, 1951-1955

Items	Hog farms				
	1951	1952	1953	1954	1955
Number of farms	169	157	125	145	123
Total acres	219	219	220	218	221
Soil productivity rating	74	75	75	77	77
Total capital investment	$94,240	$104,420	$103,929	$98,229	$107,574
Cash sales of farm products					
Feed and grain	$ 3,625	$ 4,167	$ 3,991	$ 3,569	$ 4,337
Livestock and livestock products	22,289	21,748	23,675	24,180	20,586
Miscellaneous income	463	545	470	495	473
Inventory change					
Feed and grain	1,491	85	−883	1,079	−1,533
Livestock	2,521	−239	−193	52	−1,981
Value of farm products consumed	472	388	351	306	254
Gross farm income	30,861	26,694	27,411	29,681	22,136
Less purchased feed and livestock	11,631	11,095	8,121	9,953	9,387
Value of farm production	$19,230	$ 15,599	$ 19,290	$19,728	$ 12,749
Cash operating expenses	5,433	5,901	6,357	6,775	6,541
Annual depreciation	2,286	2,463	2,578	2,778	2,924
Farm and family earnings	$11,511	$ 7,235	$ 10,355	$10,175	$ 3,284
Unpaid labor charge	2,390	2,543	2,502	2,408	2,545
Returns to capital and management	9,121	4,692	7,853	7,767	739
Interest on investment	3,993	4,524	4,291	4,309	4,709
Management returns	5,128	168	3,562	3,458	−3,970
Total cash income	$26,889	$ 26,849	$ 28,461	$28,587	$ 25,826
Total cash expenditures	21,043	20,060	17,600	20,403	18,988
Cash balance	5,846	6,789	10,861	8,184	6,838

TABLE 4. — PRODUCTION, EXPENSES AND EARNINGS ON 180 to 259-ACRE DAIRY FARMS IN NORTHERN ILLINOIS, 1951-1955

Items	Dairy farms				
	1951	1952	1953	1954	1955
Number of farms	40	47	61	48	52
Total acres	219	216	215	218	219
Soil productivity rating	64	65	67	72	72
Total capital investment	$78,038	$81,577	$96,118	$96,315	$96,558
Cash sales of farm products					
Feed and grain	$ 2,370	$ 2,962	$ 3,710	$ 4,384	$ 4,223
Livestock and livestock products	18,078	14,527	15,124	14,771	13,159
Miscellaneous income	434	490	464	444	460
Inventory change					
Feed and grain	285	451	70	871	−1,729
Livestock	1,198	26	−508	−18	40
Value of farm products consumed	474	397	432	342	349
Gross farm income	22,839	18,853	19,292	20,794	16,502
Less purchased feed and livestock	4,041	3,448	3,387	3,781	3,067
Value of farm production	$18,798	$15,405	$15,905	$17,013	$13,435
Cash operating expenses	6,304	6,212	6,661	7,376	6,870
Annual depreciation	2,314	2,202	2,531	2,976	2,930
Farm and family earnings	$10,180	$ 6,991	$ 6,713	$ 6,661	$ 3,635
Unpaid labor charge	2,359	2,706	2,774	2,633	2,725
Returns to capital and management	7,821	4,285	3,939	4,028	910
Interest on investment	3,457	3,575	3,696	4,252	4,229
Management returns	4,364	710	243	−224	−3,319
Total cash income	$21,221	$18,179	$19,557	$19,942	$18,566
Total cash expenditures	13,882	12,993	14,068	15,515	13,802
Cash balance	7,339	5,186	5,489	4,427	4,764

Value of production, expenses and earnings for the five-year period of 1951-1955 are shown in Tables 1 through 7 for different systems of farming in northern and southern Illinois. Important factors in determining the 1955 farm income level in northern Illinois were inventory decreases for crops and livestock caused by much lower year-end inventory prices and reduced cash income from the sale of livestock and livestock products.

Cash balance, the difference between cash receipts and cash expenditures, does not show the same sharp declines in income as farm and family earnings. (Tables 1-7.) Cash basis accounting does not include changes in inventories and may therefore show quite different levels of farm income in any one year. Also, the cash balance figure for a farm business may be influenced by irregular purchases or sales of products or the replacement of capital items by amounts greater or less than depreciation charges.

Farm price levels. Illinois farm prices for grains and meat animals dropped sharply in the last half of 1955. The decline in farm product prices was a major factor in causing lower income levels on Illinois farms. The index of prices received by Illinois farmers dropped from a high of 85 (1947-49 = 100) in January and February 1955, to a low of 71 in November and December, a drop of 17 percent. For the same period, the index of prices, interest, taxes and wage rates paid by farmers

TABLE 5. — PRODUCTION, EXPENSES AND EARNINGS ON 180 to 259-ACRE HOG FARMS IN SOUTHERN ILLINOIS, 1951-1955

Items	Hog farms				
	1951	1952	1953	1954	1955
Number of farms	27	31	28	46	32
Total acres	220	219	224	221	216
Soil productivity rating	35	38	38	42	40
Total capital investment	$45,469	$53,807	$54,111	$54,776	$54,115
Cash sales of farm products					
Feed and grain	$ 3,277	$ 4,262	$ 4,213	$ 4,140	$ 4,080
Livestock and livestock products	9,907	11,528	13,075	11,756	10,715
Miscellaneous income	443	437	610	478	299
Inventory change					
Feed and grain	1,249	−793	−234	−459	139
Livestock	437	254	−521	−371	−490
Value of farm products consumed	487	412	418	327	277
Gross farm income	15,800	16,100	17,561	15,871	15,020
Less purchased feed and livestock	4,136	5,818	4,753	5,346	5,667
Value of farm production	$11,664	$10,282	$12,808	$10,525	$ 9,353
Cash operating expenses	3,532	4,412	4,695	5,083	4,637
Annual depreciation	1,625	1,875	1,939	2,134	2,028
Farm and family earnings	$ 6,507	$ 3,995	$ 6,174	$ 3,308	$ 2,688
Unpaid labor charge	2,336	2,446	2,472	2,247	2,269
Returns to capital and management	4,171	1,549	3,702	1,061	419
Interest on investment	2,003	2,381	2,385	2,408	2,371
Management returns	2,168	−832	1,317	−1,347	−1,952
Total cash income	$13,756	$16,345	$17,937	$16,529	$15,208
Total cash expenditures	10,105	12,551	11,675	12,549	11,925
Cash balance	3,651	3,794	6,262	3,980	3,283

in the United States dropped one point to 112, primarily because of lower prices paid for farm raised feeds. Although the monthly index of Illinois farm prices moved up from a low of 72 in January 1956 to 84 in Septem-

TABLE 6. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259-ACRE DAIRY FARMS IN SOUTHERN ILLINOIS, 1951-1955

Items	Dairy farms				
	1951	1952	1953	1954	1955
Number of farms	43	44	48	51	40
Total acres	213	214	213	213	213
Soil productivity rating	33	32	30	31	31
Total capital investment	$46,499	$49,736	$46,180	$48,014	$50,902
Cash sales of farm products					
Feed and grain	$ 2,829	$ 4,324	$ 3,415	$ 2,978	$ 3,253
Livestock and livestock products	11,437	10,654	9,104	8,776	9,432
Miscellaneous income	376	500	482	606	764
Inventory change					
Feed and grain	1,259	−459	−353	−360	508
Livestock	449	−154	248	−307	366
Value of farm products consumed	477	481	419	371	358
Gross farm income	16,827	15,346	13,315	12,064	14,681
Less purchased feed and livestock	3,544	3,311	2,669	3,018	3,274
Value of farm production	$13,283	$12,035	$10,646	$ 9,046	$11,407
Cash operating expenses	4,026	4,405	4,418	4,457	4,692
Annual depreciation	1,736	1,826	1,846	2,154	2,361
Farm and family earnings	$ 7,521	$ 5,804	$ 4,382	$ 2,435	$ 4,354
Unpaid labor charge	2,804	2,873	2,602	2,549	2,833
Returns to capital and management	4,717	2,931	1,780	−114	1,521
Interest on investment	2,060	2,208	2,043	2,135	2,257
Management returns	2,657	723	−263	−2,249	−736
Total cash income	$14,803	$15,636	$13,116	$12,521	$13,531
Total cash expenditures	10,384	10,434	9,253	10,006	11,381
Cash balance	4,419	5,202	3,863	2,515	2,150

TABLE 7. — PRODUCTION, EXPENSES AND EARNINGS ON 180 TO 259-ACRE GRAIN FARMS IN SOUTHERN ILLINOIS, 1951-1955

Items	Grain farms				
	1951	1952	1953	1954	1955
Number of farms	40	35	26	22	52
Total acres	217	217	223	223	224
Soil productivity rating	43	48	45	42	41
Total capital investment	$51,066	$57,283	$57,590	$55,920	$55,317
Cash sales of farm products					
Feed and grain	$ 7,800	$ 9,248	$ 9,189	$ 8,586	$ 8,215
Livestock and livestock products	5,587	4,863	4,836	4,736	4,082
Miscellaneous income	396	412	448	701	534
Inventory change					
Feed and grain	1,604	−35	287	−189	1,675
Livestock	707	497	−662	176	−146
Value of farm products consumed	341	335	304	232	215
Gross farm income	16,435	15,320	14,402	14,242	14,575
Less purchased feed and livestock	2,312	2,727	1,848	2,617	2,619
Value of farm production	$14,123	$12,593	$12,554	$11,625	$11,956
Cash operating expenses	3,894	4,261	4,371	4,950	4,250
Annual depreciation	1,662	1,868	2,087	2,425	2,175
Farm and family earnings	$ 8,567	$ 6,464	$ 6,096	$ 4,250	$ 5,531
Unpaid labor charge	2,156	2,246	2,067	2,171	2,349
Returns to capital and management	6,411	4,218	4,029	2,079	3,182
Interest on investment	2,222	2,496	2,512	2,455	2,386
Management returns	4,189	1,722	1,517	−376	796
Total cash income	$14,121	$14,651	$14,614	$14,240	$12,933
Total cash expenditures	8,857	9,755	8,763	9,862	9,585
Cash balance	5,264	4,896	5,851	4,378	3,348

ber, the average for the year will be about equal to the 1955 average. Annual indexes of prices paid by farmers in the United States and prices received by Illinois farmers for 1947 to 1955 and preliminary estimates for 1956 are shown in Figure 1.

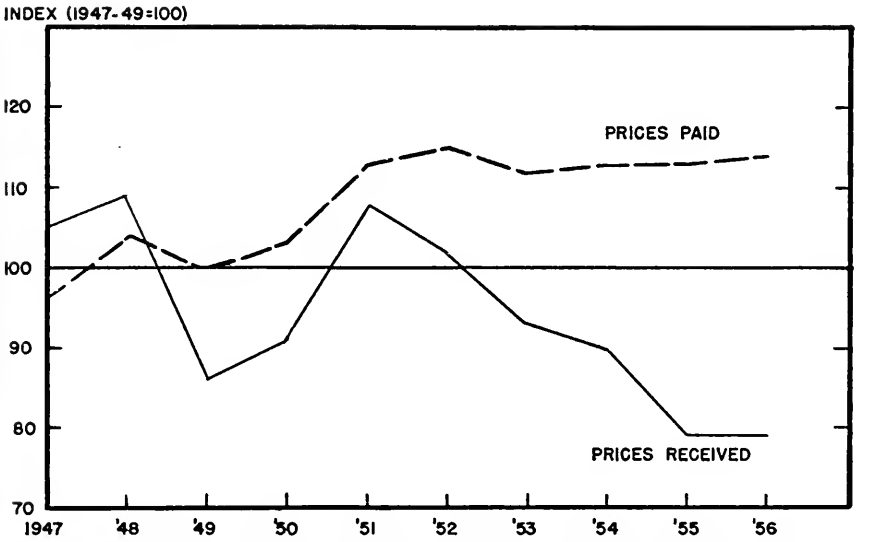


FIG. 1. INDEXES OF PRICES, INTEREST, TAXES AND WAGE RATES PAID BY UNITED STATES FARMERS AND PRICES RECEIVED BY ILLINOIS FARMERS.

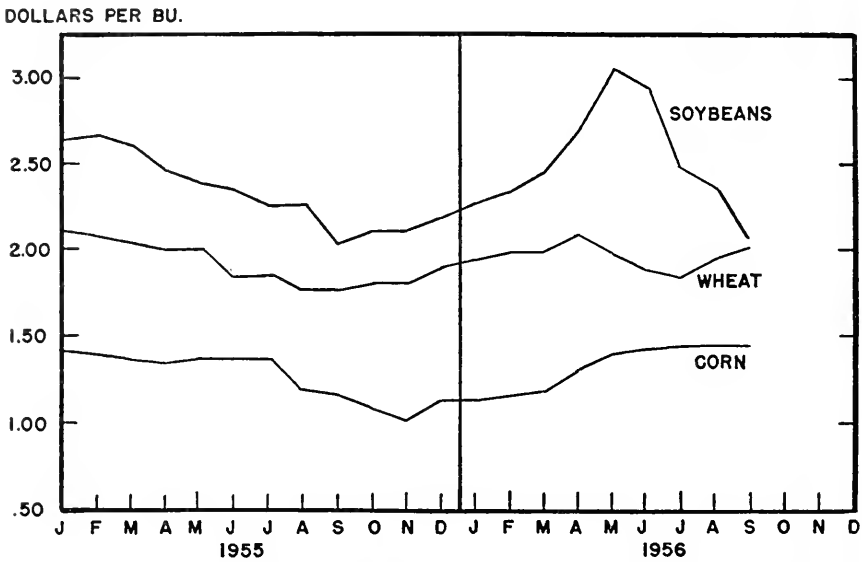


Fig. 2. Monthly Illinois Farm Prices for Corn, Wheat and Soybeans, January 1955 to September 1956.

The monthly change in Illinois farm prices for corn, soybeans and wheat for 1955 and current months in 1956 are shown in Figure 2. Part of the decline in grain prices was seasonal, a decline in grain prices to low levels at harvesttime. Grain prices recovered in early 1956 up to or above the levels of early 1955. In some cases, the sharp farm income declines caused in part by low December 31 inventory prices for grains may have been recovered in 1956 if the 1955 crop was later sold at the higher prices.

Monthly farm prices for cattle and hogs are shown in Figure 3. Hog prices dropped from a high of $17.50 per hundredweight in June 1955 to a low of $10.60 in December. Cattle prices gradually worked downward from $18.90 in January 1955 to a low of $15.20 in December 1955. The average cattle price includes all grades and classes of cattle marketed from Illinois farms. Low farm income levels in 1955 resulting from inventory price declines for hogs probably were not recovered in 1956 since monthly average hog prices did not increase substantially until April 1956.

The average monthly farm prices for milk and eggs did not follow the pattern of grain and meat animal prices. The average monthly price of eggs increased during 1955 and milk prices remained at about the same level as 1954 except for seasonal price changes.

Selected cost items. Tables 8 and 9 present selected per-acre cost

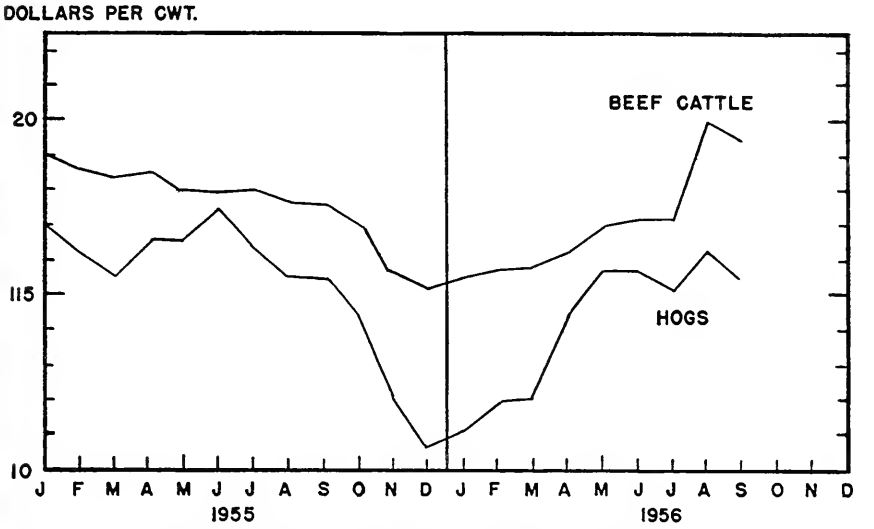


FIG. 3. MONTHLY ILLINOIS FARM PRICES FOR BEEF CATTLE AND HOGS, JANUARY 1955 TO SEPTEMBER 1956.

items on different type and size classification of farms in northern and southern Illinois. These data may be used for comparison of costs on farms that do not have complete farm records. Farmers and other persons may find these costs useful in farm planning.

Cost items of soil fertility, building and machinery include depreciа-

TABLE 8. — SELECTED COST ITEMS PER ACRE ON NORTHERN ILLINOIS FARMS, 1955

Size of farm	Under 260 acres				260 to 499 acres			
Type of farm	Grain farms	Hog farms	Beef farms	Dairy farms	Grain farms	Hog farms	Beef farms	Dairy farms
Soil fertility	$ 4.52	$ 4.03	$ 4.08	$ 3.40	$ 4.57	$ 3.47	$ 4.12	$ 3.20
Buildings	4.24	6.40	7.37	6.89	3.56	4.90	5.48	5.73
Machinery, total	17.03	21.15	21.27	23.43	15.03	16.57	17.44	18.01
Machinery repairs	3.24	4.60	4.40	4.73	3.33	3.76	3.91	4.00
Gas and oil	3.22	3.78	3.97	3.70	3.11	3.21	3.42	3.12
Labor	13.17	16.17	15.65	20.29	10.82	13.10	13.47	15.09
Purchased feed	5.10	29.04	29.16	11.77	5.18	20.92	21.02	10.58

TABLE 9. — SELECTED COST ITEMS PER ACRE ON SOUTHERN ILLINOIS FARMS, 1955

Size of farm	Under 260 acres				260 to 499 acres			
Type of farm	Grain farms	Hog farms	Mixed live-stock	Dairy farms	Grain farms	Hog farms	Mixed live-stock	Dairy farms
Soil fertility	$ 4.02	$ 4.20	$ 4.07	$ 3.78	$ 4.06	$ 3.88	$ 4.43	$ 3.22
Buildings	2.91	4.51	3.56	4.23	2.36	3.17	3.08	3.46
Machinery, total	15.36	16.42	14.70	18.14	13.83	13.86	15.34	15.16
Machinery repairs	2.98	3.02	2.91	3.64	3.09	3.18	3.53	3.35
Gas and oil	3.13	3.30	2.77	3.17	2.87	2.80	3.06	2.84
Labor	12.13	13.97	13.90	16.90	9.35	10.82	10.96	12.59
Purchased feed	6.97	24.03	15.78	13.47	4.68	17.88	13.04	10.65

TABLE 10. — RETURNS PER $100 FEED FED TO DIFFERENT CLASSES OF LIVESTOCK

Year	Beef cow herds	Dairy cow herds	Dual purpose herds	Feeder cattle bought	Native sheep raised	Feeder sheep bought	Hogs	Poultry	Yearly price of corn
1933	$ 90	$152	$112	$ 97	$...	$...	$128	$217	$ .32
1934	84	145	118	125	...	...	127	198	.58
1935	110	143	141	152	93	163	174	211	.74
1936	85	150	109	96	109	101	155	180	.73
1937	99	159	116	106	123	50	122	157	.91
1938	119	193	151	142	98	153	184	208	.45
1939	146	204	162	131	136	136	144	195	.43
1940	134	198	173	136	142	149	118	177	.54
1941	136	212	162	124	160	122	193	202	.63
1942	127	176	151	136	131	147	201	187	.77
1943	108	160	118	105	93	108	136	169	.97
1944	94	166	120	107	88	136	125	140	1.07
1945	110	174	128	119	117	120	138	159	1.07
1946	130	183	148	135	138	194	154	141	1.39
1947	130	162	147	138	130	131	150	117	1.90
1948	143	183	152	137	138	79	131	137	1.89
1949	132	175	137	136	142	104	144	161	1.16
1950	169	173	173	170	177	182	152	122	1.35
1951	170	187	163	142	171	111	127	137	1.66
1952	99	175	120	86	67	44	116	116	1.65
1953	64	147	71	81	84	113	178	148	1.44
1954	95	141	95	126	97	119	154	104	1.46
1955	94	168	99	106	103	100	109	142	1.28
23-year average	116	171	133	123	121	122	146	162	1.06

tion and cash expense items. Labor costs include hired labor expense and all family and operator's labor charged at $185 per month in northern Illinois and $170 per month in southern Illinois.

Building, machinery, labor and purchased feed costs per acre are usually higher on livestock farms where the volume of business per acre is greater. Costs, particularly labor and machinery costs, also vary according to size of farm. In general, the larger farms are less intensive and are able to spread certain fixed labor and machinery costs over more acres of land.

Returns from livestock. Table 10 shows the returns per $100 feed fed to livestock on Illinois farms for the past 23 years. Since feed represents 60 to 80 percent of the total cost of producing livestock and livestock products, returns per $100 feed fed is an indicator of livestock profits. The difference between a $100 of feed cost and the return figure is the margin available to pay for labor, equipment and supplies and to provide a profit margin. Different livestock enterprises require different margins to cover these other costs. Labor and equipment costs are high relative to feed costs for dairy and poultry and low for hogs and feeder cattle. In using Table 10, comparison should be made with the 23-year average to appraise the relative profitableness of any class of livestock in a particular year.

Livestock returns have fluctuated widely the last five years. The lowest returns for the 23 years were in 1952 for sheep, in 1953 for beef and

dual purpose herds and feeder cattle, in 1954 for dairy and poultry and in 1955 for hogs. These variations in livestock returns explain part of the year-to-year changes in net farm earnings from different systems of farming.

A. G. Mueller

LANDLORD-TENANT SHARES IN 1955

Tenancy and type of lease are important considerations in making an economic analysis of the farm business. This is particularly true under present high land values and high operating capital requirements. The type of lease and leasing arrangements employed determine the extent to which the landowner contributes to the business and the extent to which he may participate in the management of it.

High levels of operating capital contributed by tenants are shown in Table 1. The values given for capital items subject to depreciation are remaining cost values. To replace these items at their original cost would likely require an investment half again as high or more. Interest and depreciation on the capital supplied by the tenant add substantially to his labor contribution to offset the landlord's contribution in land and fixed improvements. On a tillable-acre basis the tenant's capital inputs show

Table 1. — Average Beginning-of-Year Capital Investments by Tenants and Landlords on All-Rented Farms Ranging From 180-339 Acres in Size and Grouped by Quality of Soil. From Records on Farms in the Farm Bureau Farm Management Service in 1955[a]

	Soil productivity ranges					
	100-76	75-56	55-36	35-5	100-76	75-56
	Farms operated under crop-share leases				Farms operated under livestock-share leases	
Number of farms[b]	140	88	13	21	173	118
Average size of farm	258	248	244	248	251	258
Tillable acres per farm	238	216	219	200	228	217
Average soil productivity rating	85	69	48	25	83	69
Tenant's investments:						
Machinery, equipment, auto and soil fertility	$ 8,182	$ 7,326	$ 8,426	$ 6,570	$ 7,386	$ 6,970
Livestock, feed, grain and seeds	12,013	11,660	6,936	7,279	12,449	11,459
Total tenant capital	$ 20,195	$18,986	$15,362	$13,849	$ 19,835	$18,429
Landlord's investments:						
Land inventory	$ 88,596	$66,446	$41,343	$30,227	$ 85,515	$67,716
Buildings, fences, soil fertility, and equipment	11,479	10,822	3,698	4,676	17,520	17,277
Livestock, feed, grain and seed	4,737	4,066	415	874	12,322	11,582
Total landlord capital	$104,812	$81,334	$45,456	$35,777	$115,357	$96,575
Tenant's unpaid labor, interest and depreciation[c]	$ 5,450	$ 5,159	$ 5,403	$ 4,770	$ 5,179	$ 5,058
Landlord's unpaid labor, interest and depreciation[c]	5,118	4,108	2,284	1,909	6,452	5,774

[a] The data are for farms grouped according to the average productivity rating of their tillable land.
[b] This is not the total number of such farms in the Farm Bureau Farm Management Service. Samples of farms were used to limit the number of records handled to obtain these data.
[c] Labor and depreciation as charged in the Farm Bureau Farm Management Service. Interest at 4 percent on land and buildings, and 5 percent on machinery, equipment, livestock, feed and grain.

less variation by quality of soil than the landlord's land and capital contribution. Note particularly the values of unpaid labor, interest and depreciation reported in the last two lines of Table 1. This explains why the rent share under crop-share leases drops from a one-half share on the best land to a two-fifths share on less productive land and on down to a one-third share on the poorest land.

The landlord's high improvement capital inputs under livestock-share leases are both cause and effect. Where the farm has a superior set of buildings, fences, and other livestock facilities the landlord will seek to rent the farm on a livestock-share lease in order to share in the returns and thus recover his cost from these investments. Where a livestock-share lease is already in existence the landlord is likely to be more willing to make additional capital improvements for efficient livestock production.

The tenant's total capital input does not differ greatly on a livestock-share lease from that on a crop-share lease. (See Table 1.) Many crop-share leases are used on livestock farms. However, the livestock volume is usually much greater under a livestock-share lease. The extra labor and management required from the livestock-share tenant usually is offset by the landlord's greater input in buildings, fences and operating expenses.

Cash differences. Table 2 shows striking differences in cash inputs between tenants and landlords under crop-share leases, and between landlords under crop-share leases and landlords under livestock-share leases.

Of every dollar of cash income received by these tenants in the northern half of Illinois in 1955, 80¢, 84¢, 78¢ and 84¢ respectively (Table 2) was spent to pay farm operating expenses and to maintain capital investment. Thus only 16 to 22 cents of each dollar received by tenants was available to meet living expenses, pay income taxes, meet interest charges and reduce debts. There was no important difference in the cash income-expenditure ratios between livestock-share and crop-share tenants.

In contrast, of each dollar received by crop-share landlords only about 38 cents was paid out for farm expenditures. Livestock-share landlords, sharing more fully in operating costs, had cash income-expenditure ratios nearer that of tenants, since of each dollar received they had about 78 cents of farm expenditures.

Their high ratio of expenditures to cash income makes tenants much more affected by a cost-price squeeze than either a crop-share landlord or a debt-free owner-operator. In spite of their relatively unfavorable cash position, both tenants and landlords maintained their capital invest-

TABLE 2. — AVERAGE CASH INCOME AND CASH EXPENDITURES BY TENANTS AND LANDLORDS ON ALL-RENTED FARMS 180-339 ACRES IN SIZE AND GROUPED ACCORDING TO TWO LEVELS OF SOIL PRODUCTIVITY AND TWO LEASE TYPES. FROM RECORDS ON FARMS ENROLLED IN THE FARM BUREAU FARM MANAGEMENT SERVICE IN 1955.

	Soil productivity ratings			
	100-76		75-56	
	Crop-share lease	Livestock-share lease	Crop-share lease	Livestock-share lease
Number of farms	140	173	88	118
Average size of farm	258	251	248	258
Tillable acres per farm	238	228	216	217
Average soil productivity rating	85	83	69	69
Tenant's cash income	$15,272	$15,172	$14,482	$13,488
Tenant's cash expenditures[a]	12,194	12,754	11,341	11,300
Percent expenditures are of income	80	84	78	84
Landlord's cash income	$ 7,265	$14,498	$ 5,849	$12,750
Landlord's cash expenditures[a]	2,477	10,988	2,413	10,313
Percent expenditures are of income	34	76	41	81
Cash expense for machine hire				
Tenant's share	$ 276	$ 230	$ 323	$ 241
Landlord's share	68	231	47	211
Cash expense for gasoline, fuel, and oil				
Tenant's share	$ 851	$ 684	$ 772	$ 657
Landlord's share	.....	212	.....	239
Cash expense for annual fertilizers				
Tenant's share	$ 420	$ 346	$ 322	$ 357
Landlord's share	347	393	276	342
Cash expense on building and improvement repairs				
Tenant's share	$ 120	$ 38	$ 106	$ 47
Landlord's share	129	421	122	549
Total cash operating expenses[b]				
Tenant's share	$ 4,351	$ 3,920	$ 3,989	$ 3,756
Landlord's share	1,572	2,914	1,279	2,871
Total capital purchases[b]				
Tenant's purchases	$ 2,071	$ 1,994	$ 1,647	$ 1,835
Landlord's purchases	654	1,417	910	2,091
Total depreciation on:				
Tenant's capital	$ 1,946	$ 1,743	$ 1,748	$ 1,656
Landlord's capital	865	1,612	814	1,639
Cash income above feed and livestock purchased				
Tenant's income	$ 9,499	$ 8,332	$ 8,778	$ 7,779
Landlord's income	7,014	7,840	5,624	7,398

[a] Cash expenditures include purchases of capital items, feeder and breeding livestock, feed and all cash operating expenses.
[b] Excludes all purchased livestock and feed.

ments through capital purchases equal to or greater, on the average, than depreciation charges.

Table 2 shows a much greater participation in operating costs by livestock-share than by crop-share landlords. This is partly due to custom and traditional methods of equalizing tenant and landlord contributions under livestock-share leases and partly to the need for the livestock-share landlord to contribute more than land and fixed capital to offset the tenant's labor, capital, and other operating inputs.

Livestock-share landlords have traditionally shared in the fuel and oil costs because in the days of horse-drawn machinery the horses were

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard
Director, Extension Service in Agriculture and Home Economics

FREE — Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914

Ill. 8900, 11-56—11M
Permit No. 1247

fed out of undivided grain grown on the farm. To maintain the same balance of inputs with the introduction of tractor power, some landlords assumed a share of the fuel and oil bills. There is, however, no need for a landlord to pay part of the gas and oil costs if he is able to make up his proportionate share of the business input some other way.

Fertilizer costs. Fertilizer costs are a good example of the general rule that added expenses should be shared in the same way as the added income produced by the expense. According to Table 2, the farms in our sample divided annual fertilizer costs approximately equally. Landlords, however, continued to provide most of the limestone and rock phosphate.

Cash rent. Cash rent paid by the crop-share tenants is included in the total cash expenditure and total cash operating expenses in Table 2. Not all of these tenants paid a cash rent, but as an average of all crop-share rented farms in each soil group in Table 2, the cash rent amounted to $247 or $1.04 per tillable acre on the farms with soils rated 100-76. and $289 or $1.34 per tillable acre on the farms with soils rated 75-56. Cash rent payments accounted for less than three percent of tenant's total cash expenditures, and less than five percent of the landlord's cash income.

F. J. Reiss

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director*. Acts approved by Congress May 8 and June 30, 1914.

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
College of Agriculture · University of Illinois · Department of Agricultural Economics

L. H. Simerl, Editor | June, 1957 | Number 227

ARTICLES IN THIS ISSUE

LAND TENURE SHIFTS AS ILLINOIS FARMERS TAKE ON AGE

A quick summary of what has happened since 1900 in Illinois has seven segments. These are:

1. A farm as a property to amass in a lifetime has become more impressive.
2. Full-owner operators have not always had the benefit of a large enough scale.
3. Fewer per 100 under 25 and more over 65 compared with earlier periods has been the all-operator picture in Illinois as in states as divergent as California, Kansas, Mississippi and New York.
4. Tenants, part owners and full owners all show less accent on youth, compared with grandfather's day.
5. Some postponement of taking on farm operator responsibilities or in dropping them off after middle years has been in keeping with progress.
6. Temporarily deferred operator retirement may be expected as more operators qualify for annuities under Social Security.
7. Getting farms to larger scale, to better condition for up-to-date operation, and to best qualified hands is especially important now.

Were those who operated farms from youth to middle sixties attaining land ownership in notably smaller proportions in the early 1950's than 50 years before? The answer is that the tendency for older oper-

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

ators to win through to land ownership still holds as a pattern, but. . . . The "buts" are worth a view both from individual and broader standpoints. Among the modifying factors note will be taken of four.

1. At the mid-century operators who were farming only land and improvements they owned had farms of fewer acres, on the average, and of lower than average price. Full-owner operators resorted to farms farther below the average of all farms from 1900 to 1950, and only from 1950 to 1954 showed a tendency toward less stunted farms.

2. Numbers of Illinois farm operators who owned all the land they farmed became smaller by comparison with operators who rented part or all of the land they farmed. This trend was persistent. In general Illinois farmland has gone more and more into the hands of operators who farmed large acreages, who operated all or, at least, some land rented from other owners, the amount of rented land standing at very near half of the area the part-owner operators controlled. This tendency to operate considerable land rented from others has been continuing until later and later in the life of the operators.

3. Full-owner operation, while being attained later in life, on relatively fewer acres and on land of less than average productivity, has been a protected harbor in which farm operators, after buffeting with larger acreages and a variety of experiences with property rented from others, have found refuge for the years before retirement and have found a form of life savings well suited to intrafamily transfers. Even though in some cases smaller scale full-owner operation affords a simplified retreat and even though, in value per acre, to say nothing of value per farm, the properties of owner operators have held a low position relative to other farms, they represent, in many cases, dollar value of such amounts and of such freedom from debt as to compare favorably with the life savings of many nonfarm cousins approaching retirement from their main lines of income earning.

4. The youthfulness of farm operators in Illinois has become about ten years less in the 1950's than a half-century ago and this applies to part-owner and full-owner operators as well as to tenants. Full-owner operation, having become a late-in-life achievement of many farmers, including some in their fifties and beyond, has probably held to smaller acreage per farm because of the severity of the various demands on persons of advanced years. Mechanical devices have enabled operators in advanced maturity to keep going with less handicap arising from age. This has probably helped to account for the shift to the right of all curves showing age distribution of farm operators in general. Whether there will be more elderly farmers operating beyond 65 with an eye to making a peak

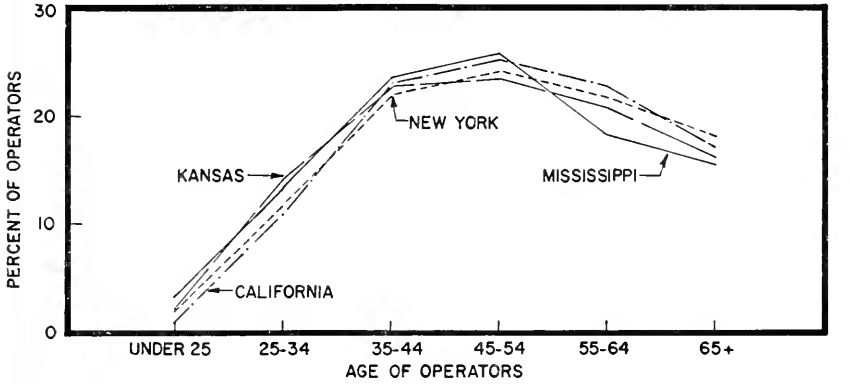


FIG. 1. DISTRIBUTION OF FARM OPERATORS BY AGE GROUPS, SELECTED STATES, 1954.

The average age of farm operators in 1954 was in California, 51.8; Kansas, 48.6; Mississippi, 48.2; and New York, 50.7 years. Illinois, where farm operators averaged 49.3 years, had a pattern of age distribution resembling Kansas. Older operators had a smaller place among all operators in Mississippi. Where, because of irrigation and other features, operators have heavy capital obligations, they tend to be older. In all five states operators of more advanced years were in greater prominence in 1954 than in 1900.

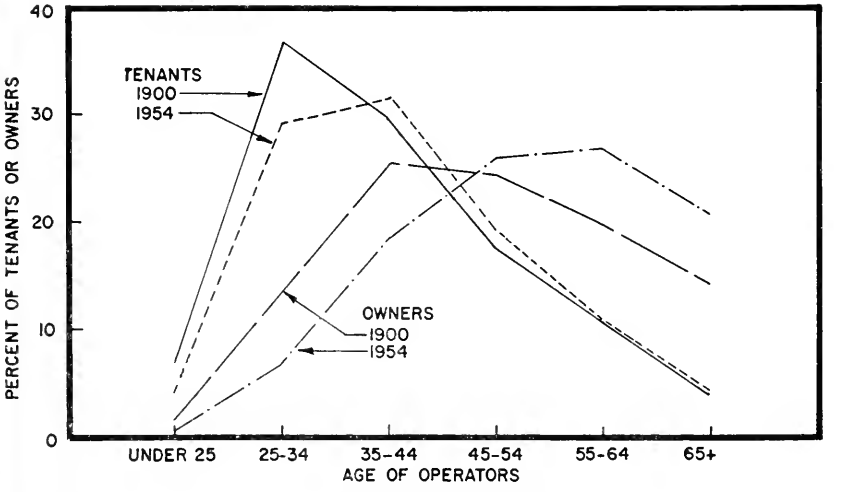


FIG. 2. DISTRIBUTION OF FARM TENANTS AND OWNER OPERATORS BY AGE GROUPS, ILLINOIS, 1900 AND 1950.

Owner operators whether owning all the land they farmed or not, showed a smaller proportion 45 years old and over in the early part of the 1900's. Those in the three upper age brackets were 59.4 percent of all owner operators in 1900, but this became 74.2 percent in 1954. Tenant farmers, on the other hand, were mostly younger than owner operators and they aged less during the 54 year period than the owner group.

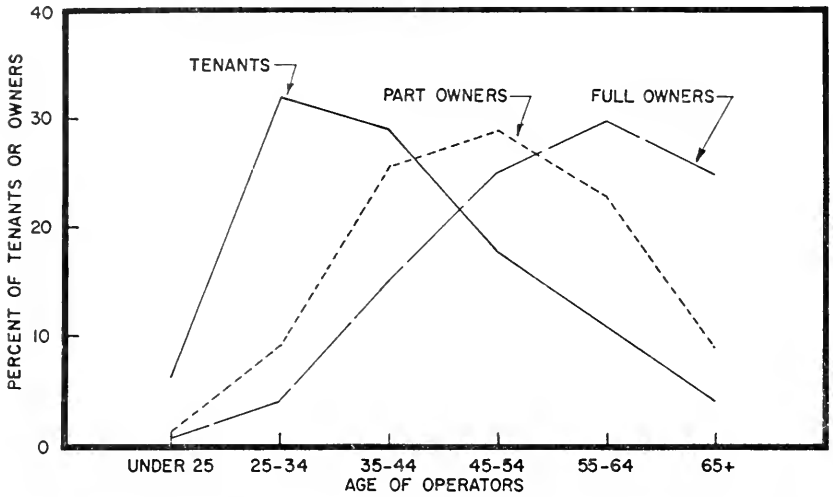


FIG. 3. DISTRIBUTION OF TENANT, PART-OWNER AND FULL-OWNER OPERATORS, ILLINOIS, 1950.

The 1950 age picture for Illinois shows full-owner operators and part-owner operators separately and for the various farming-type areas (called economic areas by the census). Part-owner operators were in median position between tenants and full-owner operators on both the youth side and the side of the older.

showing of income preliminary to retiring on Social Security benefits will be something to watch for in the years ahead. Prolonged periods of pre-farming activity, in school, armed services and industrial or other nonfarm employment, doubtless help to account for the smaller proportions of operators, whether tenants or owners, in the group under 25 years of age. This applied to California, Kansas, Mississippi and New York (Fig. 1). In these states, as in Illinois, operators of farms in general were of higher average age in the 1950's than at earlier dates. In Illinois, as in other states, the part-way shift from the former accent on youth in farm operator groups has affected tenants as a group less than owner operators. (Fig. 2.)

When owner operators are divided into those who rent additional land from others (part owners) and those who are full owners, part owners in Illinois show an age pattern about half-way between tenants and full owners in both the first half and the latter half of the farm operator life span (Fig. 3). In one of the cash grain areas of Illinois part-owner operators show a concentration of nearly a third of their numbers in the 45 to 54 age group. In this area the 55 to 64 group was more numerous than the 35 to 44 group and the 65 plus group more numerous than the 25 to 34 group. Full-owner operation, after getting off slowly in the younger ages, came in stronger among those 55 and over, especially in the cash-grain area (Figs. 3 and 4).

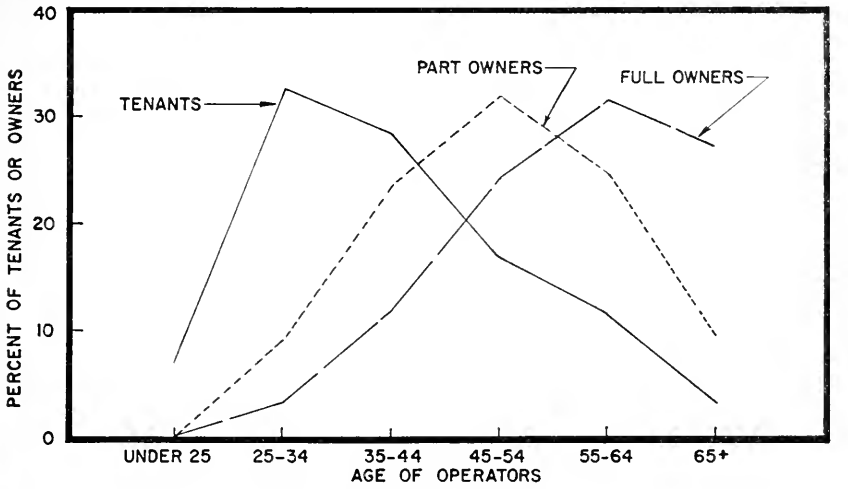


FIG. 4. DISTRIBUTION OF FARM TENANT, PART-OWNER AND FULL-OWNER OPERATORS, 13 EAST-CENTRAL ILLINOIS COUNTIES (CENSUS ECONOMIC AREA 6B), 1950.

A larger proportion of part-owner operators were 45 years old and over in the cash grain area of east-central Illinois than in the state as a whole in 1950. In that area there was even a notably higher proportion of full owners in the higher age brackets.

Shifts of this kind in the Illinois farm scene can be viewed more clearly in the light of two underlying trends in the farm economy of the state. Let us first consider the shift away from high concentration on younger age groups in the farm operator populations as a whole. The 30-year core period statistically dominant in the life span shifted from 25-54 to 35-64 in New York and California between 1890 and 1900, in Illinois between 1910 and 1920, and in Kansas between 1920 and 1930. These four states were used as non-southern samples. In Mississippi the accent on younger operators, while less recently than a half-century ago, continued through 1950. Croppers, who are employees who have their wages paid in crops, have been counted, by the census, as farm operators in southern states, and much of the capital required of tenants in other parts of the country is not required of croppers in the South. Where the operation of rented land by tenants and part owners has required heavy outlays for ownership or hiring of machinery and other equipment and for various current advances — these having run to inventory totals larger than whole farms were costing around 1900 — it is not surprising that the operators prepared financially to make the capital investments and meet the current items are not the youngest. That Illinois in the aging of her farm operators should have followed sharply on the heels of states emphasizing irrigation and other types of farming with high

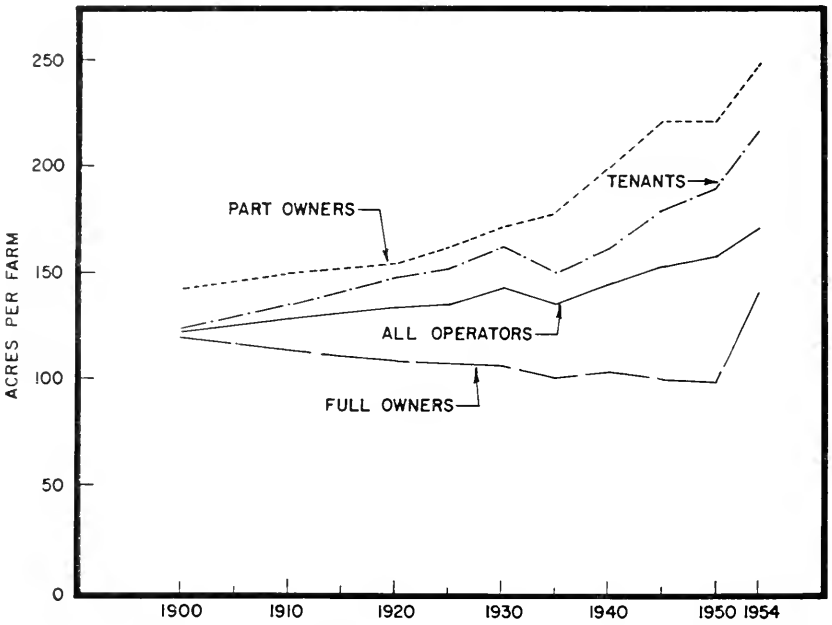


Fig. 5. Average Size of Farms, by Tenure of Operator, Illinois, 1900-1954.

Growth in size of Illinois farms has been accelerated since about 1935 where tenants and part-owner operators prevailed. Only between 1950 and 1954 was there a notable increase in the average size of the full-owner operated farm. Reduced enumeration of very small owner-operated properties may explain in part the apparent increase in size of full-owner farms in the early 1950's.

capital requirements is not surprising. It was a necessary adjustment. Farmers of ages 35 to 65 constitute from two-thirds to three-fourths of operators now as did those 25 to 54 years old in grandfather's day.

A second trend in the economy has been the growth in the proportion and agricultural progress of operators who were tenants. The farms having the largest size increases were those including rented land. (Fig. 5.) Land operated under lease by tenants and by part owners reached 58 percent in 1945, an all time high for Illinois. The land in farms operated by tenants in Illinois in 1950 and 1954 carried values per acre above the average by about 15 to 17 percent and that operated by owners of all types had value per acre about 8 to 12 percent below the average of all farms. The rented portion of the part owner's farm while usually less well equipped with buildings, is often tillable land in higher than average proportions. In dollars worth of land, it is probable that the land operated by tenants in 1954 accounted for about 52.3 percent of the state's farm real estate and that in the rented portion of part-owner farms was another 14 or 15 percent. Of the real estate values in farms it appears that nearly

two-thirds was operated under lease in 1954. This resulted partly from the fact that the rented land in 1954 was 18 percent more in dollar value per acre than the average of all land. Part-owner operated farms averaged 25 percent lower in dollar value per acre than the general average, but on the portion rented from others perhaps lower in value by 5 to 10 percent. Thus control over farms by tenants reached a peak in Illinois in 1935, and over acres in 1945 and lessee control over acres and over dollar inventories in land and buildings continued to higher figures through the census of 1954. Full-owner operators appear to have gained 40 acres in the average size of their farms, 1950-1954, but their farms were still only 81 percent of the average Illinois farm, and in value per acre their farms were 18 percent under average. In dollar values, at least, the ratio of farm real estate units rented is probably higher now than in 1954, and the ratio operated by owners at an all time low. Mere counting of noses of operators in the major tenure classes is no longer sufficient.

Owner operators increased from 55 percent of all operators in 1930 to 64.6 percent in 1954, but among them were part owners accounting for rented land about equal to that of 8 percent of the full-owner farms in 1930 and 11 percent in 1954. Against a 25 acre increase in the size of the average full-owner operated farm from 1900 to 1954 there was an increase of 96 acres in the average tenant farm and of 107 acres in the average part-owner farm.

Two patterns have thus been emerging in Illinois land tenure. On the one hand, renting by full-scale tenants and by part owners has taken on a dominant position and full-owner operation a subordinate position. The extent of this shift or the precise form of it may be surprising to some who have not kept touch with the intensity and persistence of the trends in tenure. On the other hand, the group now making the farm operation venture is more mature, redoubles the scale of effort in the midstream of its economic voyage, extends efforts into years of advanced maturity, and moves toward a later retirement with full-owner operation of a farm property not too demanding as an investment and as an operating challenge.

C. L. Stewart

OUR AGING POPULATION: IMPLICATIONS FOR AGRICULTURE

Among the many factors in the population revolution of the past several decades, none has been more significant than the increase in numbers and proportions of older persons. Two factors have contributed to developing concern about our senior citizens.

First was the general industrial and technological revolution. Before the transition from a preindustrial-agricultural society, workers were ex-

pected to work for their own living until illness, physical incapacity or old age overtook them. When the worker was no longer able to care for himself the family assumed obligations for his further support. This period was characterized by a philosophy of hard work, production and relative scarcity. With the technological revolution and automation the number of older workers needed in production declined. The function of the family in assuming responsibility and care for its infirm and aged has also changed. The older worker today must rely on some form of public support or provide for his old age through a retirement program. The present age is characterized by a philosophy of leisure and consumption.

The second factor contributing to the increase in older persons has been the population revolution. Among the population factors have been the significant increase in life expectancy from birth and in all age groups, and the contribution to the proportion of aged made by the influx of large numbers of foreign born during the first 25 years of the present century. These immigrants were concentrated in the productive working ages and now many are passing into the older ages.

Average life expectancy is derived from life tables and represent calculations of the chances of living from one year to the next. The average life expectancy is thus the number of years a group of people starting at the same age can expect to live in the future. Such calculations do not relate to an individual but to groups. Longevity, on the other hand, refers to the actual number of years any one person actually lives. It is apparent that life expectancy and longevity are different. The former is a life table average, while the latter is largely determined by the biological heritage of each individual. Thus longevity of some individuals is greater than others, indicating that there are differences in hereditary and family backgrounds. General improvements in conditions of public health, sanitation and medical care have added significantly to average life expectancy. There is evidence to suggest that individuals are not living very much longer than formerly. For each individual "three score and ten years" of biblical reference is still pretty much the length of life of any one person.

That marked increases have taken place in life expectancy is readily apparent by examining the facts. In 1900 white males had an average life expectancy of 48.23 years and white females 51.08 years. Fifty years later these expectancies had increased to 66.31 and 72.03 years, respectively. These are tremendous increases amounting to 37.5 percent for males and 41.0 percent for females. This remarkable increase in life expectancy at birth for males and females has been accomplished largely by the dramatic decreases in the number of infants who die in the first year of life. While life expectancy increased for other ages it has not been

TABLE 1. — TRENDS IN THE TOTAL POPULATION AND POPULATION 65 YEARS OF AGE AND OVER IN ILLINOIS, 1900 to 1950

Census year	Total population	Percent increase over preceding census	Population over 65 years	Percent increase over preceding census	Percent population over 65 is of total
1950	8,712,176	10.3	754,301	32.8	8.7
1940	7,897,241	3.5	567,963	34.5	7.1
1930	7,630,654	17.7	421,073	41.5	5.5
1920	6,485,280	15.0	297,647	22.2	4.6
1910	5,638,591	16.9	243,374	27.7	4.3
1900	4,821,550	26.0	190,639	38.4	3.9

as marked as at birth. White males at 20 showed a 17.4 percent increase in life expectancy between 1900 and 1950, and white females experienced a 24.7 percent increase. Increases in life expectancy after the first year of life and through the young adult periods reflect the progress made in medical science and treatments of infectious diseases with wonder drugs. Among older adults chronic and degenerative diseases have increased and life expectancies have not increased as much for those over 45 years as for those under 45.

In 1950, Illinois oldsters over 65 years had an average life expectancy of 13.49 years. This is slightly less than the 13.83 for the entire nation. At the time of the last census Illinois had 754,000 persons over 65 years

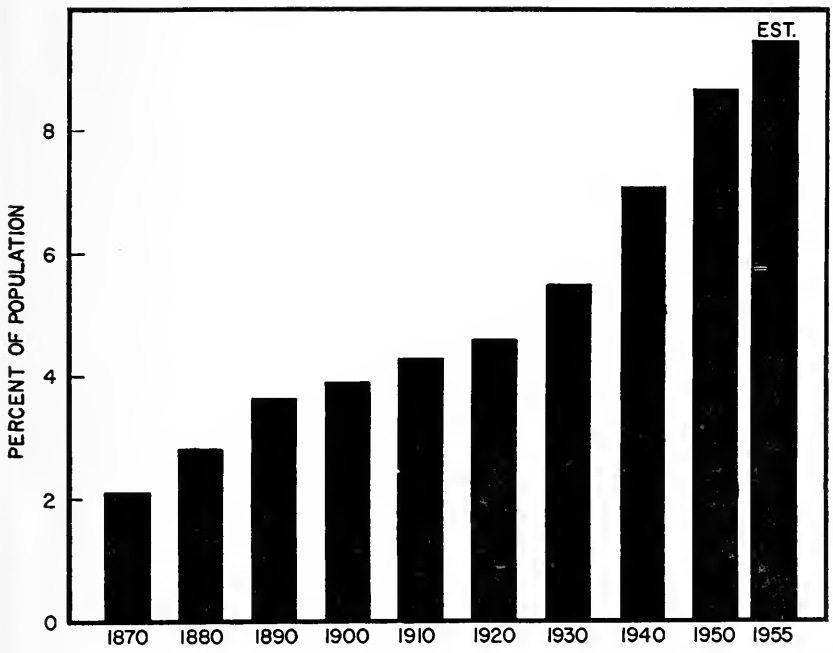


FIG. 1. PERCENT OF POPULATION 65 YEARS OF AGE AND OVER, ILLINOIS, 1870-1955.

TABLE 2. — DISTRIBUTION OF POPULATIONS 65 YEARS OF AGE AND OVER, AND PROPORTION IN TOTAL POPULATION, EACH RESIDENCE GROUP, 1920 to 1950

Year	Total	Percent	Urban	Percent	Rural nonfarm	Percent	Rural farm	Percent
1950	754,301	8.6	541,543	8.3	148,325	10.2	64,433	8.4
1940	567,963	7.2	384,196	6.6	110,923	9.9	72,844	7.5
1930	421,073	5.5	268,750	4.8	93,570	9.3	58,753	5.9
1920	297,647	4.6	171,442	3.9	77,202	7.8	49,003	4.9

of age representing 8.7 percent of the population. Table 1 shows that Illinois population over 65 years has grown faster than the general population. See Figure 1. While the state's total population increased about 80 percent during the last 50 years, the number of persons over 65 increased almost fourfold from 190,000 to 754,000. In 1900 about one person in twenty-five was over 65 and in 1950 the ratio was one in twelve. A recent estimate by the Bureau of the Census reveals there were 862,000 persons over 65 in 1955 — an increase of 14.3 percent. Projections based on current death rates indicate the number of older persons in Illinois will exceed one million sometime between 1960 and 1965. Although the number of older citizens is increasing very rapidly, the extremely high birth rates since World War II will result in decreasing the future proportion of the state's population over 65 years.

Table 2 shows that the number of oldsters in the total population increased about two and a half times from 297,000 in 1920 to 754,000 in 1950. In the former period they constituted 4.6 percent of all residents and in 1950, 8.6 percent. The increasing number of older persons who reside in cities suggests that various private and public retirement plans make it possible for them to be self-supporting and not seek smaller places where living is less costly. Here population over 65 years almost quadrupled from 171,000 to 541,000 representing 3.9 percent and 8.3 percent of the urban population in 1900 and 1950.

It is obvious that rural towns and villages with less than 2,500 inhabitants are truly the "home of the aged." In 1920 the 77,000 persons over 65 represented 7.8 percent of the rural-nonfarm population and the 148,000 in 1950 were 10 percent of the rural-nonfarm group. The tendency for extremes in conservatism in many rural communities may be due to the number of older persons. Many problems related to getting social changes and developing new facilities reflect the tendency of these groups to maintain the *status quo*.

Although the rural-farm population declined from 1,090,000 to 765,000 — a decrease of approximately one-third in 30 years — the number of farm people over 65 years increased more than 15,000 or 31.5 percent during the same period. In 1950 there were more than 64,000 comprising 8.4 percent of the farm population. Apparently migration from farms

TABLE 3. — SEX RATIO (MALES PER 100 FEMALES) AMONG PERSONS 65 YEARS OF AGE AND OVER IN THE TOTAL, URBAN, RURAL-NONFARM AND RURAL-FARM POPULATION 1920 to 1950

Year	Total	Urban	Rural-nonfarm	Rural-farm
1950	89.7	83.9	97.9	131.4
1940	92.9	84.5	99.1	138.5
1930	97.6	88.4	101.7	143.8
1920	96.8	87.2	101.5	130.4

since 1920 has involved greater numbers of people in the younger more productive ages than those in the older ages.

Although the sex ratio at birth is 105 males for each 100 females, higher death rates among males result in our population having more females than males. In the total population there were in 1950 98.3 males for every 100 females; the urban ratio was 95.8; the rural-nonfarm 105.5 and the rural-farm 111.4. The trend towards more females than males in Illinois population has been underway for many years. In 1900 there were 105.3 males per 100 females. During each successive decade since that time the ratio has declined and in 1950 for the first time males were in the minority.

Table 3 shows that the ratio between the sexes for the population over 65 years varies considerably among the residents of cities, rural-nonfarm and rural farm areas. Females outnumber males significantly in the cities. This condition has prevailed since 1920, when there were 97 males for each 100 females, by 1950 the ratio had declined to about 84. While the sex ratio was slightly in favor of females in the rural-nonfarm population in 1950, the disparity is not as great as in the cities, nor did female oldsters become predominant until 1940. Compared to these two groups the rural-farm population had 131 males for each 100 females in the age group 65 years and older. Since 1920 males have outnumbered females among farm oldsters. The greater proportion of older males on farms suggests that many widowers continued to live on the farm either as single individuals or to reside with a junior family member, and continue to contribute labor to the enterprise. On the other hand, widows of farmers appear to move off the farms into nearby villages, small towns or cities thereby increasing the proportion of oldsters in the rural-nonfarm and city population. (See Table 2.)

An important factor contributing to the excess of females in cities is the higher rate of migration of females from farm and rural areas. Not only do more females migrate from farms than males but they leave at an earlier age. This selectivity also results in leaving more men than women on farms. This imbalance between the sexes in agriculture poses many problems particularly among young single adults where there are

TABLE 4. — DISTRIBUTION OF ILLINOIS FARM OPERATORS BY AGE, 1910 and 1955

Age group	1955		1910	
	Number	Percent	Number	Percent
Under 25	3,007	1.7	12,381	4.9
25 to 35	25,562	14.8	56,125	22.4
35 to 45	40,091	23.2	67,339	26.9
45 to 55	40,932	23.8	59,563	23.7
55 to 65	35,889	20.8	35,167	14.0
65 and over	27,192	15.7	20,389	8.1
Total reporting	172,673	100.0	250,964	100.0
Median age	49.3		41.9	

as many as 300 to 400 males between 15 and 30 years of age for each 100 females.

Since the widespread depression of the thirties, increasing public and private concern developed about security for our aging population. The Federal Social Security Act in 1935 and amendments extending coverage to farm laborers in 1950 and farm operators in 1954 was a milestone of considerable significance in its possible effects on the age structure of our agricultural population.

Farmers have traditionally believed that farm ownership was their best approach to old age security. However, rapid shifts in agriculture from subsistence to increased commercialized production has in a large measure decreased the feelings of security. Although commercialized production has provided more income it has also made agriculture more sensitive to fluctuations in general economic conditions and price changes. Since World War II a larger proportion of farmers has supplemented incomes from employment in nonfarm jobs, many of which were under social security.

The proportion of older farm operators on Illinois farms has increased since 1910. Table 4 shows that the proportion over 65 years old doubled during this period and the average age of all operators increased from about 43 to more than 49 years.

Table 5 shows that older farmers and farm managers remain in the labor force in greater proportions than any other major occupational group suggesting that farm operators continue operating farms beyond the usual retirement age. Compared with the major self-employed groups of professionals, managers, officials and proprietors, the proportion of farmers over 65 still employed in the labor force is twice as great as these groups.

Retirement, in the form of complete retirement, is a newer phenomenon in rural society and particularly among farmers than for industrial employees in urban society. Farm operators have not, as yet, accepted retirement as a necessary conclusion to a life of work. As self-employed persons farmers have been able to set their own time and method of re-

TABLE 5. — TOTAL EMPLOYED MALES, NUMBER AND PERCENT OVER 65 YEARS OF AGE IN MAJOR OCCUPATIONAL GROUPS, 1950

Major occupational group	Number employed	Number 65 years or older	Percent 65 years or older
Professional, technical and kindred workers	202,732	9,365	4.6
Farmers and farm managers	170,526	21,384	12.5
Managers, officials and proprietors	274,199	17,239	6.2
Clerical and kindred workers	208,132	8,921	4.3
Sales workers	164,398	8,808	5.3
Craftsmen, foremen and kindred workers	508,499	24,592	4.8
Operatives and kindred workers	534,097	16,171	3.0
Private household workers	3,449	440	1.3
Service workers, except private household	171,745	19,909	11.5
Farm laborers and foremen*	49,488	3,346	6.7
Laborers, except farm and mine	189,686	10,379	5.4
Occupation not reported	26,622	2,544	9.5
Total	2,503,573	143,098	5.7

* Does not include unpaid family workers.

tirement the same as the self-employed in cities. In general farmers seem to accept partial retirement or a cessation of work by reducing farm operations or management responsibilities. In the past, if complete retirement from farm work and management functions were practiced, the farmer-operator usually retired because of disability, illness, or a recognition of old age — an age measured not in chronological years but in the extent to which the individual was no longer able to do a full day's work.

The lack of specific attitudes about retirement among farmers in comparison with other groups is due in large part to their beliefs and ideas about the meaning of work. The farmer is probably more work orientated than any other occupational group in our society. Traditional beliefs about the virtue of hard work developed out of the nature of agriculture and the spirit of frontier in America. Although the modern farmer lives in the midst of a highly commercialized urban-industrial society many of his beliefs, attitudes, and ideas are conditioned by traditions of the past. The fact that the farmer lives in small groups characterized by intimate personal contacts and social relationships also reinforces his roles and images of individual self reliance and initiative.

Farmers have been traditionally suspicious of outside forces and any "interference" with the processes of self determination. In times of stress and even disaster great reliance is placed upon the family and the local community as the major instruments for assistance and solving problems. It is in this kind of social setting that farmers cared for their own indigent and needy.

While physical disability and illness may be considered legitimate reasons for retiring, complete retirement for *age alone* seems to run counter to the traditional ethics and values of farming and farm life. The prevalent attitude that one should keep working and not retire or "give

up" appears to be deeply rooted in the farmer's psychology. Therefore, many farmers keep working and try to add increments to their land holdings believing that a deed to complete ownership of land is the best security for their needs in old age.

In spite of these attitudes and beliefs, coverage under social security is now the law of the land. Perhaps the problems that may be important can be put into questions such as the following: Will a greater number of the present farm owners retire under the provisions of OASI (Old Age and Survivors Insurance) than in the past? What effect will this have on getting younger men started in farming? How will farmers retiring under the provisions of OASI influence the traditional attitudes of farmers towards investment and savings in land for old age? What results will social security and retirement plans have on the value of farmland? How will traditional farm-tenant relationships be affected by social security? Will there be a general tendency for the number of employed in agriculture to be younger in average age? Where will farmers retire to? Will they remain on the home farm or will they seek out nearby small towns and villages? What are the prospects and what planning is now being done for future care of the aged in local communities? A host of similar questions need factual answers if we are to intelligently plan for the future needs of oldsters in agriculture.

Presumably, past events may be taken as a guide to the future. If so, the number of persons in the population who are 65 years or older can be expected to increase. We are faced today with a problem that is new and without precedent in our history; namely, an increase in the number of older persons who must either have the opportunity to work and provide for themselves or be supported by a smaller proportion of people in the working ages. Not only must this latter group provide the necessary labor for goods and services for the dependent young as well as retired oldsters but they must also produce future population replacements. Concern for the growing problem of aging and its social and economic implications has created widespread interest among many individuals, organizations as well as local, state and federal governmental agencies. Intelligent action and programs designed to provide for adequate care of our older citizens can have many consequences for the family, community and the nation. Unfortunately, to date very little planning has been done in many areas to meet the challenge of the older citizen. In fact, many individuals do not make plans for their own retirement and activities in old age. The fundamental need, therefore, appears to be for educational programs that will focus upon tackling the problems and encouraging the oldsters as well as the mature among us to plan for retirement before the age of retirement is reached.

C. L. Folse

PROFITABLE USE OF NONTILLABLE PASTURE IN NORTHWESTERN ILLINOIS[1]

Nontillable pastureland represents an important portion of the total land in northwestern Illinois. In 1954, 7.6 percent of the total land in 19 counties in this area was classified as nontillable pasture. In spite of the apparent increases in income possible by pasture renovation, in 1954 only 9.6 percent of the nontillable pasture was improved by such practices as liming, fertilizing, seeding, irrigation, drainage, or weed control.

The purpose of this article is to indicate the effect of capital availability on the most profitable use of resources on a 280-acre farm which has 40 acres of nontillable pasture and 240 acres suitable for cropping. Of special interest is the use of nontillable pastureland. The cropland on this farm is assumed to be 50 percent Muscatine silt loam and 50 percent Tama silt loam. Two men are available during the entire year. Hired labor is available at two dollars an hour during the peak seasons.

Enterprises considered. Five possible crop rotations are considered for the 240 acres of tillable land (see Table 1). The estimated yields assume that a fertility build-up program has been completed. Harvesting losses have been deducted.

Four alternative management systems are considered for the 40 acres of nontillable land (see Table 2). System A requires only fall clipping of the bluegrass pasture. Under System B, three tons of lime are applied once every eight years and 200 pounds of 0-20-0 applied every other year. System C requires application of three tons of lime, 300 pounds of 0-20-0 and 100 pounds of 33-0-0 at eight-year intervals with an additional application of 100 pounds of 10-20-0 as top dressing each of the seven intervening years. Finally, with complete renovation (System D) the pasture is plowed, disked, and after the application of three tons of lime, 150

[1] See Gossett, William C., "Productivity and Profitable Utilization of Nontillable Pasture on Northwestern Illinois Farms." Unpublished thesis, University of Illinois, May 1957.

TABLE 1. — ESTIMATED ANNUAL YIELDS, LABOR AND OPERATING EXPENSES FOR FIVE ROTATIONS ON TAMA-MUSCATINE SOILS

	Rotation				
	C-C-O (Cl)	C-C-Sb-O (Cl)	C-C-Sb-O-Cl	C-C-O-Cl	C-C-O-Cl-Cl
Yields per acre					
Corn, bushels	76	76	80	82	84
Soybeans, bushels	0	32	32	0	0
Oats, bushels	55	56	56	60	60
Clover, ton	0	0	3.0	3.0	3.5
Man-hours per rotation acre	8.4	8.0	6.4	6.3	5.0
Cash operating expenses per rotation acre	$32.08	$29.54	$24.52	$23.98	$21.80

TABLE 2. — ESTIMATED ANNUAL YIELDS, LABOR AND FERTILIZER REQUIREMENTS FOR FOUR NON-TILLABLE PASTURE MANAGEMENT SYSTEMS

		System			
		A	B	C	D
		Fall clipping	Phosphate, lime, fall clipping	Nitrogen, phosphate, lime, fall clipping	Reseeding, nitrogen, phosphate, potash, lime, fall clipping
Yield per acre (pasture days)		90	130	150	200
Fertilizer required per acre (pounds)	N	0	0	13	15
	P_2O_5	0	20	22	21
	K_2O	0	0	0	17
	Lime	0	750	750	750
Labor per acre (man hours)		0.5	1.1	1.1	3.9
Average annual costs		$1.05	$4.70	$7.77	$10.40

pounds of 0-20-0, 300 pounds of 10-10-10, the area is seeded to a mixture of six pounds of alfalfa, one-half pound of ladino clover, three pounds of bromegrass, and two pounds of timothy per acre. It is estimated that this would need to be done once every eight years. In each of the intervening seven years, 150 pounds of 10-10-10 is applied. In order to have at least some nontillable pasture each year, it is assumed that one-eighth of the nontillable pastureland will be renovated each year.

Six different livestock alternatives are considered as possibilities (Table 3). The alternatives include feeding systems believed to be able to profitably utilize nontillable pasture.

TABLE 3. — ESTIMATED ANNUAL FEED AND LABOR REQUIREMENTS FOR SIX LIVESTOCK ENTERPRISES

	Hogs		Choice feeding cattle		Beef cow herd	
	Two-litter system	One-litter system	Beginning weight: 550 pounds Selling weight: 1,050 pounds		Calves fed out	
	Spring and fall	Spring	Pasture	Drylot	Pasture	Drylot
	Feed required per 100 pounds of production					
Feed						
Corn, pounds	371	417	573	625	341	369
Supplement, pounds	44	34	48	58	27	32
Hay, pounds	0	0	343	365	610	630
Pasture, days	2.2	4.4	8.1	0	44	39
	Man hours per unit of production					
	(2,700 pounds produced)	(1,350 pounds produced)	(500 pounds gain)	(500 pounds gain)	(900 pounds beef produced)	(900 pounds beef produced)
Labor						
Man hours	40.4	24.7	8.6	9.6	19.4	20.4

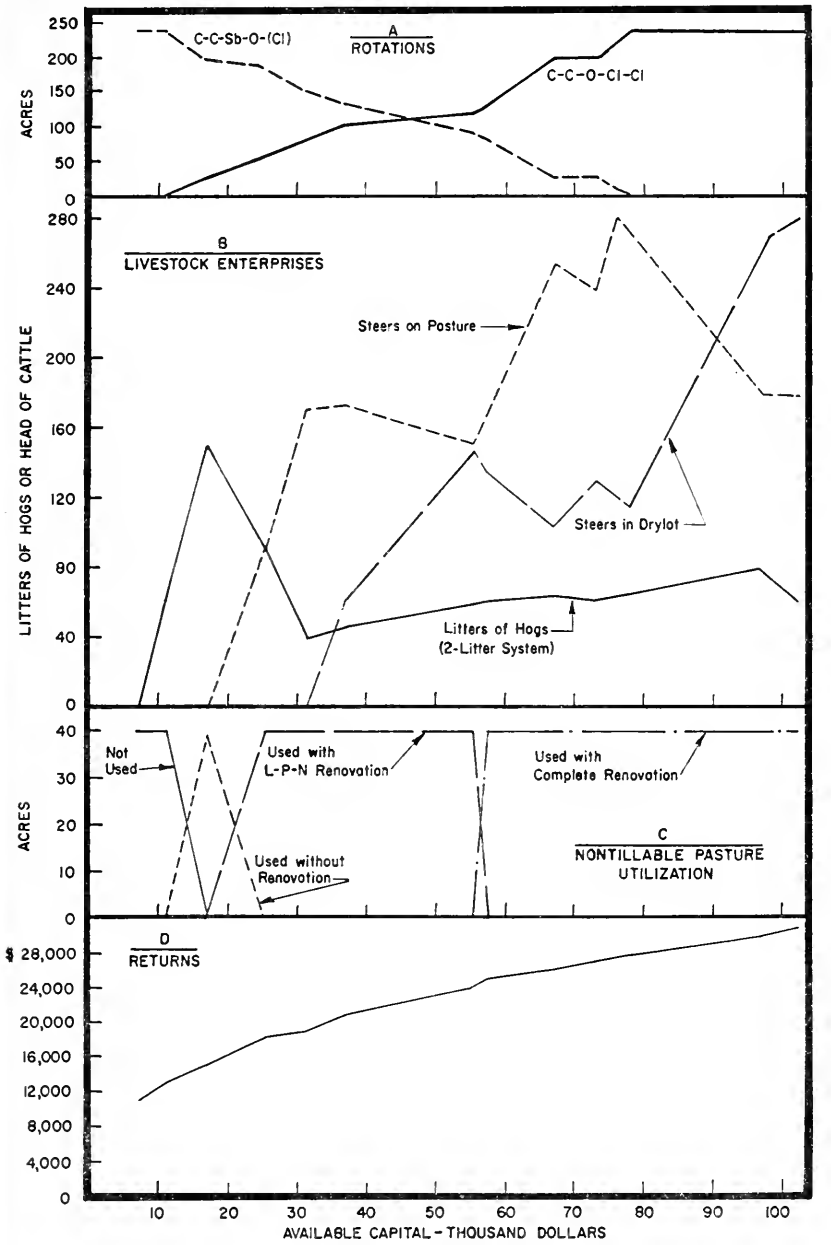


FIG. 1. CHANGES IN HIGHEST PROFIT FARMING SYSTEM WITH VARIATION IN AMOUNT OF AVAILABLE CAPITAL.

Prices and costs. Fertilizer, supplement and grain prices are the 1951-55 average Illinois prices. Hog prices assume a 12-to-one hog-corn ratio adjusted for seasonal variation. The average price per pound of a choice 1,000-pound slaughter steer is assumed to be 33 percent higher than the average price per pound of 225-pound butcher hogs. Prices of other slaughter cattle were adjusted relative to the choice 1,000-pound slaughter steer price. Feeder-cattle prices assume a price margin of approximately $2.75 per hundred pounds. Crop production costs are based on 1955 Detailed Cost Reports of Northern Illinois.

Results. The highest return farming systems for various levels of capital availability were chosen on the basis of returns over an eight-year period. Land costs, labor costs of the two men considered available, and overhead costs on machinery and buildings were not deducted. These costs are assumed to remain the same with the different farming systems considered. It was necessary to consider returns over an eight-year period because the pasture renovation plans have eight-year cycles.

Available capital refers to funds available for cash operating expenses and investment in pasture renovation during the first year of operation. Thus alternative uses for available capital included such items as fuel, seed, fertilizer, feeder cattle, feed, as well as investments in pasture renovation systems.

In Figure 1, we may note the changes in farming system necessary to maximize returns at various capital levels. As capital becomes more plentiful (Figure 1-A) the rotation on the 240 acres of tillable land gradually shifts from a four-year catch-crop rotation, C-C-Sb-O (Cl), to a five-year rotation with 40 percent of the land in stand-over legume. This change is associated with changes in the kinds and numbers of livestock (Figure 1-B). Although hogs are relatively important at low levels of capital availability, feeding cattle becomes more important as capital scarcity decreases. The number of hogs reaches a peak of 145 litters at a capital supply of $17,000. Capital is too limited at that level for a feeder-cattle operation. The number of steers fed on pasture reaches a maximum of 275 head at $76,000 available capital. Roughage limitations prevent further increases. Cropping and livestock systems also interact with the selection of the best system of management of the nontillable pastureland. At low levels of capital availability, there is insufficient livestock to use any of the nontillable pasture (Figure 1-C). With approximately $12,000 available, it becomes profitable to use some of the nontillable pasture. However, it is used under System A which entails only fall clipping as a management practice. At higher levels of capital availability, the renovation practices required to maximize profits for the *total* farm become more intensive.

At about $16,000, the highest profit farming system is self-sufficient with regard to grain supplies; the grain produced is all consumed by the livestock. Beyond this level of capital availability, expansion of the livestock enterprises requires purchase of grain. Utilization of the labor supply becomes more complete at higher capital levels. It becomes necessary to hire labor at a capital level of $57,000.

Figure 1-D indicates the increase in average annual returns as capital availability increases. Again, the returns represent income above cash operating expenses.

W. D. Gossett and E. R. Swanson

UNIVERSITY OF ILLINOIS
COLLEGE OF AGRICULTURE
URBANA, ILLINOIS

Louis B. Howard

Director, Extension Service
in Agriculture and Home Economics

FREE—Cooperative Agricultural Extension Work. Acts of May 8 and June 30, 1914.

Ill. 8900, 6-57—12,000
Permit No. 1247

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. Louis B. Howard, *Director.* Acts approved by Congress May 8 and June 30, 1914.