Twenty-five Years

of

Illinois Crop Costs

1913-1937

.

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and
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CONTENTS

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By R. H. Wilcox, Associate Chief in Farm Management, and
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ROM ACCOUNTS kept by selected groups of Illinois farmers in cooperation with the Illinois Agricultural Experiment Station since July 1, 1912,[1] there has accumulated a mass of data on the costs involved in producing crops and livestock. The twenty-five years covered by the data reported here was a period of rapid and fundamental change in Illinois agriculture. The "horse economy" that had dominated mid-western farming after the invention of the reaper and binder, gangplow and cultivator, gave way to a "tractor economy" characterized by larger machinery units, decreasing amounts of man labor per unit of land and crops, and increasing proportions of direct cash costs incurred in producing crops. Tractors and trucks, combines and corn husking machines, new crops and improved strains of established crops, improved roads and more rapid means of transportation have impelled farmers to alter their farming practices, and have led to various adjustments in labor, power, and other cost factors. Incentive toward improvement in methods and reduction of costs has come also from the necessity farmers have had of adjusting their operations to extremely low prices for their products during part of the period.

The recording, in summary form, of crop-cost data covering these years of change is the main purpose of the present bulletin. The data are not new. Year by year they have been analyzed and published as mimeographed reports for the immediate service of the cooperating farmers in planning their business and organizing their work; and they have been the basis for recommendations concerning many farming practices. They have been drawn upon also in the preparation of other bulletins of this Station,[2] in which emphasis has been chiefly on the *amounts* of and *seasonal demand* for labor, power, and materials used in crop and livestock production.

Few new interpretations—only those that might be expected from a broader and more inclusive view of materials already well known in detail—are offered in the present bulletin. Of course, a twenty-five

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[1] Altho the gathering of the data for these cost studies began July 1, 1912, the data presented herein begin with 1913. See page 360.

[2] For a list of these publications, see page 455.

year record gives opportunity to trace the effects of changes in prices, methods, and practices on the cost of production, in a way that is impossible in reports covering shorter periods. Moreover, these collected data can, to some extent, be used by farmers in the same manner as the current reports; that is, as a basis for selecting and fitting together the various enterprises so as to make the farm business as a whole more profitable, or discover by comparison where changes can be made in their own practices or methods that will enable them to reduce their cost of producing a given crop. For these uses in farm planning the data covering the more recent years of the study are of course the most valuable.

Of the several important factors to be considered in an analysis of the organization of an Illinois farm, two are shown by the data in this bulletin; namely, the relative amounts of the different items of cost that enter into the final cost of each important crop, and the profit to be gained from each such crop.[1]

DESCRIPTION OF THE COST-ACCOUNTING STUDY

At the beginning of this accounting project the cooperating farmers were located in only two counties, Franklin and Hancock. Later the study was shifted to other counties, so that records have been obtained altogether from farms in thirteen counties in areas in which, in general, distinctly different types of farming are done. A continuous twenty-five-year record of the costs entering into crop and livestock production has thus been obtained, tho there is not a continuous record for any one farm thruout the period nor for the farms in any one county. The data presented in this bulletin begin with the calendar year 1913, since it is the first full year for which records were obtained.

Objectives

This investigation into farm costs was undertaken with the general object of discovering ways and means of securing greater economy in the production of farm products, and of helping farmers to improve

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[1]The proportions in which various crops adapted to a given area may be combined to make the most profitable rotation for a farm are determined, however, not merely by the relative profitableness of the crops as shown in the cost tables, but by other very important data not given here—such as the seasonal distribution of labor and power required by each crop, the adaptation of the crop plan to the farm labor supply, and the needs to be met in livestock production and soil building. These and other factors that affect profitable farming are discussed in Illinois Bulletin 329, "Organizing the Corn-Belt Farm for Profitable Production."

the organization of their farms thru wiser choices of farm enterprises or of methods and practices in handling their enterprises. The determination of the cost and the profit or loss per acre or per animal was only a secondary function of the study, except as such data would be helpful in discovering how the unit cost of a product might be lessened.

When the original plan of this study was drawn up in 1912, the specific objectives were stated as follows:

1. To study the organization and operation of farms.

2. To determine the cost of producing different farm products.

3. To determine the factors underlying the financial, physical, and productive organization of farms.

4. To furnish information which shall be the basis of guiding and interpreting the results of the more extensive, or survey, type of study.

5. To furnish adequate data on farm investments and their distribution.

6. To show sources of receipts and avenues of disbursements.

7. To determine the distribution of man and horse labor and of machine power.

8. To furnish facts as to the financial, material, and labor requirements of crops and livestock.

9. To investigate and determine all the factors grouped under the head of farm costs.

Later, when other areas of the state besides Franklin and Hancock counties were included in the study, two more objectives were added:

10. To ascertain regional differences in costs and in such basic factors of cost as hours of man and horse labor, hours of tractor use, pounds of seed, twine, fertilizer, and any other cost factors that can be measured in quantity as well as in value.

11. To provide standards of performance in field operations and feedlot practices, with which farmers operating under similar conditions may compare their accomplishments.

When the objectives set up at the beginning of the study were formulated, the idea was current that the basic factors in the cost of producing crops were fairly stable, and that if they could be accurately assessed once, they could be used to compute costs without further study from year to year simply by applying current rates to them. But after the study was in progress, the introduction of mechanical power into farming on a much larger scale than had been known before brought about definite changes in the basic factors themselves. The measurement of changes that occur in costs therefore became one of the objectives of the study.

To an unusual degree the objectives set up for this cost-accounting project have been accomplished, as has been evident from the use made of the data in extension teaching and in classroom instruction.

Not all the foregoing objectives, however, are met by the data
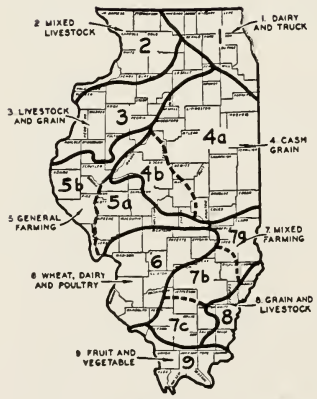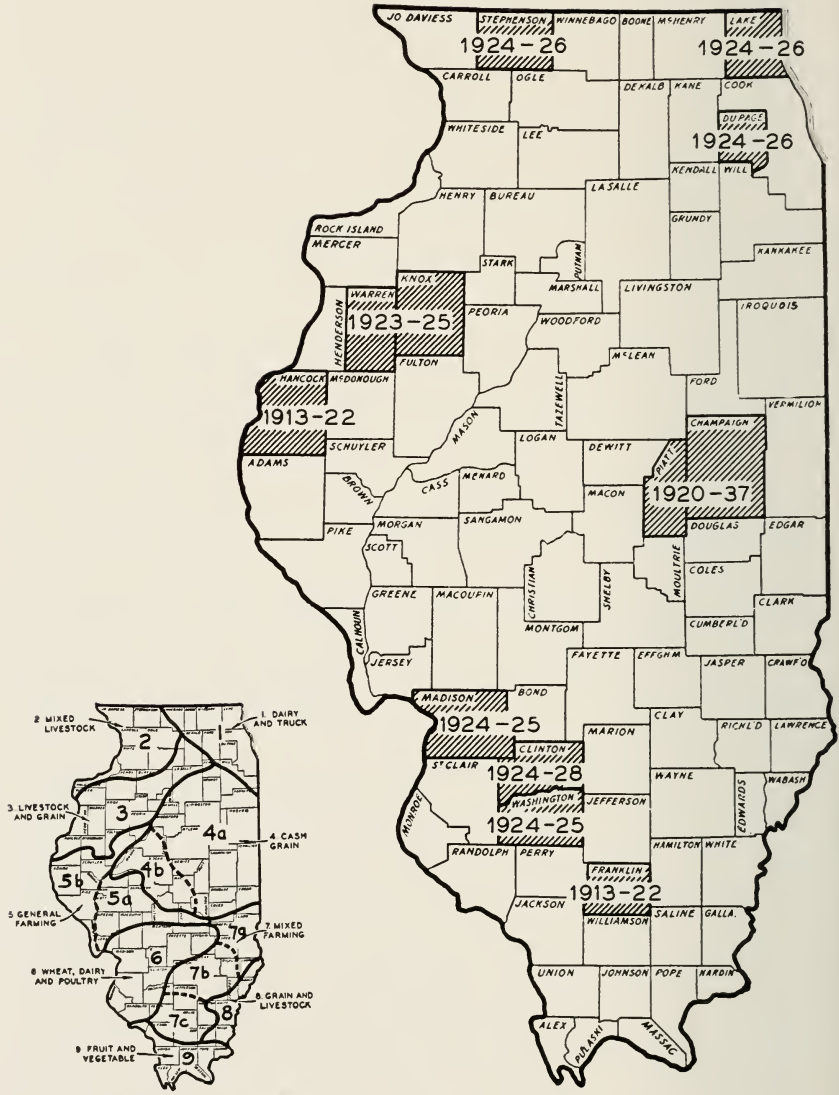
The Nine Major Type-of-Farming
Areas in Illinois

FIG. 1.—ILLINOIS COUNTIES AND TYPE-OF-FARMING AREAS IN WHICH
COST STUDIES WERE MADE

presented in the present publication. No attempt, for example, is made here to set up standards of performance in crop production, as proposed in No. 11 above. Only the data on financial, material, and labor requirements of crop production on typical farms, and the difference between these items in different regions of Illinois and at different times, are included. Moreover, the data presented are, with few exceptions, averages of the data from all the farms studied in a given area. Consequently, tho the results show typical costs under good farming practices in the areas studied at the time the study was made, they can neither be taken as representative of costs in all the farming-type areas of the state nor of costs under all kinds of farming within the area studied. If objectives for a similar study were to be formulated today, more attention would be given to the separation of data on the basis of specific systems of farming and different methods of production. To make this separation successfully would require larger numbers of farms following given systems and methods of production than were included in the present study.

Selection of Cooperators

Care was taken to select as cooperating farmers in each area those who were in general representative of the farmers of the area with respect to ability, land holdings, type of farming in which engaged, and financial standing. It was not always possible, however, to include only those whose farms and farming were typical of the locality—for first consideration had to be whether the farmer could and would keep the records required of him. Thus it was perhaps unavoidable that the group selected would be somewhat more efficient, on the average, than the other farmers of the community—for the inefficient farmers would naturally be less willing to undertake the keeping of the accounts. Nevertheless, inasmuch as a routeman called upon each cooperator regularly at least once a week to supervise the accounts during the early years of the study, and thereby greatly reduced the burden to the farmer, it was possible to obtain records from some men who would otherwise have been unwilling or unable to keep detailed cost accounts.

The fact that on the average the cooperators were somewhat more efficient as farmers than others in the same localities offers no particular hindrance to the use of the data for measuring the importance of individual items of cost and their variation from year to year and farm to farm. It is not a hindrance because the range in ability within the group, as indicated by variations in costs from farm to farm, was

fairly representative of that found among farmers in general in the areas studied.

During the early years of the study, when close supervision of the accounts was particularly needed, travel from farm to farm was slow —by foot or horse and buggy. Consequently, even tho each routeman gave full time to supervising the accounts, only ten to twelve cooperators in each area could be included in the accounting work. But more recently, with improved means of travel, and with less need for close supervision because of the farmers' greater familiarity with the accounts, it has been possible to work with a larger number, the accounts on thirty or more farms being supervised by one routeman who has visited each cooperator at least five times a year.

Location and Character of Farms

The counties in which the farms included in this study were located, and the years in which cost work was conducted, are shown in Fig. 1 and Table 1. A comprehensive description of the types of farming prevailing in the different areas represented by these farms is given in Bulletin 403[1] of this Station.

The farms operated by the cooperators in these cost studies were considerably larger than the average for the areas in which they lie. In 1935, for example, the average size of all farms in Champaign county was 179.6 acres, in DuPage county 111.5 acres, and in Franklin county 69.9 acres. Yet the farms of the cost-study cooperators in these general areas during the periods indicated in Table 1 averaged 261 acres, 146 acres, and 259 acres respectively. Part of this difference is accounted for by the fact that in the average of all farms are included the small farms frequently found near towns, that are not representative of commercial farming.

Northeastern dairy and truck area *(Farming Type Area 1).* This region, a part of the Chicago fluid-milk area, was represented by farms in DuPage, Lake, and Stephenson counties. Tho Stephenson county lies in Area 2, the northwestern mixed livestock area, the few cooperators in the present study whose farms were located in this county shipped fluid milk to the Chicago market, and therefore are classified with the farms in the northeastern dairy and truck area. Approximately 75 percent of the gross income of farms in this area is from the sale of milk and of dairy animals. Crop production is adjusted to furnish feed for livestock. In 1929, 89 percent of the crop and pasture

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[1]H. C. M. Case and K. H. Myers. Types of farming in Illinois. Ill. Agr. Exp. Sta. Bul. 403. 1934.

TABLE 1.—FARMS INCLUDED IN ILLINOIS COST STUDIES, LOCATION, AVERAGE SIZE, AVERAGE ACRES IN CROPS, AND YEARS STUDIED

Counties included in routes	Average number of farms	Years covered	Number of years	Average acres per farm	Average acres in crops per farm
Franklin................	7	1913–1922	10	259	164
Hancock................	9	1913–1922	10	233	177
Champaign, Piatt........	21	1920–1937[a]	18	261	225
Knox, Warren...........	18	1923–1925	3	274	203
Clinton, Madison, Washington...........	10	1924–1925	2	223	169
DuPage, Lake, Stephenson.	10	1924–1926	3	146	118
Clinton................	18	1926–1928	3	164	127

[a]Tho the period covered in this bulletin closes with 1937, the cost-accounting work is still being carried on in Champaign and Piatt counties.

land of this region was in corn, oats, barley, hay, and pasture. None of the cooperators in this study obtained any appreciable income from truck crops.

Western livestock and grain area *(Farming Type Area 3)*. Co-operators in Hancock, Knox, and Warren counties represented the area of heaviest production of beef cattle and hogs in Illinois. Sale of meat animals usually accounts for 50 to 75 percent of the gross farm income in this area. Not all the farms, of course, are livestock farms. Soil and topography have much to do with determining the kind of enterprises that will be developed on a given farm. Where the land is not too hilly to be cultivated without excessive erosion, the soil is a dark prairie loam; but a considerable portion of the area is rolling timberland suitable only for pasture. Steers purchased on the principal feeder-cattle markets and hogs raised in the area provide the principal means for disposing of the crops grown.

East-central cash grain area *(Farming Type Area 4)*. This predominantly grain-producing area was represented by the farms in Champaign and Piatt counties. The land in this area is level to moderately rolling and very fertile. Over 90 percent of it is tillable. Corn is the principal crop. Thruout the period of this study corn occupied about 47 percent of the tillable land, but during the later years the acreage of it was reduced somewhat under the AAA program. Oats, wheat and, in recent years, soybeans utilize an important part of the remaining cropland. Nearly three-quarters of the corn and half the oats are shipped out of the area. Soybeans are delivered in increasing quantities to mills located in the area.

Southwestern wheat, dairy, and poultry area *(Farming Type Area 6)*. This area, which includes much of the St. Louis fluid-milk zone, was represented by farms in Clinton, Madison, and Washington counties. Altho lying within the St. Louis milkshed these counties are characterized by a diversity of farming interests. Winter wheat and poultry are important sources of farm income. Feed crops grown in the area are not as a rule sufficient to supply the needs for feed. Yields of winter wheat are so much better, relatively, than of feed crops, that wheat is grown for sale in order to furnish funds from which to purchase feeds.

Much of the tillable land in this area needs lime and drainage in order to grow legume crops. Some of the land, underlain by a tight subsoil, is used for permanent pastures. From these pastures some redtop seed is obtained. Only 50 to 55 percent of the tillable land is used for crop production.

South-central mixed-farming area *(Farming Type Area 7)*. The diversified farming interests of the south-central part of Illinois were represented by the farms in Franklin county. In this region the productivity of the soil is relatively low, most of the land being underlain by a tight subsoil and drainage on the more level areas consequently offering an extremely difficult problem. General farms are most representative of the area. Farms specializing in poultry, fruit, and redtop seed are, however, numerically important. Tho four-fifths of the land is fit for cultivation, about half of the tillable land is allowed to lie idle or is used as pasture and large areas of pasture are cut for redtop seed. About as much land is devoted to hay production as to corn. Peach plantings have expanded since 1900 at the expense of apples, but orchards occupy only a small proportion of the farm land.

Method of Compiling the Data

Daily records of labor, feed, cash, and other items kept by the cooperating farmers were gathered by the routemen on their regular visits to the cooperators, and were brought to the Experiment Station, where the cost of production for each of the productive enterprises on the farms was ascertained by the use of journal, double-entry ledger, and sound cost accounting procedure. Crop costs, with which this bulletin is concerned, were entered under the following heads:[1] man labor, horse labor, tractor use, machinery, seed, twine, threshing and

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[1]The description of the way in which the cost of these items was determined is taken in part from Illinois Bulletin 277, by Emil Rauchenstein and R. C. Ross.

fuel, combine, corn picker, fertilizer, general farm expense, miscellaneous, taxes, and interest on land.

Man labor. Each cooperator kept daily records of all labor. The hour rate was computed by dividing the cash cost of all hired labor on each farm, plus the value of board and other items furnished to hired labor, by the total hours worked by hired labor. The labor of the operator and other unpaid family labor was figured at the average rate for hired labor on the farms under study in the county. The total cost of man labor used on each field was determined thru 1932. Since 1932 the cost has been determined on the basis of crops rather than of fields, even when several fields on a farm are planted to the same crop. In determining the total labor cost for each crop, no additional charge was made for the management of the operator, because the pay for competent planning should be represented, not as a charge to each enterprise, but as the net earnings of the entire farm.

Horse labor. Daily records were kept of the labor performed by all of the horses on each farm. The rate of charge per hour for horse labor was found by dividing the cost of maintaining horses (including interest on the investment) by the total hours of horse labor performed. The cost of the horse labor spent on each field was determined thru 1932, but since that year the cost has been determined on the basis of the total acreage of each crop on each farm.

Tractor use. Records similar to those kept on man and horse labor were kept on tractor use and the annual cost of operating a tractor. From 1913 to 1923, while tractors were in the experimental stage and depreciation on the machines was particularly heavy, the costs on tractor farms were kept comparable to those on other farms by charging depreciation on the tractor directly to the profit and loss account of the farm as a whole, rather than to the expense account of the tractor. After 1923, however, tractor depreciation was charged directly to the cost of tractor operation. The rate for tractor use was thereafter computed by dividing the total cost of operating the tractor, including depreciation, by all hours of work performed by the tractor, including drawbar, belt, and custom work.

Machinery. The charge for machinery included depreciation on each machine, interest at 5 percent on the value of each machine at the beginning of the crop year, and the cost of repair parts, grease, oil, housing, and labor of repairing the machines. Where machines such as combines were operated with auxiliary engines, the cost of gasoline was included as a cost of operation.

Separate accounts were kept for each kind of machinery, such as

grain machinery or hay machinery, and for certain individual machines, such as combine, threshing machine, corn picker, and corn sheller. This division seemed advisable, inasmuch as some crops, such as wheat, usually require more expensive machinery than others—for example, hay crops.

Prior to 1930 the total expense of each kind of machinery was prorated to the fields using that kind, in proportion to the number of hours of horse labor used on each field. But after 1930, because so many machines were drawn by a tractor, the expense of all crop machinery was distributed on an acre basis. The expense of such special crop machinery as seeders, grain drills, corn planters, and binders was distributed by a simple division of the expense of each machine by the number of acres on which it was used.

The expense of general crop machinery, which included the maintenance of plows, harrows, disks, and similar machines used in growing several crops, was distributed among the different crops on a weighted acre basis. Each crop-acre upon which general crop machines were used was weighted in "units" intended to represent the average comparative use of the machinery on each crop. Beginning in 1930 the unit weights given to the important crops for this purpose were as follows: corn, 10; soybeans, 10; oats, 3; wheat, 6; fall plowing, 6; and temporary pasture, 6. By multiplying the number of acres of each crop by the unit weight for that crop, and adding the sums, the total number of units for the farm was determined. The machinery cost per unit was then computed by dividing the general crop machinery cost by the total number of units for the farm. And finally the portion of the general crop machinery cost to be borne by each crop was determined by multiplying the unit cost by the number of units of each crop. In all cases where a machine was used in custom work off the farm, the acres covered in custom work were added to the acres covered on the cooperator's farm in determining the basis for expense distribution.

Seed. Purchased seed was charged at its cost. Home-grown seed was valued at current farm prices.

Fuel, twine, and threshing. These items were charged directly at current prices and rates.

Combine, corn picker. The expense, including depreciation, of operating combines and corn pickers was distributed to total acres covered, including acres of custom work.

Fertilizer. Expense for fertilizer included the cost or value of farm manures, limestone, phosphates, and commercial fertilizers, and

the cost of applying them to the land. Farm manure applied during a given year was charged off in that one year to all crop-acres regardless of where the manure was applied. The charge was prorated on a weighted acre basis. Each crop-acre was given a weight in units intended to represent the proportion of fertilizer required for each crop —corn, 35; oats, 20; wheat, 20; soybeans, 10; rotated pasture, 10. Costs of raw rock phosphate and limestone, including costs of application, were on the other hand charged to the field where applied and distributed in equal amounts over several years—raw rock phosphate ten years; and limestone five years.

No attempt was made to charge the crops for the fertility they removed from the soil, because no satisfactory method for evaluating such removal had been worked out.[1]

General farm expense. Included in general farm expense were the share of the automobile cost that was chargeable to the farm; cost of fencing, miscellaneous labor, tools and vehicles, telephone; farm-bureau dues, interest, and taxes on land used for lanes and farm-steads; cost of cutting weeds along roads and fence rows; and other items that could not be charged directly to any specific productive enterprise. The total of these general farm expenses was prorated among the productive enterprises, such as crops and productive livestock, on the basis of the man hours spent on each productive enterprise.

Interest on land. Five-percent interest on a conservative market value of the land at the first inventory was charged as an expense of production. With the exception of such farms as made improvements which directly affected the fundamental value of the land, this first valuation was kept constant until 1928, when a downward adjustment was made. Another downward adjustment was made in 1932. The valuations then reached remained in line with land prices prevailing from 1932 to 1937. The dropping out of some cooperators from time to time and the bringing in of new ones is responsible for the year-to-year fluctuations in the interest charge for use of land. The differ-

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[1]The cost data presented here do, however, provide a basis for showing the influence of yield on cost. With these data in mind, and after a study of the results of experiments in crop rotation and soil treatment conducted on types of soil comparable to those on his farm, a farmer may be able to determine what in general he may expect in terms of increased yield and lowered crop costs from applications of fertilizer or plowing under a legume crop. As studies of the influence of cropping on soil fertility are continued, the background of information available should in time enable cost workers to place a direct charge for the value of fertility removed from the soil when a crop is harvested.

ences in the charges for the use of land therefore reflect to some extent the changes in land prices, but they do not show the extreme prices at which land actually sold on the market.

Method Used in Analyzing Costs

Alternative-price system. In this bulletin and in the cost-accounting study of which it is a report, what has been called the "alternative price" system of charging costs to a given enterprise has been used, in order to enable farmers to make the best choices among the different methods of production and the different farm enterprises. By alternative price is meant the price that could have been obtained for the commodities or labor put into the enterprise had they been disposed of in some other way open to choice at the time. For example, in charging to a livestock enterprise the feed fed, the market price of grain at the farm is used even tho the grain is grown on the farm and the actual cost of producing it has been less or more than the farm price charged. An Illinois farmer has the alternative of selling his grain at the market price or of feeding it to livestock.

The alternative price, rather than the actual cost of such home-produced commodities going into the production of another commodity, was used because only by that method is it possible in cost accounting to arrive at the relative profitableness of the different enterprises involved in the farm business. Thus if grain fed to livestock were charged at actual cost of production instead of at the alternative farm price, a good grain farmer might have an apparently profitable beef-cattle enterprise even tho his methods of handling the cattle were inefficient and wasteful. Or an inefficient grain farmer, having high unit costs of producing grain, might have an apparently unprofitable beef enterprise even tho he were actually doing an excellent job with the cattle. In either of these cases the cost accounting based on actual cost of production rather than on the alternative farm price would be misleading to a farmer trying to analyze his business. On the other hand, the use of the alternative-price system serves to separate each of the major enterprises, so that each may be judged on its own merits.

Money basis for all costs. Tho it is possible to express costs of crop production, for example, in terms of hours of labor, bushels of seed, gallons of fuel for tractor, bushels of grain and tons of hay for workstock, and so on, such terms of measurement are burdensome and difficult to apprehend quickly. Because farm operators interchange the different forms of power and capital with labor, cost accounting becomes more serviceable to farmers in the analysis of their business if

FIG. 2.—ALFALFA, THE HIGH-PROFIT HAY CROP IN ILLINOIS

In 1933-1935, the last years in which timothy acreage on the farms in the study was large enough for reliable comparison, alfalfa hay showed a profit of $7.94 an acre, clover hay a loss of 9 cents, soybean hay a loss of 19 cents, and timothy hay a loss of $1.57. Average acre-yields during these years were: alfalfa, 2.2 tons; clover, 1.2 tons; soybean, 2.2 tons; and timothy, 1.1 tons.

all the costs are reduced to a common basis. Consequently in this bulletin all costs are expressed in monetary terms, even tho many of the cost items involve very little direct cash outlay.

Quantity measures also necessary. Cost data, to be most useful in adjusting the organization of a farm, need to be presented in such a way that they can be used over a considerable period of time. Costs of labor, power, machinery, and even of the use of capital, change from time to time. Therefore the data in these studies were so arranged that rates of charges other than those used here might be applied to the quantities of materials and labor used in production. Thus it is possible, on the basis of the data presented, to determine how costs would vary under different price-levels from period to period or from year to year. But a farm operator, in using these data to determine the organization of his farm, must take into consideration the ways in which farm practices have changed since these data were gathered, in so far as such changes affect the relative amounts of the cost factors involved in performing the same farm operations.

IMPORTANT FACTORS INFLUENCING CROP COSTS, 1913-1937

During the twenty-five years of this study the general level of crop-production costs from year to year was determined mainly by two influences: (1) the general movement of prices of the principal commodities used in farm production and (2) the changes that occurred in methods of producing crops. The period during which the data were gathered was characterized on the one hand by frequent and violent changes in prices of things farmers had to use in order to carry on crop production, and on the other by marked changes in methods of crop production brought about in a large measure by the introduction and widespread use of mechanical power. An adequate analysis of the cost of producing farm crops must recognize the effects both of general price movements and of changes in methods of production.
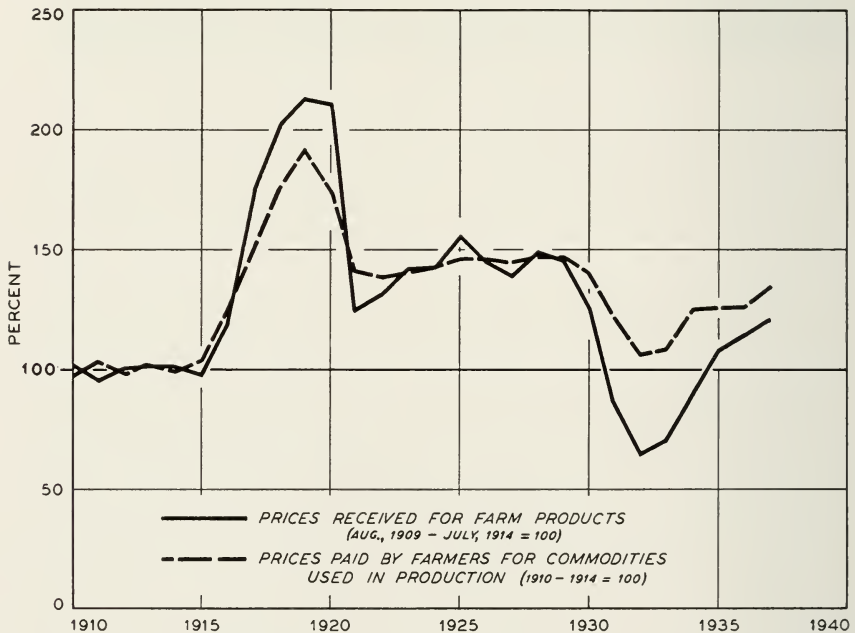
FIG. 3.—INDEXES OF PRICES PAID BY FARMERS FOR COMMODITIES USED IN PRODUCTION, AND OF PRICES RECEIVED FOR FARM PRODUCTS, UNITED STATES, 1910-1937

Both the prices received for farm products and the prices paid for commodities used by farmers in production fluctuated widely during these years. Prices received fluctuated more widely than prices paid; but, except in periods of extensive price changes, the two indexes remained fairly close together. (Data from *Agricultural Situation*, Bureau of Agr. Econ., U. S. Dept. Agr.)

Price Movements

The cost of farm labor, taxes, and commodities bought by farmers and used in the production of crops enters, of course, directly into crop-production costs. The broad general fluctuations in acre-cost of farm crops over a period of years may therefore be expected to bear a close relation to the movement of prices over the same period. During the twenty-five years from 1913 to 1937 such movements in prices—an economic force outside the control of farmers themselves—played an important part in the upward and downward swings in the costs of producing field crops.

Price-level periods. On the basis of marked changes in price-levels the twenty-five years during which the data for this study were collected may logically be divided into four shorter periods: the pre-war period, the war and immediate postwar period, the postwar decade, and the period of business recession and recovery.

Prewar Period, 1913-1915.—Altho the World War began in 1914, its effect upon farm prices did not become marked until 1916. From 1913 thru 1915 the prices farmers paid for wages, taxes, and commodities used in production remained at practically the same level (Figs. 3-6). Consequently, inasmuch as the unit cost of producing a crop is the result of acre-cost divided by acre-yield, differences in unit costs of production during the three years were largely due to differences in acre-yields.

War and Immediate Postwar Period, 1916-1919.—At the time of the World War crop prices increased rapidly. Prices of most crops advanced more than 40 percent and some of them more than 100 percent. Costs of producing crops did not rise until 1917, then increased rather steadily, reaching their highest point the year after the close of the war and not declining much for yet another year. The lag in the rise in farm expenses made the production of grain, especially of the food grains, very profitable during this period.

Postwar Decade, 1920-1929.—During the early years of the postwar decade prices received for farm crops declined faster and farther than prices paid for items purchased for use in crop production. Tho costs of producing crops did fall after the war, their decline lagged behind the drop in crop prices. Consequently grain farmers during the first half of the decade gained only small profits or sustained actual losses. In general, farmers found it necessary to reduce rigorously their cash expenditures for both commodities and labor. By 1925 the prices paid by farmers for commodities used in crop production were

FIG. 4.—INDEXES OF ILLINOIS FARM REAL-ESTATE TAXES, AND OF PRICES OF
ILLINOIS FARM PRODUCTS, 1913-1937

After 1920 the index of farm real-estate taxes moved at a much higher
level than the index of farm-product prices despite a revaluation of land for
tax purposes about 1930. The revaluation occurred about two years earlier in
Champaign and Piatt counties (where the cost studies were being conducted
during these years) than over the state as a whole. (Data on farm products
from *Illinois Crop and Livestock Statistics,* issued by Illinois Crop Reporting
Service, Ill. Dept. Agr. and U. S. Dept. Agr. cooperating; data on real-estate
taxes from Bureau of Agr. Econ., U. S. Dept. Agr.)

more nearly in line with prices received for crops, but both were about
50 percent above prewar levels.

Thruout this decade acre-costs of producing the principal grains
held fairly close to the level of prices paid by farmers for things used
in production.

Period of Business Recession and Recovery, 1930-1937.—Changes
in prices of agricultural commodities during the years from 1930 to
1937 were more drastic than during the immediate postwar decade.
Crop prices reached unprecedented lows in 1932. Costs of producing
crops dropped more slowly than prices of the crops themselves, as had
been true also during the marked decline at the beginning of the pre-
ceding period. Furthermore the gap between costs of production and
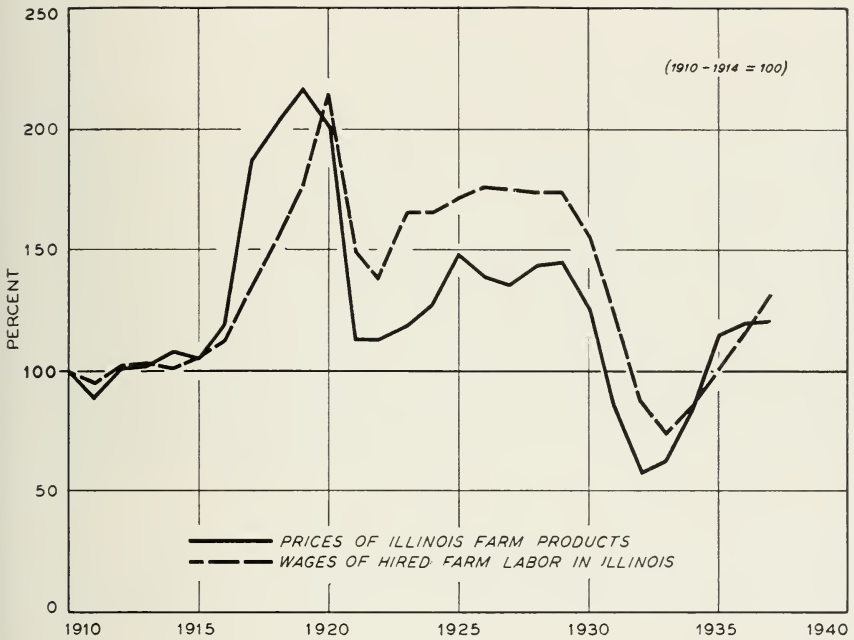
Fig. 5.—Indexes of Monthly Wages (Including Board) of Illinois Hired Labor, and of Prices of Illinois Farm Products, 1910-1937

Tho farm wages usually follow the movement of farm-product prices with a lag of about a year, the index of farm wages from 1920 to 1934 was consistently above the general level of farm prices. (Data on farm products from *Illinois Crop and Livestock Statistics,* issued by Illinois Crop Reporting Service, Ill. Dept. Agr. and U. S. Dept. Agr. cooperating; data on hired labor computed from data from Crop Reporting Service and from *Crops and Markets,* Bureau of Agr. Econ., U. S. Dept. Agr.)

prices of crops was wider in 1931 and 1932 than it had been earlier: crop prices fell below the prewar level, while costs of production, in keeping with prices of commodities used in production, did not decline to prewar levels.

Because the decline in prices of farm products was general, not confined to one or a few crops, farmers could find little advantage in trying to shift production from unprofitable enterprises to others that they might hope would be more profitable, and since the composite price of commodities used by farmers in production had not fallen so low as crop prices, it was necessary for farmers to curtail their purchases of machinery and equipment. Low labor costs and the lowered cost of keeping horses in 1932 and 1933 made the substitution
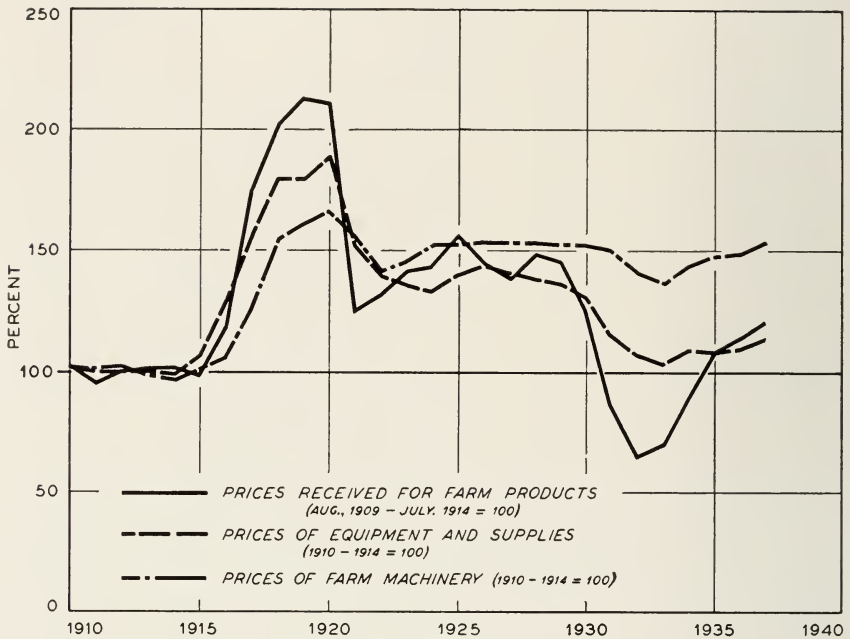
FIG. 6.—INDEXES OF PRICES PAID BY FARMERS FOR FARM MACHINERY AND FOR
EQUIPMENT AND SUPPLIES, AND OF PRICES RECEIVED FOR FARM
PRODUCTS, 1910-1937

The index of farm-machinery prices did not rise as high during the war
period from 1915 to 1920 nor fall as low during the period from 1930 to 1937 as
the index of farm-product prices or the index of prices of equipment and
supplies. Since 1917, however, machinery prices have remained about 50 percent
above their prewar level while prices of farm products have fluctuated violently,
falling in 1932 to 65 percent of prewar levels. (Data from *Agricultural
Statistics,* Bureau of Agr. Econ., U. S. Dept. Agr.)

of man and horse labor for mechanical power economical during those
two years.

From 1933 thru 1937 the prices of farm crops moved upward, and
again, as in the period from 1916 to 1919 the crop prices rose more
rapidly than the prices of commodities used by farmers in production,
and consequently more rapidly also than the costs of producing crops.
Grain production again became profitable, in spite of the fact that the
yields of most Illinois crops in 1933, 1934, and 1936 were lower than
average because of adverse weather and severe infestation of chinch
bugs. In 1936 chinch bug infestation, altho not as general thruout the
state as it was in 1934, was severe on some of the farms included in
the cost study.

FIG. 7.—UNITS LIKE THIS HAVE CUT THE COST OF SEEDBED PREPARATION

Covering as much as 30 acres in a ten-hour day, such rigs have been largely responsible for lowering the cost of seedbed preparation during the later years of the study. In 1937 the acre-costs of this field operation were: tractor, 21 cents; tandem disk, 3 cents; weeder, 1 cent; and wages of hired man, 8 cents.

Effects on crop costs. Changes in price-levels affect crop costs thru such items as wages, taxes, machinery and repairs, gasoline and oil, twine, and fertilizer, that enter directly or indirectly into crop production. Expenditures for such items are commonly called the "operating expenses" of production. In general, the yearly movement of operating expenses followed fairly closely from 1913 to 1930 the yearly movement of prices paid for commodities used in production, but fell below the level of those prices after 1930. (Table 2 and Fig. 8). The tendency for crop costs to fall below the price-level of commodities used in production after 1930 was more marked for corn and wheat, where the displacement of man labor and horse labor by machinery had gone farthest, than for oats, where harvesting methods, at least, had not changed materially during the period of study. More general combining of oats than occurred in these studies would have brought the costs of producing oats more closely in line with the trend of ·other crop costs.

Another way to bring out the relation between crop costs and the level of prices paid by farmers for commodities used in production is to compare the price-level of commodities used in production with the operating expenses of a composite acre of the principal grain crops grown. Only the grain crops were used in this comparison because the

Table 2.—Operating Expenses in Grain Production and U. S. Index of Prices Paid for Commodities Used, 1913-1937

Counties and year	Corn		Oats		Wheat		Combination of corn, oats and wheat		U. S. index of prices paid by farmers for commodities used in production (1923-1927=100)
	Operating expenses per acre	Index of operating expenses per acre (1923-1927=100)	Operating expenses per acre	Index of operating expenses per acre (1923-1927=100)	Operating expenses per acre	Index of operating expenses per acre (1923-1927=100)	Operating expenses per acre	Index of operating expenses per acre (1923-1927=100)	
Hancock									
1913	$10.92	63	$ 7.04	66	$....	...	$11.19	74	71
1914	11.76	68	6.85	64	19.14	128	12.38	82	69
1915	12.14	70	7.92	74	15.19	102	11.85	79	72
1916	11.41	66	7.65	71	13.34	89	10.95	73	86
1917	13.35	77	9.59	89	....	...	12.95	86	105
1918	15.33	89	12.23	114	17.67	118	15.14	100	120
1919	18.16	105	15.09	141	21.81	146	18.30	122	133
Hancock, Champaign, Piatt									
1920	20.18	117	13.46	126	16.53	111	17.59	117	120
1921	16.19	94	9.47	88	19.70	132	15.39	102	98
1922	15.40	89	8.35	78	15.42	103	13.64	91	96
Champaign, Piatt									
1923	17.11	99	10.55	98	14.18	95	14.74	98	98
1924	17.41	101	11.33	106	14.10	95	15.06	100	99
1925	18.43	106	10.20	95	13.74	92	15.20	101	102
1926	17.24	100	11.08	103	17.45	117	15.75	105	101
1927	16.38	95	10.42	97	15.09	101	14.57	97	100
1928	17.67	102	11.45	107	....	...	15.55	103	102
1929	16.62	96	10.29	96	15.71	105	14.81	98	102
1930	15.16	88	9.27	87	13.66	92	13.31	88	97
1931	12.67	73	9.39	88	10.07	68	11.20	74	84
1932	9.47	55	6.64	62	8.32	56	8.48	56	74
1933	8.57	49	6.08	57	7.98	54	7.80	52	75
1934	9.43	54	5.73	53	8.08	54	8.17	54	87
1935	11.14	64	7.93	74	8.91	60	9.78	65	87
1936	10.99	63	7.94	74	8.50	57	9.60	64	87
1937	11.54	67	9.14	85	9.09	61	10.33	69	93
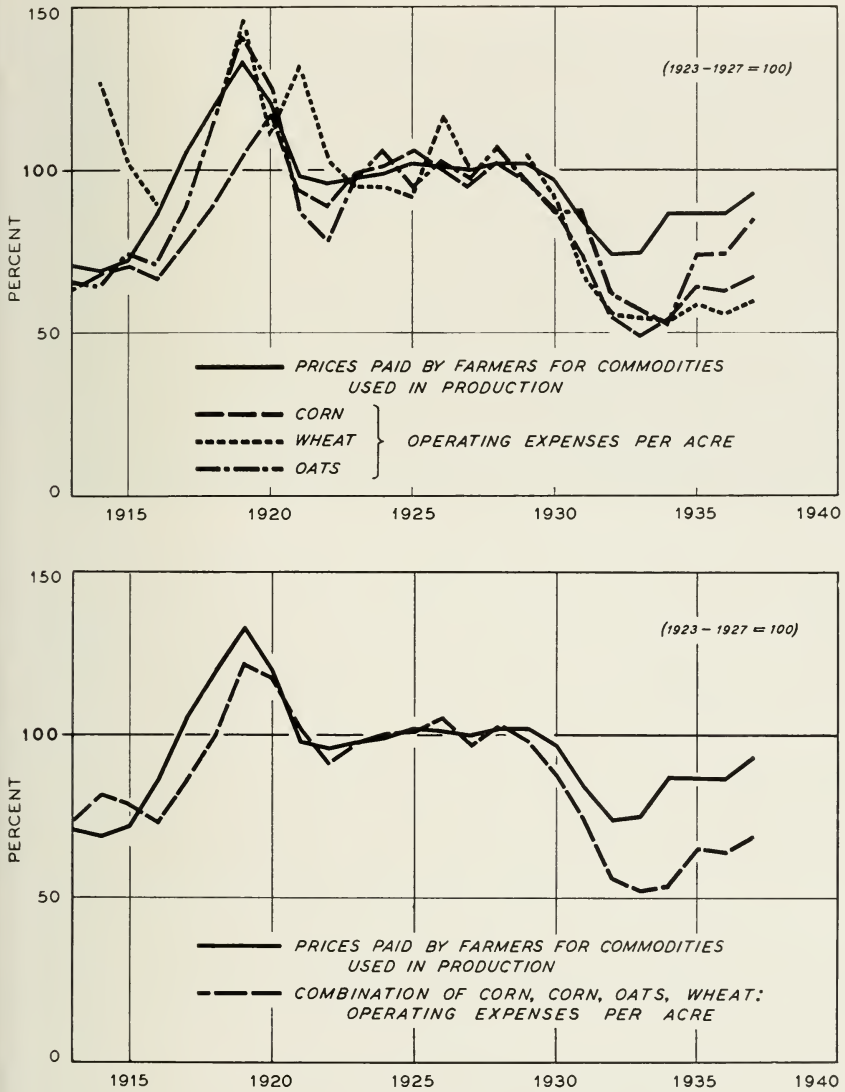
FIG. 8.—INDEXES OF OPERATING EXPENSES (INCLUDING TAXES) IN THE
PRODUCTION OF CORN, OATS, AND WHEAT, AND OF PRICES PAID BY
FARMERS FOR COMMODITIES USED IN PRODUCTION, 1913-1937

Tho operating expenses in crop production tended in general to move up
or down with the index of prices of the things farmers used in production, they
followed after about 1928 at a level considerably below the latter index. (Data
on prices paid for commodities used in production from *Agricultural Situation,*
Bureau of Agr. Econ., U. S. Dept. Agr.)

FIG. 9.—CULTIVATING CORN WITH 4-ROW TRACTOR CULTIVATOR
Only 4.8 hours of man labor per acre were required in growing and harvesting corn in this field. The corn was planted with a 4-row planter, cultivated with a 4-row cultivator, and husked with a 2-row mechanical picker. Cash costs formed a larger proportion of total corn costs, however, as a result of mechanization, averaging on all the farms in the study 14 percent of total costs in 1913-1915 and 28 percent in 1935-1937.

yields of legume crops varied greatly from farm to farm as a result of differences in amounts of lime used. By assuming a grain-crop combination of two fields of corn, one of oats, and one of wheat, which was about the proportion in which these crops were grown,[1] the yearly operating expenses of a composite acre changed in general with changes in prices of the commodities used in production prior to 1930 but dropped below the commodity price line after 1930 (Table 2 and Fig. 8), as did the costs of the individual crops in the combination.

Changes in Methods of Production

The quarter of a century over which the data in this publication extend witnessed a major revolution in farm power and methods of producing crops. At the beginning of the period, in 1913, the power used on the farms in the study in the normal crop-production processes consisted solely of man and horse labor. Steam engines were used

[1]Soybeans are omitted because of the limited data on them before the early twenties.

only as stationary power for threshing small grain, for shelling corn, and occasionally for husking and shredding corn from the bundle. The use of the internal combustion engine for traction power among the cooperating farmers followed shortly after the beginning of these studies. Not one of the cooperators used tractor power in field operations in the first year of the study, but by 1936 every cooperator in the cost study used at least one tractor on his farm.

Effect of tractor power on man and horse labor. The influence of the adoption of tractor power on the amount of man labor and horse labor used in crop production can be very definitely traced thru the twenty-five years. In the growing of corn, for example, an aver-

TABLE 3.—HOURS OF MAN LABOR, HORSE LABOR, AND TRACTOR USE PER ACRE
IN PRODUCING CORN, WHEAT, AND SOYBEANS
(Three-year moving average centered on the middle year)

Counties and year	Corn			Wheat			Soybeans		
	Man hours	Horse hours	Tractor hours	Man hours	Horse hours	Tractor hours	Man hours	Horse hours	Tractor hours
Hancock									
1914......	18.5	43.6	...	....	....	...	....	....	...
1915......	18.6	44.1	...	19.4	34.6	...	....	....	...
1916......	19.3	45.5	...	17.4	40.2	...	....	....	...
1917......	18.8	43.1	(ᵃ)	14.8	29.7	...	....	....	...
1918......	18.9	44.0	.2	15.1	33.8	...	....	....	...
1919......	18.1	42.4	.3	13.8	29.1	(ᵃ)	....	....	...
Hancock, Champaign, Piatt									
1920......	16.9	39.4	.6	14.2	32.6	.8	....	....	...
1921......	15.7	36.3	.7	12.5	24.5	.8	....	....	...
1922......	15.1	36.2	.7	12.4	24.3	.6	....	....	...
Champaign, Piatt									
1923......	14.2	33.9	.7	11.3	21.3	.6	13.4	29.1	.7
1924......	13.7	32.9	.7	10.1	19.3	.5	12.7	27.5	1.0
1925......	13.6	31.1	.9	10.3	20.5	.5	12.1	27.0	1.1
1926......	13.6	32.0	1.0	10.3	21.0	.6	11.0	25.1	1.4
1927......	13.5	31.0	1.1	10.8	21.4	.7	11.0	23.4	1.4
1928......	12.8	29.3	1.3	9.9	18.1	1.1	10.6	21.8	1.6
1929......	12.8	27.4	1.4	8.4	14.3	1.3	9.3	20.0	1.6
1930......	12.4	25.9	1.7	7.6	12.9	1.2	8.0	17.2	1.8
1931......	12.2	25.6	1.7	6.1	10.3	1.2	7.1	14.5	1.8
1932......	11.3	24.1	1.8	5.7	9.3	1.2	6.6	11.3	2.0
1933......	10.8	23.0	1.9	5.8	9.2	1.4	5.7	9.3	1.9
1934......	10.7	21.4	2.2	5.5	8.7	1.5	5.0	6.7	2.2
1935......	10.2	18.7	2.5	5.5	7.1	1.8	4.6	4.9	2.1
1936......	9.6	14.0	3.0	4.9	5.1	2.1	4.2	2.6	2.3
1937ᵇ.....	8.5	9.3	3.6	3.7	2.1	2.0	4.0	1.5	2.4

ᵃLess than 0.1 percent.
ᵇData for 1938 included in the calculation of the 3-year moving average for 1937.

age of 18.5 hours of man labor and 43.6 hours of horse labor were used per acre during the first three years of the study, before tractor power was in common use (Table 3 and Fig. 10). With the coming of mechanical equipment, however, by 1935-1937, the man labor required in growing an acre of corn was reduced to 9.6 hours, horse labor to 14 hours, and the tractor was used an average of 3 hours.
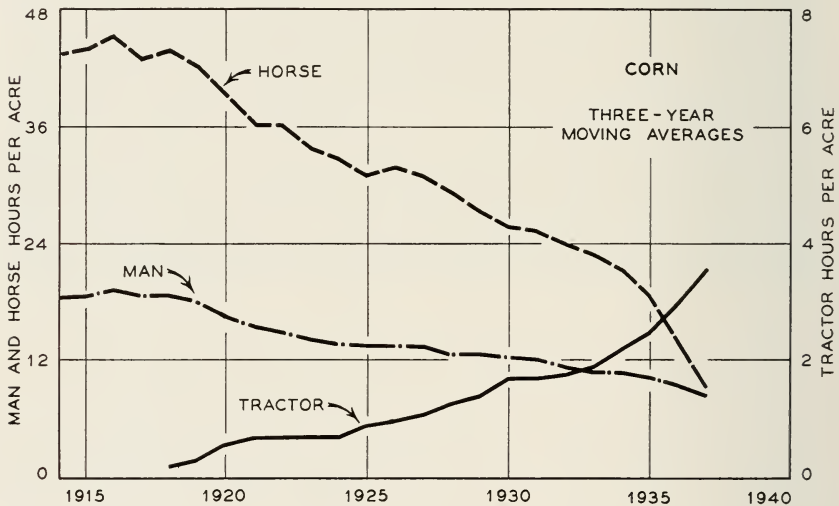
FIG. 10.—HOURS OF MAN LABOR, HORSE LABOR, AND TRACTOR USE
PER ACRE IN PRODUCING CORN, 1913-1937
(Three-year moving average)

The substitution of mechanical power for horses reduced horse labor in growing and harvesting an acre of corn from 43.6 hours in 1913-1915 to 9.3 hours in 1936-1938. Hours of tractor use rose to 3.6 an acre in 1936-1938. During the same period the adoption of large machines and mechanical pickers as well as the tractor, have resulted in lower man labor requirement an acre, from 18.5 hours in 1913-1915 to 8.5 hours in 1936-1938.

During the first three years only one of the cooperators used a tractor on his farm, and that tractor was used less than one-tenth of an hour per acre of corn.

In wheat growing the influence of the introduction of mechanical power and the accompanying large-size and improved machinery upon the number of hours of man and horse labor was felt even more than in the production of corn (Table 3 and Fig. 11). Man hours used in the production of an acre of wheat declined from 19.4 as the average for 1914-1916 to 4.9 in 1935-1937. The use of horses in producing an

acre of wheat declined from 34.6 hours average in the three years 1914-1916, to 5.1 hours average for the three years 1935-1937. In the latter period the tractor was used 2.1 hours per acre of wheat.

The same trend occurred in the growing of soybeans. Soybeans were not raised in the area of study in large enough quantity to get a reliable cost figure before 1922. In the three years 1922-1924 there
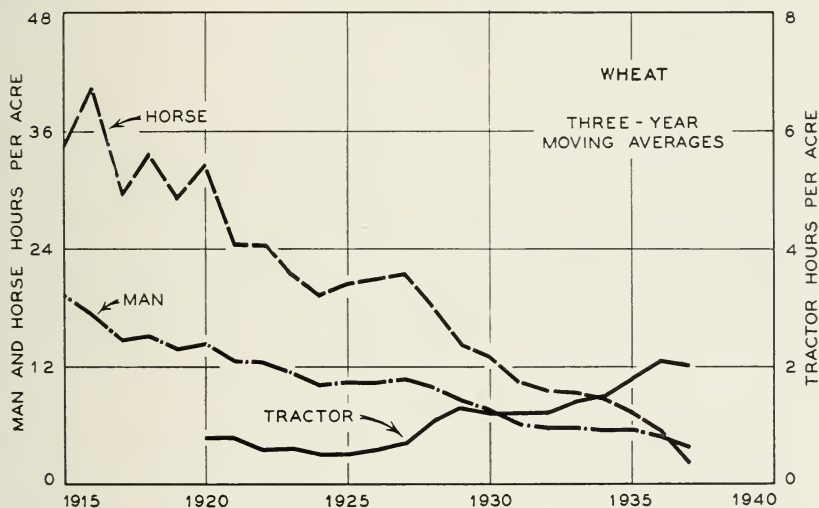
Fig. 11.—Hours of Man Labor, Horse Labor, and Tractor Use per Acre in Producing Wheat, 1913-1937
(Three-year moving average)

The use of tractor power in wheat production, to the practical elimination of horse labor on many of the farms in this study, reduced the average horse labor per acre of wheat from approximately 33 hours in the period from 1914 thru 1920 to 2.1 hours in 1936-1938. Whereas no tractors were used in wheat production on these farms prior to 1920, there were 2.0 hours an acre used in 1936-1938. Man labor in producing an acre of wheat declined from 19.4 hours in 1914 to 3.7 hours in 1936-1938.

were 13.4 man hours, 29.1 horse hours, and .7 tractor hour used to produce an acre of soybeans; by 1935-1937 man and horse hours had declined to 4.2 and 2.6 respectively, while the hours of tractor use had increased to 2.3 hours per acre (Table 3 and Fig. 12). Much of the reduction in man labor and horse labor resulted not wholly from the substitution of tractors for horses, but from the more general use of combines and large tractor-drawn tillage machines.

Effect of tractor power on crop costs. Partly as a result of these reductions in labor required for growing crops, the introduction of mechanical power has made it possible for farms to lower their crop costs. Improved methods of weed eradication, coming with the introduction of new and heavier types of equipment, improved strains of crops, new crops, and new systems of crop rotation, have altered the distribution of labor and power requirements during the year. Farmers
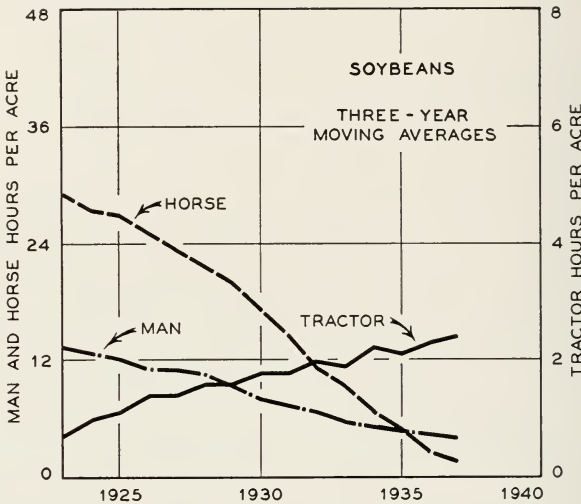
FIG. 12.—HOURS OF MAN LABOR, HORSE LABOR, AND TRACTOR USE
PER ACRE IN PRODUCING SOYBEANS, 1923-1937
(Three-year moving average)

From the beginning of the commercial production of soybeans in Champaign and Piatt counties in the early twenties, the horse labor used per acre declined from 29.1 hours in 1922-1924 to 1.5 hours in 1936-1938. During this period tractor use in soybean production rose from .7 hour to 2.4 hours an acre. The amount of man labor in soybean production and harvesting was affected as much by the adoption of the combine as by the use of the tractor. Man labor in producing soybeans declined from 13.4 hours per acre in 1922-1924 to 4.0 hours in 1936-1938.

are now working longer days advantageously during periods of peak labor demand in the planting and care of crops.

By comparing the costs of producing a single commodity over a long period of time the effects of price changes and economies resulting from the use of large and improved farm machinery can be discerned. For example, the average net cost[1] of producing an acre of

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[1]To arrive at the net acre-cost subtract from the total cost the value of the pasturage obtained from stalk fields.
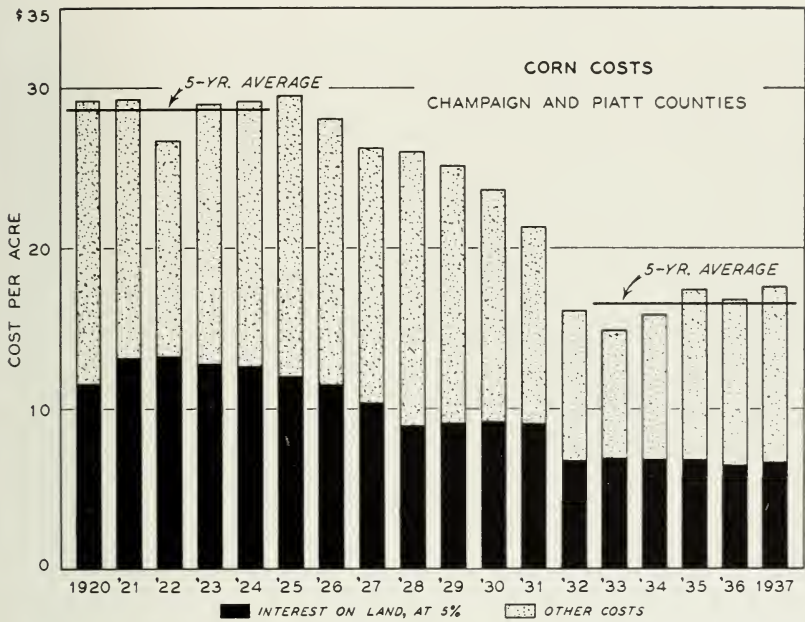
FIG. 13.—LAND CHARGES AND OTHER COSTS IN PRODUCING CORN, CHAMPAIGN AND
PIATT COUNTIES, 1920-1937

The marked reduction in cost of producing corn after about 1925 was the
result of (1) lower prices of things farmers use in production, (2) lower land
values, and (3) more general use of large-sized power and machine units.

corn in Champaign and Piatt counties during 1933-1937, the last five
years of the crop-cost work reported for these counties, was $12.34
lower than during the first five years of the period (Table 21 and
Fig. 13). Not all of this reduction in costs can, however, be attributed
to the effects of large machinery and tractor power. Interest on land
value during the later period was $5.97 an acre less than during the
earlier period. Also, the average yield of corn during the later period
was 5.1 bushels an acre lower, tho this difference in yield would in
itself account for only a small part of the large difference in acre-costs.
The average yield during the later period was lower chiefly because
of two years of extreme drouth, 1934 and 1936, when corn yields
were 26.5 and 31.6 bushels an acre respectively and total growing and
harvesting costs were $8.28 and $9.82 an acre (Table 21). In 1935
and 1937 corn yields were 58.1 and 60.8 bushels an acre and the grow-
ing and harvesting costs were $9.96 and $10.22 respectively. Because
the 1936 crop season was so unfavorable it is probable that 1937 was
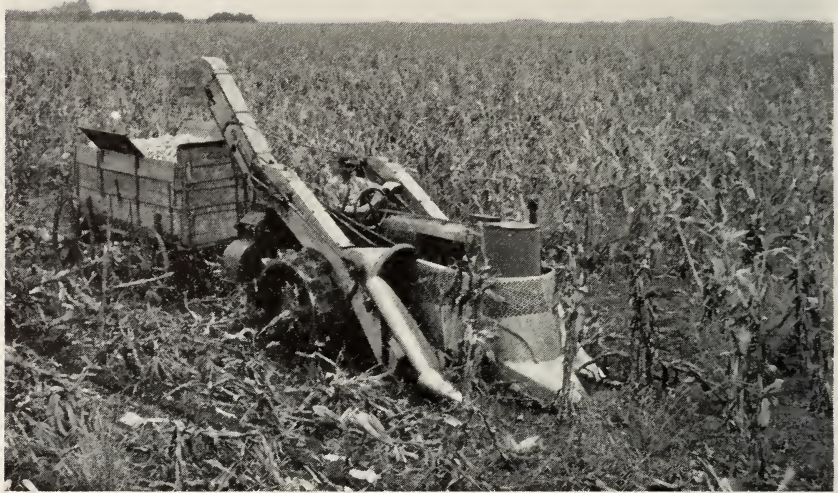
FIG. 14.—MECHANICAL CORN PICKERS HAVE REDUCED LABOR COSTS

Use of mechanical corn pickers greatly reduced the amount of transient help needed for corn harvest and contributed to the general reduction in labor requirements in corn production.

the only year included in these studies that reflects the influence of hybrid seed upon yield and costs.

In spite of the large yields of corn in 1937, the 8.9 hours of man labor an acre that year were the lowest, with the exception of 1936, of any year of the study. The labor and power record of 1937 reflects the expanded use of corn pickers in the harvesting of corn. The use of corn pickers in a year like 1937 tends to materially reduce the cost of production per bushel, as the greatest economy in the use of the mechanical picker comes when acre-yields are large. Had the acre-yields in 1935 and 1937 averaged as low as the long-time average for the area, the bushel-costs in those years would have been about 30 percent higher than they were.

The net cost of wheat production declined from an average of $25.18 an acre during the first five crop years of the study in Champaign and Piatt counties to $13.87 during the five crop years ending in 1937. During the first five crop years all the wheat was cut with binders and threshed; during the last period it was harvested with combines (Tables 23 and 24). The general level of wages, fuel and oil prices, horse feed, machinery repairs, taxes, and fertilizer was higher during the later than during the earlier period (Fig. 3). The

Fig. 15.—Combines Have Almost Entirely Replaced Binder and Thresher for Wheat Harvesting on the Farms in This Study

Use of tractors and combines has reduced the time required for harvest and the total cost of producing wheat, but has increased somewhat the proportion of costs consisting of direct cash expenditures—from an average of 20 percent of total costs in 1913-1915 to 29 percent in 1935-1937. Cash costs in wheat production, even before the use of combines, formed a fairly large part of total costs, because of cash expenditures for custom threshing, fuel, twine, and labor.

interest on land value during the later period was $5.26 an acre lower than during the earlier period. Yields of wheat, and consequently bushel-costs, varied greatly in this area from year to year. In 1936, for example, yields averaged 27.2 bushels an acre and bushel-costs 51 cents; whereas in 1937 yields averaged 12.7 bushels an acre and bushel costs $1.14.

Net costs of producing soybeans likewise declined, from $24.60 an acre average for the five years 1922-1926 to $15.44 average for the five years 1933-1937 (Tables 25 and 26). Much more of this reduction than was the case with wheat and corn was owing, however, to factors other than the use of tractor power and large machines. The interest on land value was $4.66 an acre lower during the later period. Also,

improvements in knowledge of and technics in growing and harvesting the crop contributed considerably to the reduction in costs. During the expansion of soybean acreage in the early 1920's the failure to control weeds adequately not only impaired the yields but caused harvesting to be more time-consuming than it otherwise would have been. Improvements in cultural practices led to better control of weeds. Along with improvements in cultural practices, however, came the increased use of large machine and power units and the combine. The result, in spite of a marked increase in the yield of soybeans per acre, was a decided reduction in the time required per acre in growing and harvesting the crop (Fig. 13). The reduction in acre-costs in combination with the higher yields brought about a marked reduction in bushel costs of producing soybeans—from an average of $1.50 in 1922-1926 in Champaign and Piatt counties to an average of 61 cents in 1933-1937.[1]

No similar reduction occurred in the production of oats (Table 22). Mechanical power replaced horses very largely, but combines were not used extensively for harvesting oats during the period of this study. The varieties of oats commonly grown during these years were not so well adapted to combining as wheat or soybeans, because the oats did not ripen evenly, the grain shattered from the stalk if allowed to stand unharvested until completely ripe, and the grain did not keep well in the bin if combined before fully ripe. Some farmers, furthermore, wish to save the oats straw, and for that reason prefer the binder-thresher method.

The average net operating expenses per acre in producing oats in Champaign and Piatt counties was $6.57 in 1920-1922 and $6.18 in 1935-1937. In the early three-year period 6.6 hours of man labor, 11.8 hours of horse labor, and .2 hour of tractor use per acre were required. In the later three-year period almost the same number of hours of man labor were required (6.3 hours), but the number of hours of horse labor had dropped to 6.0, just about half of that required in the early period. Tractor use per acre increased to 1.3 hours.

Changes from noncash to cash costs. The substitution of mechanical power and machinery for man labor and horse labor increased the direct cash outlay for gasoline, oil, repair parts, and repair labor.

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[1]One important factor in the upward trend in soybean yields has been the higher recovery of beans in harvesting since combines have been in general use for that purpose. During the early years of soybean production in Illinois an average of about 30 percent of the beans were lost in harvesting by binder and thresher, whereas in tests in 1936 only about 8 percent of the beans were lost in harvest by combines.—Ill. Agr. Exp. Sta. Circ. 316 and Ill. Agr. Exp. Sta. Ann. Rpt. 50 (1936-37), p. 246.

Fig. 16.—Still the Dominant Method in Harvesting Oats

Where grain is shocked and hauled to the thresher, two-thirds to three-fourths of the total man labor required in producing the crop is used in harvesting. In 1937 approximately 40 percent of the oats on the farms in the study (cash grain area) were combined.

An increase was also necessary in the cash reserve held to meet depreciation of the larger investment in machinery. In the period covered by this study the ratio of direct cash outlay plus reserve for depreciation to total cost of producing corn doubled. In 1913-1915 the direct cash outlay was 14.1 percent and cash reserve for depreciation was 4.3 percent of the total costs of producing corn; but in 1935-1937 the direct cash outlay had risen to 28.3 percent, and necessary reserve to meet depreciation had increased to 8.0 percent of the total.

VARIATIONS IN CROP COSTS

Data on crop costs covering a long period and a variety of farms and areas may be expected to reveal differences in costs by which the worth of certain practices or the adaptability of various crops may be measured.[1] Thus, among several areas, differences in the costs of producing the same commodity show the relative adaptability of the different areas to that enterprise. Year-to-year variations in the cost of producing a commodity in the same area show the effects of yearly variations in yields and in costs of the same items of expense. And finally, differences in production costs from farm to farm in the same area are evidences of differences in managerial ability of the farmers.

[1]For a discussion of farm practices and their effects on farm earnings see Illinois Bulletin 444.

Area-to-Area Variations in Cost of
Producing a Given Crop

Tho no attempt is made here to give a full discussion of differences in costs of producing crops in the various areas of Illinois, a few of the more outstanding differences brought out by the cost-accounting data are taken up.

Unit costs of producing a given crop vary from area to area largely because of differences in productivity and texture of the soil, and to some extent because of differences in climate. Tight soils and soils that are difficult to work following rains, or that warm up slowly in the spring, require more man labor and power per acre to produce a crop, and usually are not so productive as dark loam soils with an open subsoil. Thus in Franklin county, where the subsoils of the farms in this study were for the most part tight, the costs of producing corn, wheat, and oats were higher by 81, 54, and 32 cents a bushel, respectively, in 1920-1922 than they were in Hancock or Champaign and Piatt counties during the same years (Table 4). Costs of producing red clover were, on the other hand, lower in Franklin county during these three years than in either Hancock or Champaign and Piatt counties. The chief reason why costs of producing clover were lower was that acre-yields were higher. Weather in Franklin county was particularly favorable to hay production during those three years. Moreover, limestone was applied as a regular practice where clover was grown in Franklin county but not in the other two areas.

A similar comparison of costs in different parts of Illinois can be made from the data gathered from four widely separated areas in 1924 and 1925: from Washington, Clinton, and Madison counties in the southern part of the state; Champaign and Piatt counties in the east central; Warren and Knox counties in the west central; and Stephenson, Lake, and DuPage counties in the north. In these areas, the same as in those just discussed, the operating costs of producing crops were highest in the area having the least productive soils; tho when fixed charges (taxes and interest on land) were included along with operating costs, the total acre-costs of production were highest in the area having the most productive soils. Considering the values assigned to the land (without buildings or other such improvements) and the yield of corn during the two years to be good indications of the productivity of the soils of the different areas, it is evident that the land in Clinton, Madison, and Washington counties was least productive and that in Champaign and Piatt counties was most productive. At the same time the land of the least productive counties absorbed

TABLE 4.—AVERAGE COSTS OF CORN, OATS, AND WHEAT IN THREE AREAS OF ILLINOIS DURING THREE YEARS, 1920-1922

Item	Franklin county			Hancock county			Champaign-Piatt counties		
	Corn	Oats	Wheat	Corn	Oats	Wheat	Corn	Oats	Wheat
Labor and power per acre									
Man labor, hours	25.8	11.6	14.4	17.1	8.1	13.4	14.4	6.6	11.6
Horse labor, hours	53.0	20.9	26.6	39.2	15.6	26.0	33.4	11.8	23.0
Tractor use, hours	.5	1.0	1.1	.8	.25	.8	.7	.23	.47
Growing and harvesting costs per acre									
Man labor	$ 6.33	$ 2.93	$ 3.67	$ 5.23	$ 2.46	$ 4.10	$ 4.51	$ 1.70	$ 2.99
Horse labor	11.78	5.08	6.12	6.06	2.24	4.27	5.85	2.08	3.92
Tractor use	.25	.95	.68	.81	.36	1.02	.78	.28	.88
Machinery	1.52	.81	.98	1.13	.85	1.29	.91	.54	1.16
Seed	.35	2.09	2.29	.41	1.74	2.50	.33	1.52	2.56
Twine		.35	.31		.28	.31		.29	.32
Fuel		.13	.10		.09	.14			
Threshing		.97	.85		1.35	1.42		1.10	1.28
Manure and fertilizer	1.61	4.10	4.13	2.51	.09	1.39			
General farm expense	2.57	.85	.95	.14	.52	.34	2.78	.30	1.49
Miscellaneous									
Total growing and harvesting costs	$24.41	$18.26	$20.08	$16.29	$ 9.98	$16.78	$15.16	$ 7.81	$14.60
Land charges per acre									
Taxes	1.07	1.07	1.07	1.14	1.14	1.14	1.92	1.92	1.92
Interest on land at 5 percent	2.17	2.41	2.17	9.56	8.81	8.81	12.71	12.65	12.25
Total acre-cost	$27.65	$21.74	$23.32	$26.99	$19.93	$26.73	$29.79	$22.38	$28.77
Income per acre									
Grain	$14.10	$17.12	$16.17	$25.32	$16.73	$29.30	$22.36	$15.16	$31.74
Roughage		2.37	1.93		1.80	2.20		2.45	2.23
Pasture	.81	.33	.29	1.17	.76	1.15	1.03	.71	.68
Total acre-income	$14.91	$19.82	$18.39	$26.49	$19.29	$32.65	$23.39	$18.32	$34.65
Value of land per acre	$43.00	$48.00	$43.00	$191.00	$176.00	$176.00	$254.00	$253.00	$245.00
Yield per acre, bushels	20.7	24.9	12.8	52.3	39.2	21.6	49.5	37.6	21.3
Net cost per bushel	$ 1.30	$ .76	$ 1.65	$ .49	$ .44	$ 1.08	$ .58	$ .51	$ 1.21
Price per bushel	.68	.69	1.26	.48	.43	1.36	.45	.40	1.49

the largest quantities of labor and power per acre in producing corn, wheat, and oats (Table 5).

Year-to-Year Variations in Crop Costs

Production costs per bushel or ton of a given crop vary from year to year, owing usually to one or more of three factors: (1) changes in price of individual items of cost; (2) yearly fluctuations in crop yields; and (3) differences in amount of work required on land and crops because of differences in weather.

Changes in price of cost items. Prices and rates on the important items that enter into the cost of producing crops—interest rates on capital, tax rates, prices of equipment, and wage rates for farm labor—and the large overhead cost of maintaining a farm and its equipment, change less rapidly than prices of farm products. Consequently when prices of farm products change suddenly and markedly, as they often do, either upward or downward, the characteristic lag in adjustment of prices of cost items results in a period of unusually

FIG. 17.—ELECTRIC POWER REPLACING HORSE POWER FOR ELEVATING GRAIN

During the later years of the study the use of electric motors or gasoline engines displaced horse power for elevating grain on many of the farms, particularly on those where trucks were used to haul part or all of the grain to the granary or crib.

TABLE 5.—AVERAGE COSTS OF CORN, OATS, AND WHEAT IN FOUR AREAS OF ILLINOIS DURING TWO YEARS, 1924 AND 1925

Item	Clinton, Madison, and Washington counties			Knox and Warren counties			DuPage, Lake, and Stephenson counties			Champaign and Platt counties		
	Corn	Oats	Wheat	Corn	Oats	Wheat	Corn	Oats	Wheat	Corn	Oats	Wheat
Labor and power per acre												
Man labor, hours	21.2	11.4	12.2	15.3	8.5	11.2	17.2	9.0	10.1	13.4	6.6	9.6
Horse labor, hours	40.5	22.1	27.8	32.8	10.9	18.4	38.6	15.0	16.5	31.0	11.7	19.6
Tractor use, hours	.8	.4	.2	1.4	.7	1.7	.7	.4	.7	.8	.4	.4
Growing and harvesting costs per acre												
Man labor	$ 4.66	$ 2.52	$ 2.84	$ 5.26	$ 2.52	$ 3.13	$ 4.09	$ 2.01	$ 2.38	$ 4.86	$ 1.66	$ 2.36
Horse labor	5.37	2.74	3.43	4.90	1.69	2.82	6.36	2.64	2.29	4.74	1.69	2.72
Tractor use	.96	.51	.23	1.40	.81	1.48	1.02	.40	.76	.90	.28	.80
Machinery	1.67	.86	.62	.94	1.07	1.19	2.27	1.00	.98	.88	.49	.73
Seed	.25	1.44	1.70	.66	1.66	1.84	.46	1.54	2.52	.46	1.27	1.58
Twine	....	.24	.22	....	.21	.07	....	.37	.41	....	.27	.30
Fuel	....	.06	.07	....	.22	.32	....	....	.08	....	.09	.14
Threshing	....	.92	.87	2.35	1.15	.92	3.76	1.55	1.36	1.60	1.03	1.11
Manure and fertilizer	2.78	2.27	2.52	2.52	1.45	1.33	1.38	2.02	2.38	2.20	.86	.86
General farm expense	1.28	.66	.46	.14	1.42	1.51	....	.73	.70	.35	1.10	1.46
Miscellaneous	....	....	....	....	.03	.31	....	....	....	....	.02	....
Total growing and harvesting costs	16.97	12.22	12.96	18.17	12.23	14.92	19.34	12.26	13.86	15.99	8.76	12.06
Land charges per acre												
Taxes	$ .64	$ .66	$ .66	$ 1.30	$ 1.31	$ 1.18	$ 1.34	$ 1.48	$ 1.72	$ 1.96	$ 2.00	$ 1.86
Interest on land at 5 percent	3.48	3.52	3.61	9.92	9.79	9.77	7.67	7.69	7.68	12.36	12.47	11.66
Total acre-cost	$21.09	$16.40	$17.23	$29.39	$23.33	$25.87	$28.35	$21.43	$23.26	$30.31	$23.23	$25.58
Income per acre												
Grain	$26.89	$13.88	$18.30	$39.25	$21.01	$23.74	$38.21	$22.66	$36.68	$34.73	$15.72	$27.28
Roughage	.01	1.31	1.32	.09	1.49	1.16	....	4.02	3.31	....	1.43	.76
Pasture		.23	1.28	.83	.72	.59	.38	.14	.78	.98	1.88	1.24
Total acre-income	$26.90	$15.42	$20.90	$40.17	$23.22	$25.49	$38.59	$26.82	$40.77	$35.71	$19.03	$29.28
Yield per acre, bushels	34.4	29.1	13.1	53.2	55.6	20.3	53.7	52.6	24.4	47.2	39.3	22.2
Value of land per acre	$70	$70	$72	$198	$196	$195	$154	$154	$154	$247	$249	$233
Net cost per bushel	.61	.51	1.12	.54	.38	1.19	.52	.33	.79	.62	.51	1.06
Price per bushel	.78	.48	1.40	.74	.38	1.17	.71	.43	1.50	.74	.40	1.23

profitable or unusually unprofitable farming, depending on whether the trend is upward or downward. These lags in adjustment of prices of cost items to changing prices of farm products may be traced in Figs. 3 to 6.

Nevertheless, because of the nature of the farming enterprise itself, it is practically impossible for a farmer to make the adjustments in his farming operations that would seem to be called for in order to meet the disparity between prices of the products he sells and of the products he buys. Because the main bulk of direct cash outlay in farming operations is expended, not in the purchase of raw products to be used in production, but on land, buildings, equipment, and labor, a farmer cannot reduce his costs appreciably by taking advantage of low commodity prices to lay up a supply of raw products for future use. Moreover, because of the large overhead cost and the considerable period of time required to produce a crop or an animal, it is virtually impossible for him to curtail operations greatly during periods of price depression and expect to be in a position to go ahead again when conditions improve. Years of effort would be lost, in many instances, if flocks and herds were disposed of under a plan of curtailed operations when prices were unfavorable. Costs of materials and services essential to the continuance of the farm business must be met, even tho the price relationships are unfavorable. Similarly, if a price recession occurs after a farmer has sown his crops for the year, he cannot then curtail his production. The only means by which he can recover on the investment already made is to harvest his crops as they mature, regardless of the disparity between the cost of the crops and the price they will bring. Furthermore, if prices advance after his crops are sown, he cannot then expand his operations to take advantage of the favorable price relationships.

Yearly fluctuations in crop yields. Acre-yields are an important factor in determining unit costs of crop production. High acre-yields tend toward high acre-costs but toward low costs per ton or bushel. In the eighteen years of cost-accounting work in Champaign and Piatt counties the yield of corn on the farms studied ranged from 26 bushels an acre in 1934 to 61 bushels an acre in 1937 (Table 21). In these two years the before-harvest operating costs were not greatly different, $6.70 an acre in 1934 and $7.03 an acre in 1937; but because of the larger crop to be handled in 1937 the harvesting costs per acre were twice as high ($3.19) as in 1934 ($1.58).

On the other hand, the costs per bushel were lower when the yields were high (30 cents, 1937) than when the yields were low (60

cents, 1934). In six of the eighteen years corn yields were below 45
bushels an acre and bushel-costs averaged 58 cents, whereas in three
years yields were above 55 bushels and bushel-costs averaged 29 cents.

Differences in labor costs owing to differences in weather. Wet
weather at the time when the seedbed should be prepared may retard
field work to such an extent that fewer field operations are made than
normal, and seed is planted in a hastily prepared seedbed, as happened
with the corn crops in 1933, 1935, and 1937. April and May of 1933
were very wet months, while the same months of 1935 and 1937 were
cold and damp. During these three years there were, on the average,
14.1 percent fewer hours of man labor used in growing corn than in
the accompanying years—1932, 1934, and 1936.

Wet weather during harvest, on the other hand, usually means that
more labor is required. Hay that is wet usually requires additional
labor to put it in condition to be stored. Storms that blow down heavy
stands of grain necessitate either harvesting the crop by cutting into
the way the plants lean, or leaving some grain in the field unharvested.
Corn that is leaning badly, as a result of storms or wind, requires
more time in husking, whether the husking is done by hand or by a
mechanical corn picker.

Farm-to-Farm Variations in Crop Costs

Differences in average costs from area to area and from year to
year in the same area are not so large as differences in costs from
farm to farm in the same area in any one year. Costs on two farms
in a given year may be widely different even tho weather and price
levels under which the farms are operated are identical, and the types
of soil practically the same, tho differences in productivity of the soils
may have developed from the way they have been handled over a
period of years. Occasionally differences in crop costs from farm to
farm in the same locality are due to unavoidable causes, such as storms
or insect damage; but in most cases they are the result of differences
in managing ability of the farm operators.

Data on yields, costs, prices, and profits in corn production on 20
farms in Champaign and Piatt counties in 1936 are given in Table 6.
The difference of 73 cents a bushel between Farm 1, with the lowest
cost, and Farm 20, with the highest cost, was the result of a slightly
lower acre-cost and a higher acre-yield on Farm 1. In the following
sections certain farms from among the 20 are selected to illustrate the
influence of differences in growing and harvesting costs, and in yields,
after the influence of all other factors is eliminated. Differences in

Table 6.—Variations in Acre-Cost of Producing Corn on Twenty Farms in 1936, Champaign and Piatt Counties, Illinois

Item	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8	Farm 9	Farm 10
Net cost per bushel	$ .33	$ .35	$ .39	$ .42	$ .49	$ .50	$ .50	$ .51	$ .52	$ .53
Number of acres grown	82.1	82.6	162.1	111.2	120.1	144.4	70.4	207.8	173.8	51.6
Yield	52.6	47.8	44.5	40.9	38.3	35.5	39.0	32.6	33.5	31.5
Labor and power										
Man labor, hours	9.56	9.76	7.16	9.23	8.57	6.27	11.46	4.81	9.96	7.82
Horse labor, hours	14.33	12.44	7.29	21.11	11.19	6.56	21.22	2.22	19.68	9.04
Tractor use, hours	2.25	4.20	3.10	.81	2.64	2.97	1.85	3.49	1.27	3.07
Truck miles	....	....	....	....	....	....	....	1.43	....	....
Growing costs										
Man labor	$ 1.36	$ 1.42	$ 1.18	$ 1.12	$ .69	$ .79	$ 1.54	$ .65	$ 1.24	$ .77
Horse labor	1.19	.89	.37	1.69	.25	.08	3.01	.03	1.12	.42
Tractor use	1.21	1.36	1.45	1.20	1.99	.95	.53	1.47	.80	1.61
Machinery	.72	.53	.73	.39	.69	.90	.44	.90	.53	.37
Seed	.96	1.05	1.01	1.16	1.09	.83	.95	1.51	1.03	.81
Fertilizer	.69	2.18	1.37	.81	.40	.17	1.18	.16	.21	.61
General farm expense	1.08	1.34	.80	1.54	2.18	2.29	1.54	1.10	1.92	1.08
Total growing cost	$ 7.21	$ 8.77	$ 6.91	$ 7.91	$ 7.29	$ 6.01	$ 9.19	$ 5.82	$ 6.85	$ 5.67
Harvesting costs										
Man labor	$ .93	$ .44	$ 1.06	$ 1.08	$ 1.53	$ 1.59	$ .73	$ .50	$ 2.00	$ .86
Horse labor	.39	.18	.58	1.28	2.09	1.80	1.49	.69	.78	2.81
Tractor use	.61	.33	....	....	....	....	....	.47	....	....
Picker and truck	.56	....	.92	....	....	....	.74	.64	....	....
Total harvesting cost	$ 2.49	$ .95	$ 2.56	$ 2.36	$ 3.62	$ 3.39	$ 2.96	$ 2.30	$ 2.78	$ 3.67
Total growing and harvesting costs	$ 9.70	$ 9.72	$ 9.47	$ 10.27	$ 10.91	$ 9.40	$ 12.15	$ 8.12	$ 9.63	$ 9.34
Land charges										
Taxes	$ 1.04	$ 1.11	$ 1.23	$ .95	$ 1.69	$ 1.67	$ 1.08	$ 1.10	$ .89	$ 1.02
Interest	7.50	7.00	6.75	6.73	6.50	6.75	7.50	7.50	7.50	7.00
Total cost	$ 18.24	$ 17.83	$ 17.45	$ 17.95	$ 19.10	$ 17.82	$ 20.73	$ 16.72	$ 18.02	$ 17.36
Income										
Grain	$ 50.20	$ 45.41	$ 42.31	$ 38.85	$ 36.37	$ 33.69	$ 37.24	$ 30.95	$ 31.84	$ 29.89
Pasture	.82	.92	.07	.59	.34	.27	1.07	.09	.73	.75
Total income	$ 51.02	$ 46.33	$ 42.38	$ 39.44	$ 36.71	$ 33.96	$ 38.31	$ 31.04	$ 32.57	$ 30.64
Net profit	$ 32.78	$ 28.50	$ 24.93	$ 21.49	$ 17.61	$ 16.14	$ 17.58	$ 14.32	$ 14.55	$ 13.28

Table 6.—Variations in Acre-Cost of Producing Corn on Twenty Farms in 1936, Champaign and Piatt Counties, Illinois (Concluded)

Item	Farm 11	Farm 12	Farm 13	Farm 14	Farm 15	Farm 16	Farm 17	Farm 18	Farm 19	Farm 20
Net cost per bushel	$ .60	$ .61	$ .64	$ .65	$ .68	$ .70	$ .75	$ .82	$ .95	$ 1.06
Number of acres grown	131.6	102.3	105.2	57.4	20.0	126.1	65.6	21.7	49.2	111.0
Yield	24.6	24.8	28.1	27.5	26.4	23.6	30.5	20.3	19.4	16.4
Labor and power										
Man labor, hours	8.32	9.68	9.03	12.43	8.38	4.97	12.77	6.96	8.79	6.06
Horse labor, hours	15.53	10.33	17.12	7.80	14.69	2.49	16.07	7.19	10.41	12.57
Tractor use, hours	1.81	3.70	2.24	2.76	1.77	5.33	4.55	3.23	2.94	1.75
Truck miles	.....	.....	.....	.....	.....	.....	.08	.....	.....	1.46
Growing costs										
Man labor	$ 1.14	$ 1.26	$ 1.13	$ .72	$ .89	$ .68	$ 1.32	$ .83	$ 1.03	$ .86
Horse labor	1.19	.75	2.13	.22	1.09	.....	.98	.53	.43	3.16
Tractor use	.37	.88	1.08	2.10	.90	2.11	2.74	1.45	.82	.99
Machinery	.37	.28	.54	.90	1.05	.79	1.05	.69	1.00	.75
Seed	.91	.74	.83	.87	1.52	.85	1.03	.52	.81	.35
Fertilizer	.87	.76	.98	.36	1.84	1.82	1.79	1.35	1.88	.79
General farm expense	.88	.66	1.12	1.05	.79	.71	1.39	.45	2.41	1.41
Total growing cost	$ 5.73	$ 5.33	$ 7.81	$ 6.22	$ 8.08	$ 6.96	$ 10.30	$ 5.82	$ 8.38	$ 8.31
Harvesting costs										
Man labor	$ 1.28	$ 1.45	$ 1.32	$ 2.51	$ .90	$ .59	$ 1.59	$ 1.11	$ 1.63	$ .36
Horse labor	.59	1.28	1.43	.97	1.44	.14	3.16	2.43	.38	.57
Tractor use	.....	.....	.....	.....	.....	.27	.....	.....	.....	.45
Picker and truck	.....	.....	.....	.....	.....	.36	.....	.....	.....	.47
Total harvesting cost	$ 1.87	$ 2.73	$ 2.75	$ 3.48	$ 2.34	$ 1.36	$ 4.75	$ 3.54	$ 2.01	$ 1.85
Total growing and harvesting costs	$ 7.60	$ 8.06	$ 10.56	$ 9.70	$ 10.42	$ 8.32	$ 15.05	$ 9.36	$ 10.39	$ 10.19
Land charges										
Taxes	1.01	1.24	.90	1.11	1.44	1.21	1.49	1.57	1.32	1.38
Interest on land	6.75	6.50	7.06	7.50	6.75	7.50	7.50	7.50	7.50	6.75
Total cost	$ 15.36	$ 15.80	$ 18.52	$ 18.31	$ 18.61	$ 17.03	$ 24.04	$ 18.43	$ 19.21	$ 18.32
Income										
Grain	$ 23.36	$ 23.60	$ 26.65	$ 26.13	$ 25.13	$ 22.38	$ 28.99	$ 19.28	$ 18.39	$ 15.58
Pasture	.67	.56	.64	.35	.50	.49	1.25	1.85	.82	.92
Total income	$ 24.03	$ 24.16	$ 27.29	$ 26.48	$ 25.63	$ 22.87	$ 30.24	$ 21.13	$ 19.21	$ 16.50
Net profit	$ 8.67	$ 8.36	$ 8.77	$ 8.17	$ 7.02	$ 5.84	$ 6.20	$ 2.70	$	$ -1.82

production costs from one farm to another are, however, the result of differences both in yields and in costs of growing and harvesting. The examples are drawn from the data on costs of producing corn, but the various influences and differences were not, of course, peculiar to corn alone—they extended to the other crops as well.

Differences in growing and harvesting costs. On Farms 10 and 17 the acre-yields of corn in 1936 were practically the same, 31.5 bushels on Farm 10 and 30.5 bushels on Farm 17, but growing and harvesting costs were $15.05 an acre on Farm 17 and only $9.34 on Farm 10 (Table 6). Consequently the costs per bushel for growing and harvesting corn, together with fixed charges for taxes and interest on land, were lower on Farm 10 (53 cents) than on Farm 17 (75 cents). The difference of 22 cents was in part the result of 63 percent more hours of man labor, 77 percent more hours of horse labor, and 48 percent more hours of tractor use on Farm 17 than on Farm 10. In addition to higher labor and power costs per acre, the other items of cost for producing corn on Farm 17 all were higher.

Acre-yields affect unit costs. Farms 1 and 14 had similar costs of growing and harvesting corn, but differing yields (Table 6). Acre-costs on the two farms were in fact so nearly the same that the difference in unit costs may be attributed almost entirely to the difference in acre-yields. Growing and harvesting costs were $9.70 on each farm; and the total acre-costs, including charges for interest and taxes, were only a few cents apart. On Farm 1, however, the yield of corn was 52.6 bushels an acre, at a cost of 33 cents a bushel; whereas on Farm 14 the yield was only 27.5 bushels an acre, and the cost was 65 cents a bushel.

SOME FUNDAMENTAL TRENDS IN FARMING BROUGHT OUT BY THE COST STUDY

Data of the kind presented in this bulletin, covering an extensive period, offer an opportunity for the drawing of certain conclusions regarding changes that have come about in agricultural production and the relation of such changes to the life of farm people. Several such trends were brought out or confirmed by the present study.

Greater efficiency in crop production. Perhaps the most important of the general trends in Illinois farming brought out in these cost data is the improvement which has come about in the efficiency with which crops are grown and harvested. This increase in efficiency

cannot be exactly or fully measured because the changes that must have occurred in the fertility of the soil as a result of cropping and erosion during the twenty-five years cannot be accurately evaluated. Such changes would affect the yields of crops directly; and of course yield is one of the important factors determining cost of production.

Nevertheless, the greater efficiency in production of crops is evident in (1) a general reduction in operating costs of production, and (2) the maintaining of yield levels in spite of the probable decline in fertility of the soil. The reduction in operating costs cannot, of course, be attributed entirely to more efficient production of crops; some of it is accounted for by lower prices of the commodities used in crop production, as was pointed out previously (page 373). But there is still a considerable reduction due to improved methods of production, improved tillage and harvesting machinery, larger and more efficient power units and other equipment, and consequent reductions in labor requirements. Maintenance or even increase in acre-yields in the face of somewhat declining fertility of the soil is the result of improvement of varieties of crops by means of plant breeding; better control of weeds, insects, and diseases thru improved knowledge and technics; and better tillage and more efficient harvesting obtained with modern equipment and more adequate power units. Thus the effects of continual cropping upon the productivity of the soil has in general been obscured. Because they continue to get good yields, farmers are prone to disregard the long-time view and overlook the fact that such methods cannot be depended upon to increase or maintain yields indefinitely. The plant food that is removed by the crops must eventually be returned. On the farms in the present study some applications were made of animal and green manure, limestone, and commercial fertilizers (page 368); but these were probably not sufficient to replace in full the plant-food elements removed by continual cropping and erosion.[1]

The improvement that has been brought about in efficiency of crop production has of course been one of the chief elements in enabling the better farmers to weather, as well as they have, the period of relatively low prices for farm products during the early thirties. One reservation must, however, be made in applying to corn-belt farming as a whole the conclusion that reduction in production costs has gone a considerable way toward enabling farmers to carry on their work profitably under a relatively low scale of prices for farm products. The costs listed in

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[1]Effects of continual cropping on soil productivity are brought out in Ill. Agr. Exp. Sta. Bulletins 300, "Lessons from the Morrow Plots" (1927), and 425, "Crop yields on Illinois soil experiment fields" (1936).

this bulletin, showing pronounced reductions for some crops, were in-
curred in areas representative of the best soils in the corn belt by
farmers who were in general the better farmers in their communities.
They do not, therefore, apply directly to all type-of-farming areas nor
to all farms in the areas where the studies were made; but they do
undoubtedly indicate a general trend toward more efficient production
and lower operating costs.

Changes in farm labor requirements. Another trend evident in
costs of producing crops over the twenty-five years included in this
study was a definite reduction in amounts of labor required, a reduc-
tion that was largely the result of changes in power and equipment
used. During the twenty-five years the amount of man labor required
per acre to grow and harvest corn was reduced more than 50 percent,
the amount required per acre of wheat was reduced more than 80
percent, and the amount required per acre of oats was reduced about
37 percent. A reduction of more than 70 percent occurred in labor
requirements per acre of soybeans from the early twenties, when the
crop began to find a place in Illinois farming, to 1937. These four
crops were by far the most important of all the crops grown on the
farms studied, 91.9 percent of the cropland on those farms being
occupied by these crops in 1937.

This reduction in man-labor requirements, affecting such a large
portion of the land under cultivation, had a marked effect on the labor
program of the farms, as is evident in the following tabulation:

Hancock county	*Crop acres per farm*	*Hours of man labor per farm*	*Hours worked per month of available labor*	*Number of horses per farm*	*Hours worked per horse*	*Hours use per tractor*
1914-1916.............	168	8 037	249	9.3	1 012	...
1920-1922.............	167	6 093	227	7.2	801	181
Champaign and Piatt counties						
1923-1925.............	234	6 392	242	9.0	775	355
1935-1937.............	226	4 439	203	4.3	508	466

In Hancock county the number of hours of labor per farm declined
about one-fourth from 1914-1916 to 1920-1922, and in Champaign and
Piatt counties the decline was about one-third from 1923-1925 to
1935-1937. In both these areas the crop acreage per farm among the
farms included in the study remained about the same. The decline
in labor is therefore attributable chiefly to the displacement of horses
by tractors and the use of larger and improved equipment.

The introduction of mechanical power and larger-sized equipment was also largely responsible for a reduction in the average number of hours of work spent per farm per month. In Hancock county the number of hours of work per farm declined from 249 per month in 1914-1916 to 227 per month in 1920-1922; and in Champaign and Piatt counties from 242 per month in 1923-1925 to 203 per month in 1935-1937. The farm operators themselves worked 330 fewer hours yearly in Champaign and Piatt counties in 1935-1937 than they had worked in 1923-1925.

The reduction in amount of labor needed in crop production led, in general, to a reduction in amount of labor available on the farms. In Hancock county the average number of months of available labor[1] declined from 32.3 per year per farm in the three years 1914-1916 to 22.9 per year per farm in the three years 1920-1922; and in Champaign and Piatt counties the decline was from 26.4 months per year in 1923-1925 to 21.8 months per year in 1935-1937. In Hancock county the decline in available labor was accounted for chiefly by a decline in the amount of unpaid family labor, tho there was also some decline in hired labor. Probably the children remained in school longer at the close of the period, and less farm work was done by women of the farm family. In Champaign and Piatt counties the reduction occurred chiefly in the amount of hired labor.

Changes in acreages planted to different crops. When horses were the major source of power on Illinois farms, one of the main problems was to adjust the proportion of land in different crops so as to distribute the demand for labor, power, and equipment fairly uniformly thruout the growing season. But the reduction in labor requirements by use of tractor and larger machinery, and especially the opportunity of working longer hours at a faster rate with tractors than is possible with horses, has made it unnecessary to give such close attention to the question of uniform distribution of labor and power. It has thus become practicable, at least from the standpoint of use of labor and power, for farmers to put higher proportions of their land in crops that demand attention at the same seasons.

At the close of this study farmers had accordingly increased the proportion of land in corn and soybeans, two crops which compete for

[1]A "month of available labor" is a month during which one person capable of doing a man's work on the farm is available for work, whether or not he is actually engaged in working during all of that time. When a person capable of doing only a fraction of a man's work is available, only a fraction of a month of available labor is computed.

attention at time of seedbed preparation, seeding, and cultivation. This trend is evident in the following percentages of total cropland in the various crops on farms in Champaign and Piatt counties included in the study:

	1920	1929	1937
Corn...	46.8	50.0	45.1
Oats...	29.0	23.5	12.2
Soybeans, grain and hay.........................	.7	8.3	28.9
Wheat...	10.4	11.7	7.2
Other crops....................................	13.1	6.2	6.4

Over the 17-year period corn acreage and soybean acreage together increased from 47.5 percent of the total crop acreage to 74 percent, the increase occurring in the soybean acreage, which advanced from less than 1 percent to nearly 29 percent. This increase in soybean acreage occurred chiefly at the expense of oat acreage, even tho soybeans, because they are not suitable as a nurse crop for legumes, are not as a rule substituted for oats directly in a rotation. To some extent soybeans for hay replaced acreage of red-clover hay. The production of oats fits in well with production of corn in utilizing labor and power to good advantage thruout spring and early summer; but in east-central Illinois oats are a low-profit crop in comparison with soybeans, as is shown in this bulletin. Tho soybeans compete with corn, there has been, as mentioned before, less need of fitting crops together so as to use power and labor evenly since the adoption of tractor power and larger machinery. Undoubtedly the increase in soybean acreage unaccompanied by a decrease in corn acreage was made possible very directly by improvement in power and machinery and the consequent reduction in labor requirements per acre in growing and harvesting crops.

Use made of time saved. Less unpaid family labor on the farms and fewer hours of work by the operators at the close of the twenty-five-year period than at the beginning, has provided farmers with the opportunity either to devote more time to activities other than farm work or to expand the farm business into enterprises for which with the same amount of labor available there would not have been sufficient time at an earlier date. Farm operators in Champaign and Piatt counties spent the equivalent of 33 fewer working days a year (330 hours) at the end of the period than in 1923-1925, and the total number of hours work per farm was about 195 days fewer per year.

In general the work day was shorter at the close of the period, except during the brief season of rush work in the spring. Moreover, the labor required was much lighter in character than at the beginning

of the study. Younger children did not start doing the heavy physical tasks at so early an age, and the operator's wife and girls at home spent less time at farm work.

This saving of labor on the part of both the operator and the other members of the family has meant more time for recreation, for self-improvement, for planning the organization and operation of the farm and for the marketing of livestock and crops. It has undoubtedly had much to do with the fact that farm people now spend more time in reading, in sports and other forms of recreation, in attending meetings and in taking part in various community activities. Such pursuits not only result in a better knowledge of the business of farming but contribute to a more satisfying rural life. Together with the physical improvements that have been made in rural homes during the past few decades—the more general availability of electricity for lighting and power, the hard-surfaced roads, and improved facilities for transportation and communication,—this saving of time from heavy manual labor should do much to make rural living more attractive to young men and women on the farms and should therefore contribute toward more permanent rural communities.

On some farms the reduction in time required for producing crops has led to an increase in the amount of livestock handled, as a means of utilizing available labor. This practice is altogether desirable, especially in view of the need for more legumes as a means of improving and maintaining the fertility of the land.

Many other farmers, in order to reduce the overhead cost of operation and to make use of labor released by mechanical power and large-sized equipment, have taken on additional land, either by rental or by purchase, and have thus increased the size of the farming unit. Because of the method of selecting the farms in the cost study, this use of the labor freed by mechanical power is not shown by the present data; but it is evident in other farm records kept in the same area. The results of this tendency have not been entirely satisfactory, because, for one reason, the increasing of the size of farming units has resulted in fewer farms and consequently in forcing some tenants off farms at a time when other employment has been difficult to obtain.

One of the unfortunate aspects of all these changes—more mechanization and less labor entering into crop production—has been that the farm affords less opportunity for employment. On the cash-grain farms in the study, the number of laborers hired declined almost in proportion to the reduced labor requirements for crop production. The sons of farmers are finding, as they approach maturity, less oppor-

tunity of becoming established as farmers themselves. There are not so many farms for rent; and the opportunity to get a start by working as a hired laborer has been reduced. This reduced opportunity tends to offset the effects of the greater attractiveness of farming and farm life so far as keeping young men and women on the farms is concerned.

Changes in character of farm expenses. A further significant effect of the introduction of mechanical power and larger equipment is a change in the character of farm expenses. As has been pointed out many times before, prior to the introduction of tractors the costs of farm production rose and fell more in accordance with the prices of farm products than they do at present. When farm power was furnished largely by horses, the "fuel" for the power—the horse feed— was raised on the farm; and, for the most part, the replacement stock was also raised on the farm where it would be needed. When farm products were cheap, the costs of producing them also were low. At the close of this study, however, when mechanical power was widely used, farmers had to buy new tractors to replace those worn out, and to pay cash for fuel and oil required in tractor operation. A much larger proportion of the total farm expenses was therefore necessarily composed of *cash* expenses. Moreover, changes in prices of tractor fuel and of tractors bear little relation to changes in the prices of farm products. In such mechanized farming the farmer is therefore placed at a serious disadvantage at times when prices of tractors, machinery, and fuel are relatively high as compared with the prices of farm products. Farmers thus become more dependent on the prices of their products, less well able to weather periods of depression, and more in need of assurance of stable price-levels.

SUMMARY

1. Twenty-five years of continuous cost accounting carried on by the Illinois Agricultural Experiment Station in cooperation with interested farmers shows the influence which the general movement of commodity prices and the changes that have occurred in methods of producing crops during this period 1913-1937 have had upon the cost of producing Illinois' principal field crops.

2. On the farms studied, the yearly operating expenses involved in the production of a composite acre of the crops included in a rotation of two fields of corn, one of oats, and one of wheat varied from a high of $18.30 in 1919, when prices of commodities used in farm production were highest, to $7.80 in 1933, when commodity prices were lowest.

3. Operating expenses per acre (all expenses except the charge for land) declined more during the twenty-five years in the production of wheat than in the production of oats or corn. Tractors and large machines replaced horses and horse-drawn machines in wheat growing more than in the growing of oats or corn. The operating expenses per acre in producing wheat declined from an average of $17.16 in 1914-1915 to an average of $8.70 in 1935-1936. Wheat yields were approximately 4 bushels an acre higher in 1935 and 1936 than in 1914 and 1915. In producing corn, operating expenses per acre were slightly lower in 1935-1937 than in 1913-1915, averaging $11.22 in 1935-1937 and $11.61 in 1913-1915. Yields of corn averaged 15 bushels an acre higher in 1935-1937 than in the earlier years.

Operating expenses of producing soybeans also declined during the study. In 1922-1924, the first years in which grain beans were grown in large enough acreage to give a usable average, the operating expenses per acre averaged $17.08 and the yields 16 bushels, whereas in 1935-1937 operating expenses per acre averaged $9.11 and yields 26 bushels an acre.

In producing oats, on the other hand, the operating expenses per acre were slightly higher in 1935-1937 than at the beginning of the study, averaging $7.27 in 1913-1915, in which years the average yield was 32 bushels an acre, and $8.34 in 1935-1937, when the average yield was 45 bushels an acre.

4. Improved cultural practices and increased use of mechanical power during the twenty-five years reduced the amount of man labor required in producing corn from 18.5 hours an acre in 1913-1915 to 9.6 hours an acre in 1935-1937. Man-hours an acre used in producing

wheat declined from 19.4 in 1914-1916 to 4.9 in 1935-1937, and in producing soybeans they declined from 13.4 in 1922-1924 to 4.2 in 1935-1937. Man labor per acre in producing oats declined approximately 40 percent in the twenty-five years.

5. Tractors were first used in crop production on the cost-accounting farms in 1915. Their adoption for power was slow at first, but by 1937 every cooperating farmer was using at least one tractor. The substitution of mechanical power for horses reduced the number of horse-hours per acre in producing the various crops as follows: corn, from 43.6 in 1913-1915 to 14.0 in 1935-1937; wheat, from 34.6 in 1914-1916 to 5.1 in 1935-1937; and soybeans, 29.1 in 1922-1924 to 2.6 in 1935-1937.

6. During the same periods the use of tractor power in producing the various crops increased from no hours at all at the beginning of the study to an average of 3.6 hours an acre on corn in 1936-1938, 2.0 hours an acre on wheat, 1.3 hours an acre on oats, and 2.4 hours an acre on soybeans.

7. Total costs of crop production, including land charges at 5 percent of land values, were: corn, $18.49 an acre for a 35-bushel crop in 1913 and $18.19 an acre for a 61-bushel crop in 1937; wheat, $26.59 an acre for a 23.4-bushel crop in 1914 and $14.01 an acre for a 27.2-bushel crop in 1936; oats, $14.20 an acre for a 31-bushel crop in 1913 and $14.30 for a 37-bushel crop in 1936; soybeans, $29.04 an acre for a 15-bushel crop in 1922 and $17.48 for a 26-bushel crop in 1937.

8. The net cost of producing a bushel of soybeans in 1922, with 15 bushels the average yield, was $1.46. The net cost in 1937, when beans yielded 26 bushels an acre, was 68 cents a bushel.

9. Direct cash outlay in producing corn in 1913-1915 was 14.1 percent and cash reserve for depreciation was 4.3 percent of the total costs of producing corn; in 1935-1937 the direct cash outlay had risen to 28.3 percent, and the reserve necessary to meet depreciation had increased to 8.0 percent of the total.

10. Area-to-area differences in the cost of producing crops in the same year are illustrated by the costs of producing corn. During the crop years 1920-1922 it cost $1.30 a bushel to produce corn in Franklin county; 49 cents in Hancock county and 58 cents in Champaign-Piatt counties.

11. Year-to-year variations in costs of crop production are caused largely by changes in prices of cost items, fluctuations in yields,

and differences in weather affecting fieldwork. The cost per bushel in producing corn dropped from 43 cents in 1931 to 28 cents in 1932, owing largely to a decline in the prices of cost items. In 1934 the cost was 60 cents a bushel and in 1930 it was 30 cents, the difference being due to differences in yields.

12. Farm-to-farm variations in crop costs in the area of study are the result (1) of differences in the way the land has been handled over a period of years and (2) of differences in managing ability, both of which are under the control of the farm operator. Between certain farms in the same area on identical soil types there was a difference of $7.45 in the growing and harvesting costs per acre of corn in 1936. On one farm in 1936 the cost of producing corn was 33 cents a bushel and on a neighboring farm it was 60 cents a bushel.

13. General trends in agricultural production evident in the cost data over the twenty-five years were (1) a tendency toward greater efficiency in crop production, resulting in a lowering of operating costs and the maintenance of acre-yields in spite of probable slight declining of soil fertility; (2) significant and far-reaching reductions in the amounts of labor needed in growing and harvesting crops; (3) the revision of cropping systems so as to put a higher proportion of total crop acreage in more profitable crops even tho those crops compete directly for labor and power; and (4) a change in the character of farm expenses such that a higher proportion of cash purchases has become necessary.

The data on costs of producing the various crops in different sections of Illinois are given on the following pages.

TABLES: YEAR-BY-YEAR COSTS OF CROP PRODUCTION

Table 7.—CORN: Hancock County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	1913	1914	1915	1916	1917
Growing and harvesting costs per acre					
Man labor.................	$ 3.21	$ 2.96	$ 3.66	$ 3.36	$ 3.75
Horse labor..............	4.25	5.47	5.26	4.89	5.79
Tractor use..............	....	....	....	....	.30
Machinery...............	.68	.63	.67	.63	.68
Seed.....................	.27	.27	.20	.27	.36
Fertilizer.................	....	....	....	....	....
General farm expense......	2.02	1.80	1.51	1.41	1.35
Miscellaneous.............	.03	.11	.26	.28	.45
Total growing and harvesting costs......	$10.46	$11.24	$11.56	$10.84	$12.68
Land charges per acre					
Taxes...................	$ .46	$ .52	$ .58	$ .57	$ .67
Interest on land at 5 percent	7.57	7.69	7.82	8.06	7.98
Total acre-cost..............	$18.49	$19.45	$19.96	$19.47	$21.33
Income per acre					
Grain...................	$20.52	$13.11	$25.18	$22.93	$41.15
Stover....................	....	.32	....	....	....
Pasture..................	.27	.20	.75	.57	.66
Total acre-income........	$20.79	$13.63	$25.93	$23.50	$41.81
Net profit or loss per acre.....	$ 2.30	$–5.82	$ 5.97	$ 4.03	$20.48
Efficiency factors					
Net cost per bushel........	$ .52	$ .85	$ .40	$ .52	$ .47
Price per bushel..........	.60	.59	.52	.64	.94
Net profit or loss per bushel.	.08	–.26	.12	.12	.47
Yield per acre, bushels.....	34.6	22.2	48.5	36.0	43.9
Man labor per acre, hours..	18.6	16.3	20.5	19.0	18.3
Horse labor per acre, hours	42.2	37.5	51.2	43.5	41.8
Tractor use per acre, hours	....	....	....	....	.3
Man labor per bushel, hours.	.54	.73	.42	.53	.42
Total acres studied...........	335	408	503	512	716

TABLE 7.—CORN: HANCOCK COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1913-1922 (CONCLUDED)

Item	1918	1919	1920	1921	1922
Growing and harvesting costs per acre					
Man labor...............	$ 4.35	$ 5.72	$ 4.70	$ 6.43	$ 4.56
Horse labor..............	6.88	7.80	8.08	4.66	5.44
Tractor use..............	.15	.58	.80	.95	.67
Machinery...............	.88	1.14	1.22	1.07	1.11
Seed....................	.73	.33	.55	.38	.29
Fertilizer................	....	....	....	....	....
General farm expense......	.99	1.65	2.97	2.39	2.18
Miscellaneous............	.64	.08	.07	.29	.07
Total growing and harvesting costs.....	$14.62	$17.30	$20.12	$14.44	$14.32
Land charges per acre					
Taxes...................	$ .71	$ .86	$ 1.06	$ 1.14	$ 1.22
Interest on land at 5 percent	7.43	7.31	9.88	9.23	9.58
Total acre-cost..............	$22.76	$25.47	$31.06	$24.81	$25.12
Income per acre					
Grain...................	$38.69	$63.00	$32.06	$16.10	$27.79
Stover..................	....	.17	.04	....	.04
Pasture.................	.58	1.24	1.36	.72	1.35
Total acre-income......	$39.27	$64.41	$33.46	$16.82	$29.18
Net profit or loss per acre.....	$16.51	$38.94	$ 2.40	$−7.99	$ 4.06
Efficiency factors					
Net cost per bushel........	$ .64	$ .49	$ .55	$ .48	$ .45
Price per bushel...........	1.12	1.28	.60	.32	.52
Net profit or loss per bushel.	.48	.79	.05	−.16	.07
Yield per acre, bushels.....	34.5	49.2	53.5	50.2	53.3
Man labor per acre, hours..	19.2	19.1	18.0	16.3	16.9
Horse labor per acre, hours	43.9	46.3	40.6	36.3	40.8
Tractor use per acre, hours	.1	.3	.7	1.0	.6
Man labor per bushel, hours.	.56	.39	.34	.32	.32
Total acres studied..........	544	417	451	593	551

Table 8.—OATS: Hancock County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
Growing and harvesting costs per acre										
Man labor	$1.74	$1.29	$1.92	$1.88	$1.75	$2.53	$4.38	$3.55	$2.01	$1.80
Horse labor	1.86	1.95	2.02	2.03	2.63	3.52	3.99	3.03	1.90	1.79
Tractor use					.04	.34	.36	.40	.25	.42
Machinery	.72	.65	.66	.84	.57	.54	.59	.90	.89	.77
Seed	.42	1.03	.95	1.05	1.55	2.16	1.61	2.59	1.62	1.02
Twine	.12	.12	.17	.13	.39	.59	.55	.35	.28	.20
Threshing	.66	.68	.79	.57	1.51	1.58	1.45	2.08	.87	1.10
Fuel	.14	.04	.05	.02				.13	.08	.07
Fertilizer		.06				.17		.25		.02
General farm expense	.92	.51	.78	.56	.48	.09	1.30	.84	.50	.23
Miscellaneous										
Total growing and harvesting costs	$6.58	$6.33	$7.34	$7.08	$8.92	$11.52	$14.23	$14.12	$8.40	$7.42
Land charges per acre										
Taxes	$.46	$.52	$.58	$.57	$.67	$.71	$.86	$1.06	$1.14	$1.22
Interest on land at 5 percent	7.16	7.77	7.27	8.18	7.58	8.04	7.68	9.02	8.48	8.94
Total acre-cost	$14.20	$14.62	$15.19	$15.83	$17.17	$20.27	$22.77	$24.20	$18.02	$17.58
Income per acre										
Grain	$10.10	$9.24	$11.64	$8.09	$26.90	$28.22	$28.08	$34.11	$7.52	$8.57
Straw	1.56	.62	.77	.81	2.75	1.84	2.14	3.28	1.29	.83
Pasture	.17	.51	.64	.41	1.23	1.01	.93	1.18	.62	.47
Total acre-income	$11.83	$10.37	$13.05	$9.31	$30.88	$31.07	$31.15	$38.57	$9.43	$9.87
Net profit or loss per acre	$−2.37	$−4.25	$−2.14	$−6.52	$13.71	$10.80	$8.38	$14.37	$−8.59	$−7.71
Efficiency factors										
Net cost per bushel	$.41	$.44	$.39	$.65	$.27	$.34	$.46	$.37	$.55	$.46
Price per bushel	.33	.30	.33	.36	.55	.55	.65	.64	.26	.24
Net profit or loss per bushel	−.08	−.14	−.06	−.29	.28	.21	.19	.27	−.29	−.22
Yield per acre, bushels	30.7	30.8	35.4	22.5	48.9	51.0	42.9	53.1	29.1	35.5
Man labor per acre, hours	10.3	7.6	11.1	10.8	10.5	10.8	11.4	9.3	7.3	7.6
Horse labor per acre, hours	19.4	15.6	19.3	20.5	18.5	22.4	21.2	16.6	15.0	15.1
Tractor use per acre, hours					.03	.24	.19	.27	.27	.22
Man labor per bushel, hours	.34	.25	.31	.48	.21	.21	.27	.18	.25	.21
Total acres studied	166	230	216	246	398	342	249	271	326	219

TABLE 9.—WINTER WHEAT: HANCOCK COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1914-1922

Item	1914	1915	1916	1918[a]	1919	1920	1921	1922
Growing and harvesting costs per acre								
Man Labor	$ 4.02	$ 2.98	$ 2.77	$ 2.84	$ 4.65	$ 4.15	$ 4.76	$ 3.40
Horse labor	7.26	5.05	5.45	4.56	6.27	3.69	6.08	3.04
Tractor use				3.89	1.18	1.68	.30	1.08
Machinery	1.13	.82	1.10	1.35	1.38	1.32	1.43	1.12
Seed	1.98	1.27	1.26	2.60	3.15	2.72	3.15	1.62
Twine	.13	.12	.14	.45	.67	.32	.37	.25
Threshing	1.16	.87	.44	1.06	1.56	1.48	1.37	1.40
Fuel	.04	.04				.03	.15	.24
Fertilizer								
General farm expense	2.65	1.76	1.35	.21	1.50	.73	1.83	1.62
Miscellaneous	.25	1.70	.26		.59	.18	.40	.42
Total growing and harvesting costs	$18.62	$14.61	$12.77	$16.96	$20.95	$16.30	$19.84	$14.19
Land charges per acre								
Taxes	$ .52	$ .58	$ .57	$ .71	$ .86	$ 1.06	$ 1.14	$ 1.22
Interest on land at 5 percent	7.45	7.96	7.54	8.00	8.38	7.52	9.80	9.11
Total acre-cost	$26.59	$23.15	$20.88	$25.67	$30.19	$24.88	$30.78	$24.52
Income per acre								
Grain	$16.99	$17.13	$12.70	$43.72	$53.51	$42.67	$23.55	$21.69
Straw	1.33	.60	1.03	1.88	2.98	2.68	2.29	1.64
Pasture		2.05	.22		1.49	1.00	.77	1.67
Total acre-income	$18.32	$19.78	$13.95	$45.60	$57.98	$46.35	$26.61	$25.00
Net profit or loss per acre	$ −8.27	$ −3.37	$ −6.93	$19.93	$27.79	$21.47	$ −4.17	$ .48
Efficiency factors								
Net cost per bushel	$ 1.08	$ 1.19	$ 1.93	$ 1.12	$ 1.00	$ 1.12	$ 1.23	$ .90
Price per bushel	.73	.99	1.25	2.05	2.08	2.26	1.05	.92
Net profit or loss per bushel	−.35	−.20	−.68	.93	1.08	1.14	−.18	.02
Yield per acre, bushels	23.4	17.3	10.2	21.3	25.8	18.8	22.5	23.5
Man labor per acre, hours	23.4	17.2	17.5	12.1	18.1	12.2	14.5	13.4
Horse labor per acre, hours	23.6	38.9	41.4	18.0	49.7	19.5	35.2	23.4
Tractor use per acre, hours				2.4	.8	1.1	.3	1.0
Man labor per bushel, hours	1.0	.99	1.72	.57	.70	.64	.64	.57
Total acres studied	37	58	66	22	132	98	176	264

[a]No wheat was grown in 1913 or 1917 on farms studied.

Table 10.—CLOVER HAY: Hancock County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	1913-1916	1917	1918	1919	1920	1921	1922
Growing and harvesting costs per acre							
Man labor	$ 1.54	$ 2.82	$ 1.96	$ 2.97	$ 3.14	$ 2.25	$ 3.31
Horse labor	1.19	2.93	1.69	2.48	2.57	1.05	2.15
Seed	1.01	1.23	.95	1.23	2.18	1.84	1.60
Machinery	.51	.69	.58	.80	1.02	.58	.79
Fertilizer					.28	.19	
Hulling	.10	1.12	.79	1.57	2.47	1.14	1.12
General farm expense	.47	.61	.14	.82	1.04	.71	1.95
Miscellaneous				.17			
Total growing and harvesting costs	$ 4.82	$ 9.40	$ 6.11	$10.04	$12.70	$ 7.76	$10.92
Land charges per acre							
Taxes	$ .54	$ .67	$ .71	$ .86	$ 1.06	$ 1.14	$ 1.22
Interest on land at 5 percent	7.37	8.60	7.14	6.53	9.94	8.28	8.14
Total acre-cost	$12.73	$18.67	$13.96	$17.43	$23.70	$17.18	$20.28
Income per acre							
Hay	$ 6.92	$21.35	$12.99	$29.53	$13.71	$ 6.54	$ 8.19
Seed	2.93	12.14	7.83	17.85	10.81	6.72	6.26
Hullings	1.00	.26	.48	3.90	1.29	.44	.83
Pasture	.65	.01	2.38	1.85	2.24	.83	.35
Total acre-income	$11.50	$33.76	$23.68	$53.13	$28.05	$14.53	$15.63
Net profit or loss per acre	$-1.23	$15.09	$ 9.72	$35.70	$ 4.35	$-2.65	$-4.65
Efficiency factors							
Net cost per ton	$ 7.41	$ 4.17	$ 2.72	(a)	$ 9.96	$13.72	$10.19
Price, hay per ton	6.29	14.21	10.82	19.95	14.58	9.76	6.50
Price, seed per bushel	6.50	15.10	14.81	26.61	12.42	8.96	9.94
Price, hullings per ton	5.00	5.00	3.00	12.50	4.45	5.00	2.96
Net profit or loss per ton	-1.12	10.04	8.10	23.80	4.62	-3.96	-3.69
Yield per acre—							
Hay, tons	1.1	1.5	1.2	1.5	.9	.7	1.3
Seed, bushels	.44	.80	.53	.67	.87	.75	.63
Hullings, tons	.2	.05	.16	.31	.29	.09	.28
Man labor per acre, hours	9.0	13.7	8.6	11.3	10.0	8.5	14.0
Horse labor per acre, hours	13.9	17.9	10.5	13.4	10.4	9.9	15.9
Man labor per ton, hours	8.18	9.13	7.17	7.53	11.1	12.7	11.1
Total acres studied	310	49	168	256	178	79	72

aCredits in the form of farm value of seed, hullings, and pasture were more than the total cost per acre and when subtracted from the total cost gave a negative figure.

Table 11.—HAYS AND RYE: Hancock County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	Alfalfa	Timothy	Mixed hay	Rye
Growing and harvesting costs per acre				
Man labor.....................	$ 3.58	$ 1.71	$ 2.05	$ 3.00
Horse labor....................	3.13	1.38	1.76	3.87
Seed..........................	.86	.07	.88	1.63
Machinery.....................	1.05	.60	.73	.32
Fertilizer......................	.15	.02	.35	....
Twine.........................	....	....	....	.40
Threshing and hulling...........	....	.08	....	1.32
General farm expense...........	1.26	.22	.61	.92
Total growing and harvesting costs...................	$10.03	$ 4.08	$ 6.38	$11.46
Land charges per acre				
Taxes.........................	$ .79	$ .79	$ .79	$ .79
Interest on land at 5 percent.....	7.78	7.76	8.60	7.99
Total acre-cost....................	$18.60	$12.63	$15.77	$20.24
Income per acre				
Hay or roughage...............	$26.97	$12.48	$14.03	$ 2.06
Grain or seed..................	....	.46	.02	21.73
Pasture.......................	3.83	2.90	1.90	1.33
Total acre-income............	$30.80	$15.84	$15.95	$25.12
Net profit or loss per acre..........	$12.20	$ 3.21	$ .18	$ 4.88
Efficiency factors				
Net cost per bushel or ton.......	$ 7.96	$ 8.82	$ 9.82	$ .84
Price per bushel or ton..........	14.52	11.88	9.95	1.08
Net profit or loss per bushel or ton	6.56	3.06	.13	.24
Yield per acre, bushels or tons...	1.86	1.05	1.41	20.0
Man labor per acre, hours.......	16.5	7.5	8.7	14.6
Horse labor per acre, hours......	25.7	9.0	12.4	30.6
Man labor per bushel or ton, hours	8.87	7.14	6.17	.78
Total acres studied................	226	1 150	366	412

TABLE 12.—CORN: FRANKLIN COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1913-1922

Item	1913-1916	1917-1919	1920-1922
Growing and harvesting costs per acre			
Man labor.....................	$ 3.63	$ 4.59	$ 6.33
Horse labor....................	5.89	9.82	11.78
Tractor labor..................	. . . . .	.33	.25
Machinery.....................	.73	.90	1.52
Seed..........................	.17	.38	.35
Fertilizer......................	.17	.69	1.61
General farm expense...........	2.42	3.19	2.57
Total growing and harvesting costs	$13.01	$19.90	$24.41
Land charges per acre			
Taxes.........................	$ .42	$ .61	$ 1.07
Interest on land at 5 percent......	2.18	2.21	2.17
Total acre-cost.....................	$15.61	$22.72	$27.65
Income per acre			
Grain.........................	$11.03	$30.61	$14.10
Soybeans......................	. . . .	. . . .	.20
Pasture.......................	.32	.21	.06
Stover........................	.30	. . . . .	.55
Total acre-income..............	$11.65	$30.82	$14.91
Net profit or loss per acre............	$ −3.96	$ 8.10	$ −12.74
Efficiency factors			
Net cost per bushel..............	$ .88	$ .78	$ 1.30
Price per bushel................	.65	1.06	.68
Net profit or loss per bushel......	− .23	.28	− .62
Yield per acre, bushels...........	16.9	28.9	20.7
Man labor per acre, hours........	26.0	26.0	25.8
Horse labor per acre, hours.......	46.9	57.5	53.0
Tractor use per acre, hours.......	. . . . .	.2	.5
Man labor per bushel, hours......	1.53	.90	1.25
Total acres studied..................	385	582	254

Table 13.—OATS: Franklin County, Cost of Production, Income, and
Efficiency Factors, 1913-1921[a]

Item	1913-1916[b]	1917-1919	1920-1921
Growing and harvesting cost per acre			
Man labor....................	$ 1.66	$ 2.55	$ 2.93
Horse labor...................	3.06	4.14	5.08
Tractor use...................	.....	.05	.95
Machinery....................	.44	.56	.81
Seed.........................	.97	1.68	2.09
Twine........................	.07	.39	.35
Threshing....................	.32	1.02	.97
Fuel.........................	.....	.02	.13
Fertilizer....................	.24	1.16	4.10
General farm expense...........	.83	1.23	.85
Total growing and harvesting costs	$ 7.59	$12.80	$18.26
Land charges per acre			
Taxes.......................	$ .42	$ .61	$ 1.07
Interest on land at 5 percent......	2.05	2.42	2.41
Total acre-cost...................	$10.06	$15.83	$21.74
Income per acre			
Grain........................	$ 5.45	$17.00	$17.12
Straw........................	1.05	2.06	2.37
Pasture......................	.18	.32	.33
Total acre-income.............	$ 6.68	$19.38	$19.82
Net profit or loss per acre............	$ −3.38	$ 3.55	$ −1.92
Efficiency factors			
Net cost per bushel.............	$ .67	$ .49	$ .76
Price per bushel................	.42	.61	.69
Net profit or loss per bushel.......	− .25	.12	− .07
Yield per acre, bushels...........	13.2	27.7	24.9
Man labor per acre, hours........	11.7	13.1	11.6
Horse labor per acre, hours.......	25.1	24.2	20.9
Tractor use per acre, hours.......	.....	.03	1.0
Man labor per bushel, hours......	.89	.47	.47
Total acres studied.................	432	396	229

[a]Because of the failure of the oats crop, no data were obtained in 1922.
[b]In 1914 all oats on the farms in the study were cut for hay.

TABLE 14.—WINTER WHEAT: FRANKLIN COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1914-1922

Item	1914-1916	1917-1919	1920-1922
Growing and harvesting costs per acre			
Man labor.....................	$ 3.22	$ 3.57	$ 3.67
Horse labor....................	4.95	5.40	6.12
Tractor use....................	.....	.80	.68
Machinery.....................	.70	.66	.98
Seed..........................	1.50	2.68	2.29
Twine.........................	.06	.41	.31
Threshing.....................	.45	1.10	.85
Fuel..........................	.01	.02	.10
Fertilizer.....................	.66	1.81	4.13
General farm expense...........	1.93	1.85	.95
Total growing and harvesting costs	$13.48	$18.30	$20.08
Land charges per acre			
Taxes.........................	$ .42	$ .61	$ 1.07
Interest on land at 5 percent......	2.13	2.18	2.17
Total acre-cost....................	$16.03	$21.09	$23.32
Income per acre			
Grain.........................	$10.98	$34.43	$16.17
Straw.........................	1.86	3.27	1.93
Pasture.......................	.62	.54	.29
Total acre-income.............	$13.46	$38.24	$18.39
Net profit or loss per acre............	$−2.57	$17.15	$−4.93
Efficiency factors			
Net cost per bushel.............	$ 1.22	$ 1.08	$ 1.65
Price per bushel................	.99	2.15	1.26
Net profit or loss per bushel.......	−.23	1.07	−.37
Yield per acre, bushels...........	11.1	16.0	12.8
Man labor per acre, hours........	21.8	20.8	14.4
Horse labor per acre, hours.......	39.1	41.0	26.6
Tractor use per acre, hours........	.....	.6	1.1
Man labor per bushel, hours......	1.96	1.30	1.12
Total acres studied.................	478	746	451

Table 15.—TIMOTHY HAY: Franklin County, Cost of Production,
Income, and Efficiency Factors, 1914-1922

Item	1914-1916	1917-1919	1920-1922
Growing and harvesting costs per acre			
Man labor.....................	$ 1.06	$ 1.29	$ 1.18
Horse labor....................	1.08	1.70	1.68
Tractor use....................	.....	.....	.....
Seed.........................	.04	.40	.32
Machinery.....................	.25	.35	.44
Fertilizer.....................	.25	.24	.69
General farm expense...........	.29	.63	.06
Total growing and harvesting costs	$ 2.97	$ 4.61	$ 4.37
Land charges per acre			
Taxes........................	$ .42	$ .61	$ .52
Interest on land at 5 percent......	2.17	2.14	2.54
Total acre-cost....................	$ 5.56	$ 7.36	$ 7.43
Income per acre			
Hay..........................	$ 9.88	$12.25	$10.28
Pasture.......................	.57	1.10	.....
Total acre-income.............	$10.45	$13.35	$10.28
Net profit or loss per acre............	$ 4.89	$ 5.99	$ 2.85
Efficiency factors			
Net cost per ton................	$ 4.75	$ 8.35	$12.59
Price per ton...................	9.41	16.33	17.42
Net profit or loss per ton.........	4.66	7.98	4.83
Yield per acre, tons.............	1.05	.75	.59
Man labor per acre, hours........	7.6	7.4	5.2
Horse labor per acre, hours.......	8.3	9.5	8.4
Man labor per ton, hours.........	7.2	9.9	8.8
Total acres studied.................	378	252	28

Table 16.—CLOVER HAY: Franklin County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	1913-1916	1917-1919	1920-1922
Growing and harvesting costs per acre			
Man labor	$ 1.64	$ 1.99	$ 2.52
Horse labor	1.40	1.82	2.17
Seed	. . . .	.80	2.22
Machinery	.45	.36	.46
Fertilizer	. . . .	1.06	1.44
General farm expense	.43	.69	.44
Total growing and harvesting costs	$ 3.92	$ 6.72	$ 9.25
Land charges per acre			
Taxes	$ .42	$ .61	$ 1.07
Interest on land at 5 percent	2.28	2.72	1.95
Total acre-cost	$ 6.62	$10.05	$12.27
Income per acre			
Hay	$ 9.33	$27.47	$26.65
Pasture	. . . .	.43	.26
Total acre-income	$ 9.33	$27.90	$26.91
Net profit or loss per acre	$ 2.71	$17.85	$14.64
Efficiency factors			
Net cost per ton	$ 6.04	$ 6.36	$ 9.03
Price per ton	8.51	18.02	20.03
Net profit or loss per ton	2.47	11.66	11.00
Yield per acre, tons	1.1	1.53	1.33
Man labor per acre, hours	11.5	10.7	9.5
Horse labor per acre, hours	16.9	14.0	10.0
Man labor per ton, hours	10.4	7.0	7.1
Total acres studied	97	245	266

TABLE 17.—REDTOP HAY: FRANKLIN COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1914-1922

Item	1914-1915	1917-1919	1921-1922
Growing and harvesting costs per acre			
Man labor....................	$ 1.45	$ .96	$ 1.08
Horse labor...................	1.17	.75	1.39
Seed........................	. . . . .	. . . . .	.41
Machinery....................	.15	.25	.36
Threshing....................	.56	.31	.86
Fertilizer....................	. . . . .	. . . . .	.40
General farm expense...........	.61	.09	.02
Total growing and harvesting costs	$ 3.94	$ 2.36	$ 4.52
Land charges per acre			
Taxes.......................	$ .40	$ .61	$ .61
Interest on land at 5 percent......	2.00	2.77	2.70
Total acre-cost..................	$ 6.34	$ 5.74	$ 7.83
Income per acre			
Hay.........................	$ 7.72	$ 6.39	$ 4.23
Pasture......................	.42	.96	.28
Seed........................	3.50	2.04	3.05
Straw.......................	. . . . .	. . . . .	2.43
Total acre-income............	$11.64	$ 9.39	$ 9.99
Net profit or loss per acre...........	$ 5.30	$ 3.65	$ 2.16
Efficiency factors			
Net cost per ton...............	$ 3.67	$ 6.37	$ 6.37
Price per ton..................	11.70	14.86	13.02
Net profit or loss per ton.........	8.03	8.49	6.65
Yield per acre, tons.............	.66	.43	.33
Man labor per acre, hours........	9.4	5.5	5.4
Horse labor per acre, hours.......	7.3	6.2	6.8
Man labor per ton, hours.........	14.2	12.8	16.6
Total acres studied.................	50	110	37

TABLE 18.—MIXED HAY (CLOVER AND TIMOTHY): FRANKLIN
COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY
FACTORS, 1913-1914 AND 1917-1919

Item	1913-1914	1917-1919
Growing and harvesting costs per acre		
Man labor....................	$ .61	$ 1.68
Horse labor....................	.82	1.66
Seed..........................	.01	1.14
Machinery....................	.18	.33
Fertilizer....................	....	.97
General farm expense...........	.52	.67
Total growing and harvesting costs	$ 2.14	$ 6.45
Land charges per acre		
Taxes........................	$ .46	$ .61
Interest on land at 5 percent......	2.18	2.23
Total acre-cost....................	$ 4.78	$ 9.29
Income per acre		
Hay..........................	$ 7.73	$18.47
Pasture......................	.99	.36
Seed.........................	....	.40
Total acre-income............	$ 8.72	$19.23
Net profit or loss per acre...........	$ 3.94	$ 9.94
Efficiency factors		
Net cost per ton...............	$ 5.05	$ 7.83
Price per ton.................	10.31	16.94
Net profit or loss per ton........	5.26	9.11
Yield per acre, tons.............	.75	1.09
Man labor per acre, hours........	6.6	9.1
Horse labor per acre, hours.......	6.4	9.6
Man labor per ton, hours.........	8.8	8.3
Total acres studied.................	95	126

Table 19.—COWPEA HAY: Franklin County, Cost of Production, Income, and Efficiency Factors, 1913-1922

Item	1913-1914	1917-1918	1920-1922
Growing and harvesting costs per acre			
Man labor......................	$ 3.17	$ 2.55	$ 3.95
Horse labor....................	3.01	4.68	7.55
Machinery.....................	.48	.51	1.26
Seed..........................	1.92	2.63	2.08
Threshing.....................	. . . .	.84	. . . .
Fertilizer......................	. . . .	. . . .	.93
General farm expense...........	1.86	1.55	.89
Total growing and harvesting costs	$10.44	$12.76	$16.66
Land charges per acre			
Taxes........................	$ .46	$ .57	$ 1.07
Interest on land at 5 percent......	2.14	2.80	2.14
Total acre-cost....................	$13.04	$16.13	$19.87
Income per acre			
Hay..........................	$16.48	$13.10	$12.92
Pasture.......................	. . . .	.76	.14
Seed..........................	.66	3.40	. . . .
Straw.........................	. . . .	. . . .	. . . .
Total acre-income.............	$17.14	$17.26	$13.06
Net profit or loss per acre............	$ 4.10	$ 1.13	$ −6.81
Efficiency factors			
Net cost per ton................	$ 9.04	$17.87	$22.68
Price per ton...................	12.03	19.55	14.85
Net profit or loss per ton........	2.99	1.68	−7.83
Yield per acre, tons.............	1.37	.67	.87
Man labor per acre, hours.......	20.8	15.5	18.9
Horse labor per acre, hours.......	29.8	33.7	35.2
Man labor per ton, hours.........	15.2	23.1	21.7
Total acres studied.................	9	97	85

TABLE 20.—COWPEA SEED: FRANKLIN COUNTY, COST OF
PRODUCTION, INCOME AND EFFICIENCY FACTORS, 1913-1914

Item	1913-1914
Growing and harvesting costs per acre	
Man labor....................................	$ 1.86
Horse labor.................................	3.51
Machinery..................................	.49
Seed..	1.33
Threshing..................................	1.11
Fertilizer...................................	....
General farm expense......................	2.86
Total growing and harvesting costs...........	$11.16
Land charges per acre	
Taxes......................................	$ .46
Interest on land at 5 percent................	1.45
Total acre-cost................................	$13.07
Income per acre	
Seed..	$ 6.36
Straw......................................	9.25
Pasture.....................................	.07
Total acre-income...........................	$15.68
Net profit or loss per acre......................	$ 2.61
Efficiency factors	
Net cost per bushel.........................	$ .99
Price per bushel............................	1.67
Net profit or loss per bushel.................	.68
Yield per acre, bushels......................	3.8
Man labor per acre, hours...................	15.0
Horse labor per acre, hours..................	24.9
Man labor per bushel, hours.................	39.5
Total acres studied............................	58

TABLE 21.—CORN: CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1920-1937

Item	1920	1921	1922	1923	1924	1925
Growing and harvesting costs per acre						
Man labor	$ 5.75	$ 4.12	$ 3.64	$ 5.08	$ 4.39	$ 5.32
Horse labor	7.08	5.44	5.03	5.90	4.41	5.07
Tractor use	.60	.99	.74	.36	.88	.93
Machinery	1.04	.82	.88	.82	.84	.91
Seed	.45	.37	.18	.30	.54	.35
Fertilizer					1.62	1.57
General farm expense	2.45	3.04	2.86	2.51	2.14	2.26
Miscellaneous				.28	.68	.02
Total growing and harvesting costs	$17.37	$14.78	$13.33	$15.25	$15.50	$16.43
Land charges per acre						
Taxes	$ 1.81	$ 2.02	$ 1.94	$ 1.86	$ 1.91	$ 2.00
Interest on land at 5 percent	11.61	13.24	13.27	12.74	12.67	12.04
Total acre-cost	$30.79	$30.04	$28.54	$29.85	$30.08	$30.47
Income per acre						
Grain	$25.31	$14.86	$26.91	$29.25	$41.89	$27.57
Pasture	1.51	.72	.87	.86	.99	.96
Total acre-income	$26.82	$15.58	$27.78	$30.11	$42.88	$28.53
Net profit or loss per acre	$ -3.97	$ -14.46	$ -.76	$ .26	$12.80	$ -1.94
Efficiency factors						
Net cost per bushel	$ .58	$ .59	$ .58	$ .61	$ .68	$ .57
Price per bushel	.50	.30	.56	.61	.98	.53
Net profit or loss per bushel	-.08	-.29	-.02		.30	-.04
Yield per acre, bushels	50.9	49.5	48.0	47.7	42.8	51.7
Man labor per acre, hours	14.2	15.0	13.9	14.4	12.8	13.9
Horse labor per acre, hours	33.4	33.4	33.5	36.7	28.0	34.1
Tractor use per acre, hours	.5	.6	.9	.4	.8	.9
Man labor per bushel, hours	.28	.30	.29	.30	.30	.26
Total acres studied	656	997	1 187	1 503	1 587	1 696

TABLE 21.—CORN: CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1920-1937 (CONTINUED)

Item	1926	1927	1928	1929	1930	1931
Growing costs per acre						
Man labor	$ 2.30	$ 2.30	$ 2.30	$ 2.06	$ 1.99	$ 1.52
Horse labor	2.65	2.60	2.81	2.51	2.09	1.79
Tractor use	1.10	.97	.97	1.16	1.28	1.03
Machinery	.74	.65	.65	.74	.61	.72
Seed	.41	.39	.53	.59	.63	.33
Fertilizer	1.00	1.24	1.28	1.33	1.85	1.22
General farm expense	2.25	1.76	2.23	1.89	1.81	1.76
Miscellaneous	.13	.17	.57	.40	....	....
Total growing cost	$10.58	$10.08	$11.34	$10.68	$10.26	$ 8.37
Harvesting costs per acre						
Man labor	$ 2.97	$ 2.80	$ 2.75	$ 2.55	$ 1.85	$ 1.28
Horse labor	1.45	1.42	1.44	1.34	1.14	1.08
Tractor use	....	....	....	.11	.02	....
Picker expense	....	....	....	.16	....	....
Total harvesting cost	$ 4.42	$ 4.22	$ 4.19	$ 4.16	$ 3.01	$ 2.36
Total growing and harvesting costs per acre	$15.00	$14.30	$15.53	$14.84	$13.27	$10.73
Land charges per acre						
Taxes	$ 2.24	$ 2.08	$ 2.14	$ 1.78	$ 1.89	$ 1.94
Interest on land at 5 percent	11.41	10.36	8.99	9.11	9.22	9.06
Total acre-cost	$28.65	$26.74	$26.66	$25.73	$24.38	$21.73
Income per acre						
Grain	$26.89	$30.21	$32.22	$34.27	$23.68	$12.30
Pasture	.55	.44	.55	.52	.79	.43
Total acre-income	$27.44	$30.65	$32.77	$34.79	$24.47	$12.73
... per acre	$ -1.21	$ 3.91	$ 6.11	$ 9.06	$ .09	$ -8.91
Efficiency factors						
Net cost per bushel	$ .52	$ .60	$ .53	$ .50	$ .60	$ .43
Price per bushel	.50	.69	.65	.68	.60	.25
Net profit or loss per bushel	-.02	.09	.12	.18	....	-.18
Yield per acre, bushels	53.8	44.0	49.5	50.4	39.5	49.6
Man labor per acre, hours	14.1	12.7	13.6	12.1	12.8	12.2
Horse labor per acre, hours	31.2	30.6	31.1	25.9	25.1	26.6
Tractor use per acre, hours	1.0	1.2	1.0	1.6	1.7	1.7
Man labor per bushel, hours	.26	.29	.27	.24	.32	.25
Total acres studied	1 560	1 513	1 213	2 246	1 819	1 661

Item	1932	1933	1934	1935	1936	1937
Growing costs per acre						
Man labor	$ 1.04	$ 1.02	$ 1.19	$ 1.16	$ 1.05	$ 1.06
Horse labor	1.05	.89	1.44	1.06	.85	.71
Tractor use	.77	1.03	1.07	1.22	1.38	1.46
Machinery	.60	.57	.82	.69	.66	.67
Seed	.21	.18	.21	.39	.93	.75
Fertilizer	1.22	1.17	.78	.85	1.03	.88
General farm expense		.99	1.19	1.32	1.27	1.38
Mi.....						.12
Total growing cost	$ 6.09	$ 5.85	$ 6.70	$ 6.69	$ 7.17	$ 7.03
Harvesting costs per acre						
Man labor	$ .84	$ .66	$ .74	$ 1.96	$ 1.27	$ 1.40
Horse labor	.61	.50	.72	1.11	1.06	.85
Tractor	.10	.06	.05	.10	.11	.43
Picker expense	.15	.11	.07	.10	.21	.51
Total harvesting cost	$ 1.70	$ 1.33	$ 1.58	$ 3.27	$ 2.65	$ 3.19
Total growing and harvesting costs per acre	$ 7.79	$ 7.18	$ 8.28	$ 9.96	$ 9.82	$10.22
Land charges per acre						
Taxes	$ 1.68	$ 1.39	$ 1.15	$ 1.18	$ 1.17	$ 1.32
Interest on land at 5 percent	6.82	6.91	6.84	6.82	6.49	6.65
Total acre-cost	$16.29	$15.48	$16.27	$17.96	$17.48	$18.19
Income per acre						
Grain	$ 6.32	$12.33	$19.05	$26.14	$30.13	$30.53
Pasture	.15	.57	.42	.51	.64	.60
Total acre-income	$ 6.47	$12.90	$19.47	$26.65	$30.77	$31.13
Net profit or loss per acre	$ −9.82	$ −2.58	$ 3.20	$ 8.69	$13.29	$12.94
Efficiency factors						
Net cost per bushel	$ .28	$ .41	$ .60	$ .30	$ .53	$ .29
Price per bushel	.11	.34	.72	.45	.95	.50
Net profit or loss per bushel	−.17	−.07	.12	.15	.42	.21
Yield per acre, bushels	57.4	36.3	26.5	58.1	31.6	60.8
Man labor per acre, hours	11.6	10.2	10.7	11.3	8.7	8.9
Horse labor per acre, hours	25.2	20.4	23.3	20.6	12.2	9.2
Tractor use per acre, hours	1.7	2.0	2.0	2.5	2.9	3.6
Man labor per bushel, hours	.20	.28	.40	.19	.27	.15
Total acres studied	2 743	3 696	1 113	2 092	1 012	3 091

Table 22.—Oats: Champaign and Piatt Counties, Cost of Production, Income, and Efficiency Factors, 1920-1937

Item	1920	1921	1922	1923	1924	1925
Growing and harvesting costs per acre						
Man labor	$ 2.06	$ 1.71	$ 1.33	$ 1.85	$ 1.84	$ 1.47
Horse labor	2.43	1.96	1.84	2.30	1.80	1.59
Tractor use	.18	.44	.23	.10	.15	.40
Machinery	.54	.62	.46	.53	.50	.47
Seed	2.49	1.04	1.04	1.26	1.20	1.34
Fertilizer					.92	.81
General farm expense	.29	.41	.20	1.33	1.30	.90
Twine	.38	.29	.20	.26	.30	.24
Threshing and fuel	1.56	.91	.82	1.03	1.40	.84
Miscellaneous				.01		.05
Total growing and harvesting costs	$ 9.93	$ 7.38	$ 6.12	$ 8.67	$ 9.41	$ 8.11
Land charges per acre						
Taxes	$ 1.81	$ 2.02	$ 1.94	$ 1.88	$ 1.92	$ 2.09
Interest on land at 5 percent	11.56	13.19	13.18	12.70	12.66	12.28
Total acre-cost	$23.30	$22.59	$21.24	$23.25	$23.99	$22.48
Income per acre						
Grain	$29.15	$ 7.87	$ 8.47	$11.06	$19.68	$11.76
Straw	3.19	2.43	1.74	1.65	1.57	1.29
Pasture	.53	1.04	.55	1.59	2.33	1.44
Total acre-income	$32.87	$11.34	$10.76	$14.30	$23.58	$14.49
Net profit or loss per acre	$ 9.57	$ -11.25	$ -10.48	$ -8.95	$ -.41	$ -7.99
Efficiency factors						
Net cost per bushel	$ .40	$ .58	$ .60	$ .54	$ .41	$ .65
Price per bushel	.60	.24	.27	.30	.40	.39
Net profit or loss per bushel	.20	- .34	- .33	- .24	- .01	- .26
Yield per acre, bushels	48.4	32.8	31.7	36.9	48.6	30.3
Man labor per acre, hours	6.5	7.0	6.4	7.7	7.5	5.6
Horse labor per acre, hours	11.0	12.3	12.2	14.2	13.0	10.4
Tractor use per acre, hours	.1	.3	.2	.1	.2	.5
Man labor per bushel, hours	.13	.21	.20	.21	.15	.18
Total acres studied	550	725	720	549	595	801

TABLE 22. — OATS: CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1920-1937 (CONTINUED)

Item	1926	1927	1928	1929	1930	1931
Growing costs per acre						
Man labor	$ .44	$ .43	$ .40	$ .35	$ .29	$ .23
Horse labor	.59	.40	.60	.54	.44	.29
Tractor use	.34	.31	.26	.30	.21	.20
Machinery	.22	.14	.17	.15	.15	.14
Seed	1.07	1.21	1.54	1.43	1.14	.90
Fertilizer	.59	.71	.77	.69	1.00	.71
General farm expense	1.28	.95	1.06	.89	.74	.96
Miscellaneous		.12	.21	.11		
Total growing cost	$ 4.53	$ 4.27	$ 5.01	$ 4.46	$ 3.97	$ 3.43
Harvesting costs per acre						
Man labor	$ 1.57	$ 1.49	$ 1.36	$ 1.36	$ 1.03	$ 1.28
Horse labor	.97	.94	.90	.87	.69	.84
Tractor use	.18	.15	.17	.18	.14	.21
Machinery	.26	.25	.29	.24	.40	.33
Twine	.36	.30	.27	.29	.22	.30
Threshing and fuel	1.04	.88	1.16	1.08	.85	.95
Combining						
Total harvesting cost	$ 4.38	$ 4.01	$ 4.15	$ 4.02	$ 3.33	$ 3.91
Total growing and harvesting costs per acre	$ 8.91	$ 8.28	$ 9.16	$ 8.48	$ 7.30	$ 7.34
Land charges per acre						
Taxes	$ 2.17	$ 2.14	$ 2.29	$ 1.81	$ 1.97	$ 2.05
Interest on land at 5 percent	10.87	10.24	9.11	9.09	9.23	9.04
Total acre-cost	$21.95	$20.66	$20.56	$19.38	$18.50	$18.43
Income per acre						
Grain	$12.50	$13.10	$12.99	$16.84	$11.10	$ 7.09
Straw	1.14	.84	1.06	1.63	1.07	1.38
Pasture	.88	.40	.74	1.30	.91	.74
Total acre-income	$14.52	$14.34	$14.79	$19.77	$13.08	$ 9.21
Net profit or loss per acre	$ -7.43	$ -6.32	$ -5.77	$ .39	$ -5.42	$ -9.22
Efficiency factors						
Net cost per bushel	$ .52	$ .60	$ .46	$ .39	$ .46	$ .34
Price per bushel	.33	.41	.32	.40	.31	.15
Net profit or loss per bushel	-.19	-.19	-.14	.01	-.15	-.19
Yield per acre, bushels	38.3	32.2	41.1	42.0	35.6	47.3
Man labor per acre, hours	7.2	6.5	6.3	6.1	5.2	7.0
Horse labor per acre, hours	11.6	10.2	10.8	9.8	8.6	10.4
Tractor use per acre, hours	.5	.6	.5	.6	.5	.7
Man labor per bushel, hours	.19	.20	.15	.15	.14	.15
Total acres studied	882	890	725	1 061	823	781

Table 22.—Oats: Champaign and Piatt Counties, Cost of Production, Income and Efficiency Factors, 1920-1937 (Concluded)

Item	1932	1933	1934	1935	1936	1937
Growing costs per acre						
Man labor	$ .19	$ .21	$ .21	$ .24	$ .26	$ .24
Horse labor	.19	.22	.27	.19	.29	.16
Tractor use	.16	.16	.26	.26	.36	.37
Machinery	.14	.13	.13	.17	.21	.25
Seed	.63	.75	1.15	1.44	1.29	1.56
Fertilizer	.48	.73	.40	.47	.74	.52
General farm expense	.69	.50	.47	.79	.79	.95
Miscellaneous	....	....	....	....	....	....
Total growing cost	$ 2.48	$ 2.70	$ 2.89	$ 3.56	$ 3.94	$ 4.05
Harvesting costs per acre						
Man labor	$ .86	$ .66	$ .54	$ 1.11	$ .92	$ 1.16
Horse labor	.41	.34	.36	.56	.56	.67
Tractor use	.21	.14	.17	.27	.30	.33
Twine	.22	.23	.09	.18	.13	.17
Threshing and fuel	.15	.12	.24	.65	.50	.74
Machinery	.49	.37	.25	.25	.23	.27
Combining	.06	.10	.06	.13	.23	.41
Total harvesting costs	$ 2.40	$ 1.96	$ 1.71	$ 3.15	$ 2.87	$ 3.75
Total growing and harvesting costs per acre	$ 4.88	$ 4.66	$ 4.60	$ 6.71	$ 6.81	$ 7.80
Land charges per acre						
Taxes	$ 1.76	$ 1.42	$ 1.13	$ 1.22	$ 1.13	$ 1.34
Interest on land at 5 percent	6.83	6.81	6.72	6.54	6.36	6.63
Total acre-cost	$13.47	$12.89	$12.45	$14.47	$14.30	$15.77
Income per acre						
Grain	$ 5.61	$ 6.22	$ 5.91	$ 9.51	$11.82	$15.59
Straw	.78	.57	.93	1.25	1.12	2.30
Pasture	.39	.31	.32	.67	.60	.52
Total acre-income	$ 6.78	$ 7.10	$ 7.16	$11.43	$13.54	$18.41
Net profit or loss per acre	$ -6.69	$ -5.79	$ -5.29	$ -3.04	$ - .76	$ 2.64
Efficiency factors						
Net cost per bushel	$ .24	$ .48	$ .76	$ .30	$ .34	$ .23
Price per bushel	.11	.25	.40	.23	.32	.28
Net profit or loss per bushel	- .13	- .23	- .36	- .07	- .02	.05
Yield per acre, bushels	51.0	25.0	14.7	41.4	37.0	55.6
Man labor per acre, hours	6.5	5.2	4.3	6.7	5.8	6.3
Horse labor per acre, hours	10.4	8.6	6.3	7.6	5.2	5.2
Tractor use per acre, hours	.7	.6	.7	1.1	1.3	1.4
Man labor per bushel, hours	.13	.21	.3	.2	.2	.11
Total acres studied	1 123	1 618	574	1 530	1 108	862

TABLE 23.—WINTER WHEAT (THRESHED): CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1920-1937

Item	1920	1921	1922	1923	1924	1925
Growing and harvesting costs per acre						
Man labor	$ 3.08	$ 3.22	$ 2.66	$ 2.55	$ 2.44	$ 2.27
Horse labor	3.82	3.71	4.24	3.19	2.70	2.75
Tractor use		1.99	.64	.63	1.10	.50
Machinery	.92	1.01	1.54	.79	.74	.72
Seed	3.03	2.94	1.70	1.40	1.27	1.88
Fertilizer					.81	.91
General farm expense	1.30	1.70	1.47	2.23	1.48	1.44
Miscellaneous				.04		
Twine	.31	.38	.27	.28	.31	.29
Threshing and fuel	1.43	1.46	.96	1.21	1.39	1.12
Total growing and harvesting costs	$13.89	$16.41	$13.48	$12.32	$12.24	$11.88
Land charges per acre						
Taxes	$ 1.81	$ 2.02	$ 1.94	$ 1.86	$ 1.86	$ 1.86
Interest on land at 5 percent	11.54	12.70	12.51	12.53	11.72	11.59
Total acre-cost	$27.24	$31.13	$27.93	$26.71	$25.82	$25.33
Income per acre						
Grain	$47.84	$25.63	$21.74	$19.09	$27.57	$26.99
Straw	1.89	2.38	2.43	.69	.61	.90
Pasture	.56	.44	1.05	1.08	1.82	.66
Total acre-income	$50.29	$28.45	$25.22	$20.86	$30.00	$28.55
Net profit or loss per acre	$23.05	$ -2.68	$ -2.71	$ -5.85	$ 4.18	$ 3.22
Efficiency factors						
Net cost per bushel	$ 1.35	$ 1.21	$ 1.10	$ 1.13	$ 1.01	$ 1.12
Price per bushel	2.61	1.10	.98	.87	1.19	1.28
Net profit or loss per bushel	1.26	-.11	-.12	-.26	.18	.16
Yield per acre, bushels	18.3	23.4	22.2	22.0	23.2	21.1
Man labor per acre, hours	10.1	12.2	12.4	11.0	10.1	9.2
Horse labor per acre, hours	19.7	21.6	27.7	19.0	19.0	20.1
Tractor use per acre, hours		.9	.5	.5	.5	.4
Man labor per bushel, hours	.55	.52	.56	.50	.44	.44
Total acres studied	102	143	405	757	281	400

Table 23.—WINTER WHEAT (THRESHED): CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME AND EFFICIENCY FACTORS, 1920-1937ᵃ (CONTINUED)

Item	1926	1927	1929	1930	1931	1932
Growing costs per acre						
Man labor	$ 1.04	$ 1.02	$ .77	$ .82	$ .53	$ .33
Horse labor	1.80	1.55	.86	1.12	.75	.30
Tractor use	.89	.75	.96	.73	.30	.52
Machinery	.59	.58	.47	.40	.30	.21
Seed	2.44	1.85	2.13	2.24	1.15	1.12
Fertilizer	.98	.72	.97	1.24	.84	1.33
General farm expense	1.98	1.67	1.36	1.18	1.27	.97
Miscellaneous		.10	1.21	.95	.11	
Total growing costs	$ 9.72	$ 8.24	$ 8.73	$ 8.68	$ 5.25	$ 4.78
Harvesting costs per acre						
Man labor	$ 2.11	$ 1.91	$ 2.00	$ 1.19	$ 1.40	$ .99
Horse labor	1.21	1.10	1.34	.82	.83	.41
Tractor use	.34	.16	.26	.22	.32	.31
Machinery	.27	.28	.30	.48	.42	.44
Twine	.32	.33	.35	.23	.30	.19
Threshing and fuel	1.23	1.06	1.38	1.06	1.12	.52
Total harvesting costs	$ 5.48	$ 4.84	$ 5.63	$ 4.00	$ 4.39	$ 2.86
Total growing and harvesting costs per acre	$15.20	$13.08	$14.36	$12.68	$ 9.64	$ 7.64
Land charges per acre						
Taxes	$ 2.25	$ 2.01	$ 1.79	$ 1.80	$ 1.82	$ 1.73
Interest on land at 5 percent	11.35	9.26	9.04	9.23	9.43	7.13
Total acre-cost	$28.80	$24.35	$25.19	$23.71	$20.89	$16.50
Income per acre						
Grain	$26.35	$24.69	$33.51	$16.11	$10.05	$12.00
Straw	.53	.54	.97	.77	1.04	.60
Pasture	1.19	.51	1.92	.64	.62	.22
Total acre-income	$28.07	$25.74	$36.40	$17.52	$11.71	$12.82
Net profit or loss per acre	$ − .73	$ 1.39	$11.21	$ −6.19	$ −9.18	$ −3.68
Efficiency factors						
Net cost per bushel	$ 1.30	$ 1.17	$ .82	$ 1.01	$ .71	$ .55
Price per bushel	1.26	1.23	1.23	.73	.37	.42
Net profit or loss per bushel	− .04	.06	.41	− .28	− .34	− .13
Yield per acre, bushels	20.9	20.0	27.3	22.1	27.2	28.5
Man labor per acre, hours	11.6	10.0	10.0	8.0	8.8	8.0
Horse labor per acre, hours	22.4	20.5	16.1	15.4	13.6	9.4
Tractor use per acre, hours	.6	.9	1.4	1.2	.9	1.5
Man labor per bushel, hours	.56	.50	.37	.36	.32	.28
Total acres studied	389	411	385	282	231	171

ᵃThe 1928 crop winterkilled.

Table 23.—WINTER WHEAT (Threshed): Champaign and Piatt Counties, Cost of Production, Income, and Efficiency Factors, 1920-1937 (Concluded)

Item	1933	1934	1935	1936
Growing costs per acre				
Man labor....................	$ .42	$ .42	$ .36	$ .63
Horse labor....................	.35	.29	.51	.34
Tractor use....................	.46	.49	.60	1.08
Machinery....................	.35	.31	.22	.38
Seed.........................	1.13	1.58	1.49	1.36
Fertilizer....................	1.32	.85	.70	1.25
General farm expense..........	.73	.80	1.11	2.18
Miscellaneous..................	.06	....	.04	.06
Total growing costs...........	$ 4.82	$ 4.74	$ 5.03	$ 7.28
Harvesting costs per acre				
Man labor....................	$ 1.03	$ 1.04	$ 1.75	$ 1.64
Horse labor....................	.48	.58	1.50	1.16
Tractor labor.................	.29	.32	.54	.31
Machinery....................	.34	.38	.36	.44
Twine.......................	.16	.19	.27	.23
Threshing and fuel............	.58	.68	1.00	.74
Total harvesting costs........	$ 2.88	$ 3.19	$ 5.42	$ 4.52
Total growing and harvesting costs per acre....................	$ 7.70	$ 7.93	$10.45	$11.80
Land charges per acre				
Taxes.......................	$ 1.36	$ 1.09	$ 1.18	$ 1.23
Interest on land at 5 percent.....	6.81	6.88	6.79	6.75
Total acre-cost..................	$15.87	$15.90	$18.42	$19.78
Income per acre				
Grain.......................	$18.00	$16.64	$18.13	$31.04
Straw.......................	.50	1.08	.95	.28
Pasture......................	.10	.25	1.56	....
Total acre-income............	$18.60	$17.97	$20.64	$31.32
Net profit or loss per acre...........	$ 2.73	$ 2.07	$ 2.22	$11.54
Efficiency factors				
Net cost per bushel.............	$ .68	$ .78	$ .70	$ .57
Price per bushel................	.80	.89	.80	.90
Net profit or loss per bushel.....	.12	.11	.10	.33
Yield per acre, bushels..........	22.5	18.7	22.7	34.5
Man labor per acre, hours.......	8.9	8.6	11.0	12.1
Horse labor per acre, hours......	13.4	10.6	14.1	13.3
Tractor use per acre, hours......	1.5	1.9	2.4	3.2
Man labor per bushel, hours.....	.40	.46	.48	.35
Total acres studied...............	231	314	79	76.5

TABLE 24.—WINTER WHEAT (COMBINED): CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1931-1937

Item	1931	1932	1933	1934	1935	1936	1937
Growing costs per acre							
Man labor	$ .43	$ .48	$ .36	$ .43	$ .47	$ .45	$ .46
Horse labor	.47	.58	.44	.46	.53	.28	.20
Tractor use	.47	.47	.35	.40	.50	.75	.74
Machinery	.35	.30	.23	.26	.30	.30	.28
Seed	1.12	1.12	.79	1.64	1.87	1.53	2.39
Fertilizer	.51	.80	1.06	.35	.80	.37	.69
General farm expense	.70	.63	.58	.58	.56	.52	.52
Miscellaneous	.49	.11	.06		.19	.17	.14
Total growing cost	$ 4.54	$ 4.49	$ 3.87	$ 4.12	$ 5.22	$ 4.37	$ 5.42
Harvesting costs per acre							
Man labor	$ .46	$ .26	$ .22	$ .32	$ .35	$ .30	$ .31
Horse labor	.29	.15	.09	.23	.16	.09	.05
Tractor use	.18	.22	.12	.18	.30	.33	.21
Combine	1.31	.73	1.16	1.01	1.14	1.08	.95
Total harvesting cost	$ 2.24	$ 1.36	$ 1.59	$ 1.74	$ 1.95	$ 1.80	$ 1.52
Total growing and harvesting costs per acre	$ 6.78	$ 5.85	$ 5.46	$ 5.86	$ 7.17	$ 6.17	$ 6.94
Land charges per acre							
Taxes	$ 1.86	$ 1.59	$ 1.42	$ 1.17	$ 1.13	$ 1.10	$ 1.19
Interest on land at 5 percent	9.51	7.20	7.00	7.09	7.01	6.74	6.87
Total acre-cost	$18.15	$14.64	$13.88	$14.12	$15.31	$14.01	$15.00
Income per acre							
Grain	$ 9.79	$ 8.05	$17.41	$15.87	$16.16	$24.32	$13.89
Pasture	.73	.38	.60	.27	1.43	.04	.61
Total acre-income	$10.52	$ 8.43	$18.01	$16.14	$17.59	$24.36	$14.50
Net profit or loss per acre	$ -7.63	$ -6.21	$ 4.13	$ 2.02	$ 2.28	$10.35	$ -.50
Efficiency factors							
Net cost per bushel	$ .66	$ .66	$ .61	$ .78	$ .69	$ .51	$ 1.14
Price per bushel	.37	.37	.80	.89	.80	.90	1.09
Net profit or loss per bushel	-.29	-.29	.19	.11	.11	.39	-.05
Yield per acre, bushels	26.5	21.6	21.8	17.8	20.2	27.2	12.7
Man labor per acre, hours	3.5	3.8	3.6	4.3	2.8	3.9	3.8
Horse labor per acre, hours	6.3	6.8	7.7	8.4	5.0	3.5	1.9
Tractor use per acre, hours	1.0	1.3	1.0	1.2	1.6	1.8	2.1
Man labor per bushel, hours	.14	.18	.16	.24	.14	.14	.28
Total acres studied	224	203	355	196	222	200	481

EFFICIENCY FACTORS, 1922-1934

Item	1922[a]	1923[a]	1924[a]	1925[a]	1926	1927	1928	1929	1930	1931	1932	1933	1934
Growing costs per acre													
Man labor	$ 2.69	$ 2.98	$ 2.92	$ 2.93	$ 1.50	$ 1.73	$ 1.31	$ 1.29	$ 1.34	$ 1.12	$ .63	$ .64	$ .75
Horse labor	5.10	4.72	4.11	3.55	2.14	1.82	1.97	1.70	1.91	1.99	.95	.34	.79
Tractor labor	.46	.60	.77	1.32	.68	1.15	.70	1.34	.81	.74	.48	.94	.67
Machinery	1.06	1.06	1.19	1.14	.86	.74	.66	.68	.40	.38	.37	.28	.33
Seed	1.85	2.26	2.59	2.40	3.04	2.70	3.22	3.42	2.94	1.45	.74	1.74	2.22
Fertilizer			.36	.62	.35	.40	.59	.38	.43	.72	.30	.56	.33
General farm expense	1.72	1.82	1.82	2.11	1.61	1.74	2.41	1.72	1.57	1.88	.99	.68	1.15
Miscellaneous					.01	.01	.32	.23					
Total growing cost	$	$	$	$	$10.19	$10.29	$11.18	$10.76	$ 9.40	$ 8.28	$ 4.46	$ 5.18	$ 6.24
Harvesting costs per acre													
Man labor	$	$	$	$	$ 1.30	$ 1.49	$ 2.01	$ 1.57	$ 1.36	$ 1.65	$ 1.25	$ .67	$ 1.00
Horse labor					.97	1.02	1.23	1.21	1.07	1.27	.70	.38	.72
Tractor labor					.05	.23	.19	.20	.12	.26	.50	.19	.41
Machinery					.31	.30	.47	.28	.29	.34	.24	.16	.61
Twine	.31	.24	.33	.34	.27	.23	.36	.34	.25	.31	.12	.13	.22
Threshing and fuel	1.32	1.47	1.87	2.84	1.95	1.61	2.39	2.59	2.15	1.52	.66	.78	1.03
Total harvesting cost	$	$	$	$	$ 4.85	$ 4.88	$ 6.65	$ 6.19	$ 5.24	$ 5.35	$ 3.47	$ 2.31	$ 3.99
Total growing and harvesting costs per acre	$14.51	$15.15	$15.96	$17.25	$15.04	$15.17	$17.83	$16.95	$14.64	$13.63	$ 7.93	$ 7.49	$10.23
Land charges per acre													
Taxes	$ 1.94	$ 1.79	$ 1.89	$ 2.03	$ 2.01	$ 2.14	$ 2.28	$ 1.79	$ 1.81	$ 1.88	$ 1.83	$ 1.27	$ .97
Interest on land at 5 percent	12.59	12.44	11.65	11.03	9.58	10.46	9.34	9.18	8.87	9.00	6.60	6.48	6.75
Total acre-cost	$29.04	$29.38	$29.50	$30.31	$26.63	$27.77	$29.45	$27.92	$25.32	$24.51	$16.36	$15.24	$17.95
Income per acre													
Grain	$17.64	$27.09	$24.35	$24.99	$17.56	$18.31	$25.56	$35.25	$20.68	$ 7.46	$ 9.61	$11.35	$19.53
Straw	5.58	4.64	3.60	3.32	1.68	1.50	3.89	1.35	.93	1.10	.73	.41	.96
Pasture	1.14	.11	.31	1.43	.03	.33		.80	.52	.03	.13	.03	.03
Total acre-income	$24.36	$31.84	$28.26	$29.74	$19.27	$20.14	$29.45	$37.40	$22.13	$ 8.59	$10.47	$11.79	$20.52
Net profit or loss per acre	$ -4.68	$ 2.46	$ -1.24	$ -.57	$ -7.36	$ -7.63	$	$ 9.48	$ -3.19	$-15.92	$ -5.89	$ -3.45	$ 2.57
Efficiency factors													
Net cost per bushel	$ 1.46	$ 1.40	$ 1.57	$ 1.25	$ 1.84	$ 1.69	$ 1.16	$ 1.05	$ 1.15	$ .91	$ .64	$ .78	$ .64
Price per bushel	1.15	1.54	1.49	1.22	1.30	1.19	1.16	1.43	1.00	.29	.40	.60	.74
Net profit or loss per bushel	-.31	.14	-.08	-.03	-.54	-.50		.38	-.15	-.62	-.24	-.18	.10
Yield per acre, bushels	15.3	17.6	16.3	20.5	13.5	15.4	22.0	24.6	20.7	25.7	24.0	18.9	26.4
Man labor per acre, hours	13.9	12.2	14.2	11.8	10.4	10.9	11.8	10.4	11.2	13.1	11.4	7.9	10.2
Horse labor per acre, hours	31.4	27.0	28.8	26.8	25.5	22.8	22.8	20.3	27.2	29.3	26.4	12.7	18.2
Tractor use per acre, hours	.7	.5	.9	1.5	1.0	1.8	1.5	1.7	1.2	1.2	1.0	2.0	2.1
Man labor per bushel, hours	.91	.69	.87	.58	.77	.71	.54	.42	.54	.51	.48	.42	.39
Total acres studied	183	217	253	96	152	156	65	173	172	231	89	143	86

[a]No attempt was made to separate harvesting from growing costs these years.

Table 26.—SOYBEANS (Combined): Champaign and Piatt Counties, Cost of Production, Income, and Efficiency Factors, 1930-1937

Item	1930	1931	1932	1933	1934	1935	1936	1937
Growing costs per acre								
Man labor	$ 1.22	$ .79	$ .62	$ .63	$ .52	$ .58	$ .62	$ .62
Horse labor	1.73	.66	.54	.38	.53	.32	.28	.14
Tractor use	1.29	1.13	.75	1.01	.70	1.02	1.01	1.00
Machinery	.51	.54	.41	.30	.40	.45	.48	.48
Seed	2.92	1.35	.85	1.71	2.11	1.89	1.85	4.09
Fertilizer	.37	.24	.35	.36	.23	.28	.25	.24
General farm expense	1.57	1.18	.87	.54	.53	.54	.61	.74
Miscellaneous	.13	.22		.03	.01	.04	.17	.12
Total growing cost	$ 9.74	$ 6.11	$ 4.39	$ 4.96	$ 5.03	$ 5.12	$ 5.27	$ 7.43
Harvesting costs per acre								
Man labor	$ .42	$ .36	$ .26	$ .21	$ .28	$ .29	$ .19	$ .30
Horse labor	.21	.17	.10	.09	.16	.10	.04	.07
Tractor use	.25	.21	.24	.22	.14	.22	.18	.25
Combine	2.73	1.36	1.12	1.18	1.37	1.28	1.48	1.51
Total harvesting costs	$ 3.61	$ 2.10	$ 1.72	$ 1.70	$ 1.95	$ 1.89	$ 1.89	$ 2.13
Total growing and harvesting costs per acre	$13.35	$ 8.21	$ 6.11	$ 6.66	$ 6.98	$ 7.01	$ 7.16	$ 9.56
Land charges per acre								
Taxes	$ 1.80	$ 1.85	$ 1.54	$ 1.30	$ 1.13	$ 1.18	$ 1.16	$ 1.27
Interest on land at 5 percent	9.24	9.13	7.20	7.09	6.78	6.79	6.70	6.65
Total acre-cost	$24.39	$19.19	$14.85	$15.05	$14.89	$14.98	$15.02	$17.48
Income per acre								
Grain	$20.45	$ 7.18	$12.47	$13.79	$19.42	$18.53	$23.63	$20.51
Pasture	.63	.19	.04	.08	.01	.01	.02	.09
Total acre-income	$21.08	$ 7.37	$12.51	$13.87	$19.43	$18.54	$23.65	$20.60
Net profit or loss per acre	$ −3.31	$ −11.82	$ −2.34	$ −1.18	$ 4.54	$ 3.56	$ 8.63	$ 3.12
Efficiency factors								
Net cost per bushel	$ 1.16	$ .77	$ .47	$ .65	$ .57	$ .52	$ .64	$ .68
Price per bushel	1.00	.29	.40	.60	.74	.65	1.00	.80
Net profit or loss per bushel	−.16	−.48	−.07	−.05	.17	.13	.36	.12
Yield per acre, bushels	20.5	24.8	31.2	23.0	26.3	28.5	23.6	25.6
Man labor per acre, hours	6.6	5.2	5.6	5.1	4.6	4.4	4.1	3.9
Horse labor per acre, hours	12.5	7.0	9.1	7.1	7.2	3.8	2.4	1.3
Tractor use per acre, hours	2.3	2.3	1.8	2.6	1.5	2.4	2.3	2.2
Man labor per bushel, hours	.32	.21	.18	.22	.18	.15	.17	.15
Total acres studied	248	472	484	842	840	941	638	1 922

TABLE 27.—SOYBEAN HAY: CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1923-1937

Item	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923
Growing costs per acre															
Man labor	$ .48	$ .75	$ .64	$ .51	$ .68	$ .71	$ .99	$ 1.55	$ 1.47	$ 1.43	$ 1.30	$ 1.92	$ 3.88	$ 3.49	$ 4.42
Horse labor	.27	.52	.45	.55	.69	.92	1.59	2.76	2.85	2.19	1.60	2.54	3.54	3.40	5.53
Tractor use	.74	.68	.91	.62	.67	.58	.67	1.15	.89	1.19	.95	1.05	.84	1.93	.73
Machinery	.40	.41	.43	.38	.36	.44	.45	.37	.77	.77	.58	1.12	1.67	2.30	1.80
Seed	3.27	1.81	1.99	1.86	1.64	.81	1.53	3.04	3.69	2.77	3.12	2.89	2.24	2.66	2.42
Fertilizer	.27	.42	.28	.29	.51	.53	.64	.51	.49	.49	.24	.34	.53	.83	
General farm expense	2.21	1.41	1.91	1.30	1.28	1.42	1.63	2.32	2.49	2.19	1.59	2.36	2.18	2.37	2.72
Miscellaneous								.04		.18					
Total growing cost	$ 7.64	$ 6.00	$ 6.61	$ 5.51	$ 5.83	$ 5.41	$ 7.50	$11.74	$12.65	$11.22	$ 9.38	$12.22	$14.88	$16.98	$17.62
Harvesting costs per acre															
Man labor	$ 2.91	$ 1.74	$ 3.03	$ 1.68	$ 1.55	$ 2.19	$ 2.43	$ 3.09	$ 4.04	$ 3.02	$ 2.27	$ 2.35	$	$	$ ....
Horse labor	1.68	1.24	1.42	1.00	.59	.85	1.35	1.74	2.15	1.46	1.11	1.06			
Tractor use	.09	.03	.02	.01	.03	.09		.05							
Machinery	.83	.68	.70	.42	.83	1.16	.76	.91	1.53	1.12	1.06	1.59			
Total harvesting cost	$ 5.51	$ 3.69	$ 5.17	$ 3.11	$ 3.00	$ 4.29	$ 4.54	$ 5.79	$ 7.72	$ 5.60	$ 4.44	$ 5.00	$	$	$ ....
Total growing and harvesting costs per acre	$13.15	$ 9.69	$11.78	$ 8.62	$ 8.83	$ 9.70	$12.04	$17.53	$20.37	$16.82	$13.82	$17.22	$14.88	$16.98	$17.62
Land charges per acre															
Taxes	$ 1.07	$ 1.21	$ 1.23	$ 1.15	$ 1.45	$ 1.75	$ 1.95	$ 1.79	$ 1.80	$ 2.09	$ 1.86	$ 1.87	$ 2.07	$ 2.10	$ 2.02
Interest on land at 5 percent	5.26	6.35	6.66	6.59	7.01	6.96	9.25	8.68	8.93	8.73	9.09	9.25	10.80	13.12	12.39
Total acre-cost	$19.48	$17.25	$19.67	$16.36	$17.29	$18.41	$23.24	$28.00	$31.10	$27.64	$24.77	$28.34	$27.75	$32.20	$32.03
Income per acre															
Hay	$17.57	$10.47	$19.07	$22.61	$11.45	$ 9.73	$18.58	$24.32	$43.20	$17.48	$13.42	$21.10	$17.70	$10.12	$14.30
Pasture							.09	.96				.74	.08	.10	1.43
Total acre-income	$17.57	$10.47	$19.07	$22.61	$11.45	$ 9.73	$18.67	$25.28	$43.20	$17.48	$13.42	$21.84	$17.78	$10.22	$15.73
Net profit or loss per acre	$−1.91	$−6.78	$− .60	$ 6.25	$−5.84	$−8.68	$−4.57	$−2.72	$12.10	$−10.16	$−11.35	$−6.50	$−9.97	$−21.98	$−16.30
Efficiency factors															
Net cost per ton	$10.53	$14.87	$ 8.26	$10.16	$10.81	$ 7.67	$10.07	$16.90	$10.37	$17.28	$15.48	$19.71	$21.29	$21.54	$16.54
Price per ton	9.50	9.03	8.01	14.04	7.16	4.06	8.08	15.20	14.40	10.93	8.39	15.07	13.62	6.79	7.73
Net profit or loss per ton	−1.03	−5.84	− .25	3.88	−3.65	−3.61	−1.99	−1.70	4.03	−6.35	−7.09	−4.64	−7.67	−14.75	−8.81
Yield per acre, tons	1.8	1.2	2.4	1.6	1.6	2.4	2.3	1.6	3.0	1.6	1.6	1.4	1.3	1.5	1.85
Man labor per acre, hours	15.0	12.2	17.5	12.7	13.9	18.1	16.1	19.0	20.0	16.3	12.0	15.2	15.0	13.7	18.6
Horse labor per acre, hours	13.8	13.6	17.3	16.6	19.2	26.0	26.3	28.5	29.2	25.9	19.9	30.4	35.0	22.8	36.8
Tractor use per acre, hours	1.6	1.6	1.6	1.6	1.4	1.7	1.4	1.7	1.3	1.3	1.3		1.4	1.4	.6
Man labor per ton, hours	8.1	10.5	7.4	7.9	8.5	7.5	7.0	11.9	6.7	10.2	7.6	10.9	12.2	9.1	10.0
Total acres studied	132	29	71	60	161	124	157	100	70	47	40	38	28	22	80

TABLE 28.—ALFALFA HAY: CHAMPAIGN AND PIATT COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1921-1937

Item	1921-1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Growing and harvesting costs per acre										
Man labor	$ 3.91	$ 3.02	$ 2.82	$ 3.68	$ 3.34	$ 1.79	$ 3.03	$ 3.16	$ 2.47	$ 2.59
Horse labor	2.98	2.10	2.50	2.54	1.44	1.01	2.46	2.51	1.98	2.13
Tractor use	...	.27	.33	...	.29	.01	...	.42	.43	.42
Seed	3.03	.67	.68	1.76	1.67	.12	.79	1.72	1.36	.67
Machinery	1.84	2.10	1.32	1.56	1.66	1.08	.81	1.23	.95	1.27
Fertilizer	.46	.36	.45	.59	.48	.20	.87	.83	.80	.52
General farm expense	2.32	2.05	2.21	2.98	2.44	1.12	1.90	1.91	1.37	1.66
Miscellaneous	.08	.16	.41	...	...	.06	.07	...	.13	...
Total growing and harvesting costs	$14.62	$10.73	$10.72	$13.11	$11.32	$ 5.39	$ 9.93	$11.78	$ 9.49	$ 9.26
Land charges per acre										
Taxes	$ 2.01	$ 1.65	$ 1.72	$ 1.87	$ 1.79	$ 1.43	$ 1.16	$ 1.19	$ 1.26	$ 1.41
Interest on land at 5 percent	11.57	9.35	9.25	8.77	6.94	6.84	6.83	6.89	7.20	6.62
Total acre-cost	$28.20	$21.73	$21.69	$23.75	$20.05	$13.66	$17.92	$19.86	$17.95	$17.29
Income per acre										
Hay	$29.14	$32.44	$21.45	$26.24	$16.73	$19.32	$30.78	$21.81	$15.84	$22.83
Pasture	3.24	.35	.62	.46	.45	.27	.80	.52	.79	.07
Seed	...	...	...	...	...	.95	.82	...	1.82	...
Total acre-income	$32.38	$32.79	$22.07	$26.70	$17.18	$20.54	$32.40	$22.33	$18.45	$22.90
Net profit or loss per acre	$ 4.18	$11.06	$ .38	$ 2.95	$-2.87	$ 6.88	$14.48	$ 2.47	$ .50	$ 5.61
Efficiency factors										
Net cost per ton	$12.48	$10.69	$17.56	$ 9.70	$ 7.00	$ 5.79	$ 8.49	$ 7.99	$10.09	$ 9.49
Price per ton	14.57	16.22	17.88	10.93	5.98	8.99	16.03	9.01	10.42	12.54
Net profit or loss per ton	2.09	5.53	.32	1.23	-1.02	3.20	7.54	1.02	.33	3.05
Yield per acre, tons	2.0	2.0	1.2	2.4	2.8	2.2	1.9	2.4	1.5	1.8
Man labor per acre, hours	15.4	11.1	11.5	17.7	21.0	11.5	18.2	15.9	11.9	11.2
Horse labor per acre, hours	19.2	12.8	15.4	22.3	24.2	14.8	24.1	17.1	13.6	11.9
Tractor use per acre, hours	...	.4	.6	...	.8	-.1	-.1	.9	.9	.8
Man labor per ton, hours	7.66	5.50	9.58	7.38	7.50	5.35	9.46	6.57	7.80	6.16
Total acres studied	88	48	28	46	62	71	36	44	20	149

Table 29.—CLOVER HAY: Champaign and Piatt Counties, Cost of Production, Income, and Efficiency Factors, 1920-1937

Item	1920-1922	1923-1925	1926-1928	1930-1932	1933-1935	1936
Growing and harvesting costs per acre						
Man labor	$ 1.88	$ 2.65	$ 3.76	$ 1.88	$ 1.74	$ 1.63
Horse labor	1.62	1.95	1.77	1.17	1.11	1.58
Tractor use			.03	.07	.18	.16
Seed	2.79	2.01	1.71	1.94	.39	1.95
Machinery	.67	1.15	.90	.62	.38	.41
Fertilizer		.60	.70	.23	.08	.37
Hulling				1.30		.04
General farm expense	.90	1.83	1.88	1.30	.48	
Miscellaneous	1.34			.59	.90	.96
Total growing and harvesting costs	$ 9.20	$10.19	$10.75	$ 9.10	$ 5.26	$ 7.10
Land charges per acre						
Taxes	$ 1.97	$ 1.78	$ 2.04	$ 1.80	$ 1.27	$ 1.19
Interest on land at 5 percent	12.18	13.35	10.50	8.25	7.18	6.46
Total acre-cost	$23.35	$25.32	$23.29	$19.15	$13.71	$14.75
Income per acre						
Hay	$ 8.94	$16.38	$15.69	$ 8.46	$10.03	$ 8.49
Seed	5.61		.67	4.38	3.27	.29
Hulls	.52					
Pasture	1.69	1.83	.50	.18	.32	
Total acre-income	$16.76	$18.21	$16.86	$13.02	$13.62	$ 8.78
Net profit or loss per acre	$− 6.59	$− 7.11	$− 6.43	$− 6.13	$ − .09	$− 5.97
Efficiency factors						
Net cost per ton	$16.01	$14.50	$11.17	$12.36	$ 8.36	$15.55
Price of hay per ton	9.22	10.11	7.92	7.17	8.29	9.13
Price of seed per bushel	11.44		8.38	3.71	7.43	9.69
Price of hullings per ton	3.47					
Net profit or loss per ton	−6.79	−4.39	−3.25	−5.19	−.07	−6.42
Yield per acre—hay, tons	.97	1.62	1.98	1.18	1.21	.93
seed, bushels	.49		.08	1.16	.44	.03
hulls, tons	.15					
Man labor per acre, hours	7.3	11.00	13.0	9.0	9.7	7.8
Horse labor per acre, hours	9.3	13.5	14.4	12.0	11.6	8.1
Man labor per ton, hours	7.5	6.8	6.6	7.6	8.0	8.4
Total acres studied	470	112	185	179	518	91

TABLE 30.—TIMOTHY HAY: CHAMPAIGN AND PIATT COUNTIES, COST OF
PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1920-1935

Item	1920-1922	1923-1925	1926-1928	1929-1930 1932	1933-1935
Growing and harvesting costs per acre					
Man labor................	$ .91	$ 1.81	$ 1.67	$ 1.16	$ 1.31
Horse labor..............	.86	1.64	1.24	1.25	.40
Tractor use..............	.....	.....	.....	.21	.21
Seed....................	.05	.....	.44	.29	.....
Machinery...............	.39	.90	.78	.97	1.14
Fertilizer................	.11	.26	.32	.11	.07
Threshing...............	.05	.....	.....	.42	.60
General farm expense......	.86	1.52	1.19	1.11	.69
Miscellaneous...........	.01	.61	.....	.....	.....
Total growing and harvesting costs....	$ 3.24	$ 6.74	$ 5.64	$ 5.52	$ 4.42
Land charges per acre					
Taxes...................	$ 1.69	$ 1.96	$ 1.88	$ 1.79	$ 1.50
Interest on land at 5 percent	9.61	12.54	11.38	8.44	6.73
Total acre-cost..............	$14.54	$21.24	$18.90	$15.75	$12.65
Income per acre					
Hay.....................	$ 6.51	$12.78	$16.05	$ 6.45	$ 6.43
Seed....................	1.16	.....	.....	1.26	4.20
Hulls...................	.13	.....	.....	.....	.....
Pasture.................	4.84	2.29	2.44	1.96	.45
Total acre-income.......	$12.64	$15.07	$18.49	$ 9.67	$11.08
Net profit or loss per acre.....	$−1.90	$−6.17	$−.41	$−6.08	$−1.57
Efficiency factors					
Net cost per ton..........	$15.57	$18.95	$14.70	$19.58	$ 7.55
Price of hay per ton.......	12.05	12.78	14.33	10.08	6.07
Price seed per bushel......	2.15	.....	.....	1.00	1.50
Price hullings per ton......	.24	.....	.....	.....	.....
Net profit or loss per ton..	−3.52	−6.17	−.37	−9.50	−1.48
Yield per acre—hay, tons...	.54	1.00	1.12	.64	1.06
seed, bushels[a]	.4	.....	.....	4.3	4.6
Man labor per acre, hours..	3.95	7.84	6.16	4.6	7.7
Horse labor per acre, hours	5.17	9.67	8.81	6.6	6.3
Tractor use per acre, hours	.....	.....	.....	.28	.72
Man labor per ton, hours..	7.3	7.8	5.5	7.2	7.2
Total acres studied...........	370	113	96	68	33

[a]For area harvested.

TABLE 31.—CORN: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1928

Item	Washington, Clinton, and Madison counties		Clinton county		
	1924	1925	1926	1927	1928
Growing costs per acre					
Man labor.............	$ 4.96	$ 4.36	$ 3.28	$ 3.28	$ 2.50
Horse labor............	5.54	5.20	3.98	3.60	2.86
Tractor use............	1.08	.84	.50	.58	.75
Seed..................	.23	.27	.15	.40	.28
Machinery.............	1.64	1.70	1.03	1.25	.87
Manure................	2.26	3.44	2.33	3.70	3.48
General farm expense.....	1.38	1.17	1.64	2.31	1.83
Miscellaneous...........	.....	.08	.45	.13	.51
Total growing cost.....	$17.09	$17.06	$13.36	$15.25	$13.08
Harvesting cost per acre					
Man labor.............	$.....	$.....	$ 1.56	$ 2.10	$ 1.92
Horse labor............	.....	.....	.95	1.33	1.47
Total harvesting cost...	$.....	$.....	$ 2.51	$ 3.43	$ 3.39
Total growing and harvesting costs per acre...........	$17.09	$17.06	$15.87	$18.68	$16.47
Land charges per acre					
Taxes.................	$ .64	$ .65	$ .75	$ .65	$ .77
Interest on land at 5 percent	3.70	3.26	3.27	3.85	3.73
Total acre-cost.............	$21.43	$20.97	$19.89	$23.18	$20.97
Income per acre					
Grain.................	$31.80	$21.98	$ 8.49	$19.27	$25.03
Roughage..............	.....	.....	.56	.07	.04
Pasture...............	.....	.02	.35	.67	.31
Total acre-income......	$31.80	$22.00	$ 9.40	$20.01	$25.38
Net profit or loss per acre....	$10.37	$ 1.03	$−10.49	$−3.17	$ 4.41
Efficiency factors					
Net cost per bushel......	$ .67	$ .57	$ 1.09	$ .74	$ .57
Price per bushel.........	.99	.60	.49	.64	.70
Net profit or loss per bushel	.32	.03	−.60	−.10	.13
Yield per acre, bushels....	32.0	36.7	17.4	30.3	35.9
Man labor per acre, hours	21.9	20.4	19.5	24.1	22.2
Horse labor per acre, hours	41.2	39.8	39.5	44.7	38.0
Tractor labor per acre, hours...............	.8	.8	.5	.6	.8
Man labor per bushel, hours	.68	.55	1.11	.79	.62
Total acres studied..........	207	309	351	262	472

TABLE 32.—OATS: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1928

Item	Washington, Clinton, and Madison counties			Clinton county	
	1924	1925	1926	1927	1928
Growing cost per acre[a]					
Man labor................	$ 2.78	$ 2.26	$ 1.31	$ 1.41	$ 1.06
Horse labor..............	2.84	2.64	2.18	2.24	1.52
Tractor use..............	.58	.44	.25	.11	.50
Seed....................	1.25	1.62	1.31	1.52	1.51
Machinery...............	.80	.91	.44	.43	.41
Twine...................	.27	.21	.....	.....	.....
Fuel....................	.07	.05	.....	.....	.....
Threshing...............	1.08	.77	.....	.....	.....
Manure.................	1.69	2.86	2.56	2.51	2.48
General farm expense......	.71	.61	.85	1.07	1.07
Miscellaneous............	.....	.....	.....	.....	.....
Total growing cost......	$12.07	$12.37	$ 8.90	$ 9.29	$ 8.55
Harvesting costs per acre					
Man labor................	$.....	$.....	$ 1.05	$ 1.25	$ 1.39
Horse labor..............	.....	.....	.76	.73	.74
Tractor use..............	.....	.....	.....	.....	.15
Twine...................	.....	.....	.19	.27	.28
Threshing...............	.....	.....	.89	.73	1.52
Fuel....................	.....	.....	.08	.10	.10
Machinery...............	.....	.....	.27	.30	.34
Total harvesting cost....	$.....	$.....	$ 3.24	$ 3.38	$ 4.52
Total growing and harvesting costs per acre............	$12.07	$12.37	$12.14	$12.67	$13.07
Land charges per acre					
Taxes...................	$ .67	$ .66	$ .83	$ .73	$ .78
Interest on land at 5 percent	3.61	3.42	4.02	3.96	3.90
Total acre-cost..............	$16.35	$16.45	$16.99	$17.36	$17.75
Income per acre					
Grain...................	$15.92	$11.85	$10.22	$ 9.12	$15.17
Roughage...............	1.84	.78	1.81	1.32	1.25
Pasture.................	.41	.05	.10	.09	.14
Total acre-income.......	$18.17	$12.68	$12.13	$10.53	$16.56
Net profit or loss per acre.....	$ 1.82	$ -3.77	$ -4.86	$ -6.83	$ -1.19
Efficiency factors					
Net cost per bushel.......	$ .44	$ .59	$ .69	$ .88	$ .41
Price per bushel..........	.50	.45	.47	.50	.38
Net profit or loss per bushel	.06	-.14	-.22	-.38	-.03
Yield per acre, bushels.....	31.8	26.3	21.8	18.2	39.9
Man labor per acre, hours..	12.3	10.5	9.4	12.0	11.4
Horse labor per acre, hours	22.7	21.5	22.5	26.1	20.0
Tractor use per acre, hours	.4	.3	.2	.1	.8
Man labor per bushel, hours	.39	.40	.43	.66	.29
Total acres studied..........	277	298	305	220	529

[a]The figures for 1924 and 1925, Washington, Clinton, and Madison counties are for growing and harvesting.

TABLE 33.—WHEAT: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1928

Item	Washington, Clinton, and Madison counties		Clinton county		
	1924	1925	1926	1927	1928
Growing costs per acre[a]					
Man labor................	$ 3.00	$ 2.67	$ 1.28	$ 1.33	$ 1.34
Horse labor..............	3.89	2.97	2.48	1.88	1.83
Tractor use..............	.16	.31	.44	.33	.50
Seed....................	1.56	1.84	2.20	1.85	1.81
Machinery...............	.42	.82	.63	.41	.41
Twine...................	.16	.28	.....	.....	.....
Fuel....................	.05	.09	.....	.....	.....
Threshing...............	.56	1.18	.....	.....	.....
Manure..................	2.37	2.68	2.68	3.20	2.75
General farm expense......	.31	.60	.93	.99	.73
Miscellaneous............	.....	.....	.....	.....	.....
Total growing cost......	$12.48	$13.44	$10.64	$ 9.99	$ 9.37
Harvesting costs per acre					
Man labor................	$.....	$.....	$ 1.59	$ 1.26	$ .55
Horse labor..............	.....	.....	.94	.71	.35
Tractor labor............	.....	.....	.03	.02	.....
Twine...................	.....	.....	.30	.29	.08
Threshing...............	.....	.....	1.36	1.05	.29
Fuel....................	.....	.....	.09	.09	.04
Machinery...............	.....	.....	.25	.25	.18
Total harvesting cost....	.....	.....	$ 4.56	$ 3.67	$ 1.49
Total growing and harvesting costs per acre...........	$12.48	$13.44	$15.20	$13.66	$10.86
Land charges per acre					
Taxes...................	$ .61	$ .71	$ .72	$ .70	$ .71
Interest on land at 5 percent	3.55	3.67	4.13	3.96	4.18
Total acre-cost..............	$16.64	$17.82	$20.05	$18.32	$15.75
Income per acre					
Grain...................	$11.01	$25.59	$26.72	$19.80	$ 6.24
Roughage...............	1.31	1.32	.47	.62	.12
Pasture.................	2.10	.46	.34	.95	.80
Total acre-income.......	$14.42	$27.37	$27.53	$21.37	$ 7.16
Net profit or loss per acre.....	$−2.22	$ 9.55	$ 7.48	$ 3.05	$−8.59
Efficiency factors					
Net cost per bushel.......	$ 1.49	$ .93	$ .97	$ 1.07	$ 3.21
Price per bushel..........	1.24	1.48	1.34	1.27	1.35
Net profit or loss per bushel	−.25	.55	.37	.20	−1.86
Yield per acre, bushels.....	8.9	17.3	19.9	15.6	4.6
Man labor per acre, hours..	12.3	12.0	12.0	13.3	8.8
Horse labor per acre, hours	30.5	25.0	25.9	23.1	22.9
Tractor labor per acre, hours	.2	.3	.3	.4	.5
Man labor per bushel, hours	1.39	.69	.60	.85	1.91
Total acres studied...........	455	550	629	899	178

[a]The figures for 1924 and 1925, Washington, Clinton and Madison counties are for growing and harvesting.

TABLE 34.—CLOVER HAY: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1928

Item	Washington, Clinton, and Madison counties		Clinton county		
	1924	1925	1926	1927	1928
Growing and harvesting costs per acre					
Man labor..............	$ 2.52	$ 1.33	$ 1.46	$ 2.10	$ 2.26
Horse labor.............	1.81	.85	.96	1.28	1.48
Tractor use.............	.....	.....	.....	.....	.06
Seed...................	2.64	2.24	2.39	2.48	2.71
Machinery..............	.66	.30	.85	.87	.83
Manure................	1.85	2.72	1.91	1.93	2.04
General farm expense......	.84	.37	.52	.82	1.01
Miscellaneous...........	.48	.05	.22	.20	.72
Total growing and harvesting costs....	$10.80	$ 7.86	$ 8.31	$ 9.68	$11.11
Land charges per acre					
Taxes..................	$ .74	$ .67	$ .68	$ .69	$ .74
Interest on land at 5 percent	4.49	3.69	4.30	4.31	4.02
Total acre-cost..............	$16.03	$12.22	$13.29	$14.68	$15.87
Income per acre					
Hay...................	$18.05	$11.02	$10.75	$20.17	$19.95
Pasture.................	3.78	.20	.47	.63	1.07[a]
Seed...................	.....	.20	2.01	1.24	4.01
Total acre-income.......	$21.83	$11.42	$13.23	$22.04	$25.03
Net profit or loss per acre.....	$ 5.80	$ —.80	$ —.06	$ 7.36	$ 9.16
Efficiency factors					
Net cost per ton..........	$ 8.95	$16.19	$20.45	$10.57	$ 8.13
Price per ton............	13.18	15.09	20.38	16.80	15.00
Net profit or loss per ton...	4.23	—1.10	—.07	6.23	6.87
Yield per acre, tons.......	1.37	.73	.52	1.19	1.33
Man labor per acre, hours..	11.5	6.4	5.8	9.2	10.4
Horse labor per acre, hours	15.5	7.5	7.8	12.2	13.4
Man labor per ton, hours..	.8	.9	11.2	7.7	7.8
Total acres studied...........	138	191	148	165	208

[a]Includes $.89 of clover straw.

TABLE 35.—ALFALFA: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND
EFFICIENCY FACTORS, 1925-1928

Item	Washington, Clinton, and Madison counties 1925	Clinton county		
		1926	1927	1928
Growing and harvesting costs per acre				
Man labor...................	$ 4.02	$ 2.87	$ 3.06	$ 3.12
Horse labor..................	2.24	1.81	2.18	1.78
Seed........................	3.72	1.92	2.13	1.42
Machinery..................	.90	1.64	1.22	1.14
Manure.....................	3.69	1.88	2.22	1.88
General farm expense.........	1.22	1.12	1.55	1.43
Total growing and harvesting costs.................	$15.79	$11.24	$12.36	$10.77
Land charges per acre				
Taxes......................	$ .90	$ .82	$ .67	$ .80
Interest on land at 5 percent...	3.68	3.95	4.14	4.02
Total acre-cost..................	$20.37	$16.01	$17.17	$15.59
Income per acre				
Hay.......................	$50.04	$35.95	$31.12	$35.97
Pasture....................	.05	.28	.92	.19
Total acre-income..........	$50.09	$36.23	$32.04	$36.16
Net profit or loss per acre.........	$29.72	$20.22	$14.87	$20.57
Efficiency factors				
Net cost per ton..............	$ 7.25	$ 9.26	$ 8.88	$ 6.79
Price per ton................	17.87	21.15	17.01	15.85
Net profit or loss per ton......	10.62	11.89	8.13	9.06
Yield per acre, tons...........	2.8	1.7	1.8	2.3
Man labor per acre, hours.....	16.6	11.37	13.85	14.75
Horse labor per acre, hours....	18.7	15.54	18.91	16.64
Tractor labor per acre, hours..	....	....	....	....
Man labor per ton, hours......	5.94	6.69	7.57	6.50
Total acres studied..............	327	71	91	77

TABLE 36.—TIMOTHY HAY: SOUTHWEST ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1928

Item	Washington, Clinton, and Madison counties		Clinton county		
	1924	1925	1926	1927	1928
Growing and harvesting costs per acre					
Man labor................	$ 1.62	$ 1.26	$ 2.07	$ 2.11	$ 1.45
Horse labor..............	.88	1.06	1.21	1.51	.90
Tractor use..............	. . . .	. . . .	. . . .	. . . .	. . . .
Seed....................	.22	.54	.25	.62	1.15
Machinery...............	.31	.37	1.01	.68	.60
Manure.................	1.39	2.38	1.09	.98	.71
General farm expense......	.38	.32	.75	1.04	.62
Miscellaneous............	. . . .	. . . .	.34	. . . .	. . . .
Total growing and harvesting costs....	$ 4.80	$ 5.93	$ 6.72	$ 6.94	$ 5.43
Land charges per acre					
Taxes..................	$ .89	$ .80	$ .80	$ .68	$ .62
Interest on land at 5 percent	4.02	3.48	3.45	3.63	3.39
Total acre-cost...............	$ 9.71	$10.21	$10.97	$11.25	$ 9.44
Income per acre					
Hay....................	$10.69	$15.29	$22.34	$27.28	$15.71
Pasture.................	.46	.20	. . . .	. . . .	.05
Seed...................	. . . .	. . . .	. . . .	. . . .	. . . .
Total acre-income.......	$11.15	$15.49	$22.34	$27.28	$15.76
Net profit or loss per acre.....	$ 1.44	$ 5.28	$11.37	$16.03	$ 6.32
Efficiency factors					
Net cost per ton..........	$12.17	$11.64	$10.79	$ 7.40	$ 9.47
Price per ton.............	14.06	17.78	21.90	17.95	15.87
Net profit or loss per ton...	1.89	6.14	11.11	10.55	6.40
Yield per acre, tons.......	.76	.86	1.02	1.52	.99
Man labor per acre, hours..	6.8	5.8	8.6	10.0	6.8
Horse labor per acre, hours	6.5	8.1	10.4	13.0	8.5
Man labor per ton, hours..	8.9	6.7	8.4	6.6	6.9
Total acres studied...........	43	24	45	32	29

TABLE 37.—SOYBEAN HAY: CLINTON COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1926-1928

Item	1926	1927	1928
Growing costs per acre			
Man labor......................	$ 2.42	$ 1.57	$ 1.47
Horse labor.....................	2.85	2.70	1.96
Tractor use.....................	.65	.54	.37
Machinery......................	.73	.55	.54
Seed...........................	3.66	2.44	2.24
Fertilizer.......................	1.70	1.38	1.24
General farm expense............	1.52	1.84	.33
Miscellaneous...................	.07	.....	1.71
Total growing cost.............	$13.60	$11.02	$ 9.86
Harvesting costs per acre			
Man labor......................	$ 2.62	$ 2.22	$ 2.36
Horse labor.....................	1.18	1.27	1.31
Machinery......................	.95	.74	1.00
Total harvesting cost...........	$ 4.75	$ 4.23	$ 4.67
Total growing and harvesting costs per			
acre..........................	$18.35	$15.25	$14.53
Land charges per acre			
Taxes..........................	$ .64	$ .70	$ .89
Interest on land................	3.74	3.41	3.85
Total acre-cost....................	$22.73	$19.36	$19.27
Income per acre			
Hay............................	$ 8.26	$19.59	$28.74
Pasture........................	.....	.29	.....
Total acre-income..............	$ 8.26	$19.88	$28.74
Net profit or loss per acre............	$−14.47	$ .52	$ 9.47
Efficiency factors			
Net cost per ton................	$30.34	$15.86	$ 9.97
Price per ton...................	11.00	16.32	14.89
Net profit or loss per ton........	−19.34	.46	4.92
Yield per acre, tons.............	.75	1.20	1.93
Man labor per acre, hours........	20.3	17.2	17.5
Horse labor per acre, hours.......	31.0	31.8	30.5
Tractor hours per acre, hours.....	.8	.4	.4
Man labor per ton, hours.........	27.1	14.3	9.1
Total acres studied.................	37	31	23

TABLE 38.—CORN SILAGE: CLINTON COUNTY, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1926-1928

Item	1926	1927	1928
Growing costs per acre			
Man labor	$ 3.09	$ 3.15	$ 2.90
Horse labor	3.27	3.61	3.21
Tractor use	.33	.85	.66
Machinery	1.08	1.41	1.08
Seed	.18	.26	.37
Fertilizer	4.26	4.02	3.29
General farm expense	1.15	1.58	1.67
Miscellaneous	.51	.30	.17
Total growing cost	$13.87	$15.18	$13.35
Silo filling costs per acre	$ 6.37	$ 8.53	$ 8.70
Land charges per acre			
Taxes per acre	$ .75	$ .75	$ .72
Interest on land per acre	4.04	4.40	3.88
Total acre-cost	$25.03	$28.86	$26.65
Total growing cost per ton	$ 3.83	$ 2.58	$ 1.99
Silo filling costs per ton			
Man labor	$ .68	$ .50	$ .43
Horse labor	.42	.33	.32
Machinery			
Own tractor	.08	.02	.04
Own filler	.07	.06	.07
Hired (custom)	.39	.42	.36
Fuel	.04	.05	.03
Twine	.08	.07	.05
Total filling cost per ton	$ 1.76	$ 1.45	$ 1.30
Silo taxes and interest, per ton	$ 1.32	$ .88	$ .69
Silo depreciation, per ton	.37	.57	.52
Total cost per ton	$ 7.28	$ 5.48	$ 4.50
Efficiency factors			
Yield per acre, tons	3.62	5.88	6.69
Labor, per ton			
Man hours—Growing	3.4	2.3	2.1
Filling	2.7	2.4	2.0
Horse hours—Growing	8.0	5.1	4.7
Filling	3.8	3.2	3.1
Tractor hours—Growing	. . . . .	.1	.6
Total acres studied	211	126	117

TABLE 39.—CORN: WEST-CENTRAL AND NORTHERN ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1923-1926

Item	Knox and Warren counties			DuPage, Lake and Stephenson counties		
	1923	1924	1925	1924	1925	1926
Growing and harvesting costs per acre						
Man labor	$ 3.92	$ 5.06	$ 5.47	$ 3.93	$ 4.25	$ 3.77
Horse labor	4.02	5.14	4.67	6.42	6.31	4.33
Tractor use	1.26	1.39	1.40	1.39	.66	1.70
Seed	.52	.63	.68	.42	.51	.96
Machinery	.92	.87	1.02	2.19	2.35	2.66
Manure	2.80	2.38	2.32	2.65	4.88	4.45
General farm expense	2.28	2.53	2.50	1.31	1.46	1.41
Miscellaneous	.06	.26	.03			
Total growing and harvesting costs	$15.78	$18.26	$18.09	$18.31	$20.42	$19.28
Land charges per acre						
Taxes	$ 1.28	$ 1.25	$ 1.34	$ 1.23	$ 1.44	$ 1.26
Interest on land at 5 percent	9.90	10.02	9.83	7.54	7.80	7.68
Total acre-cost	$26.96	$29.53	$29.26	$27.08	$29.66	$28.22
Income per acre						
Grain	$25.02	$43.19	$35.31	$35.16	$41.26	$26.52
Roughage	.07	.03	.15			
Pasture	.43	1.01	.64	.20	.57	.22
Total acre-income	$25.52	$44.23	$36.10	$35.36	$41.83	$26.74
Net profit or loss per acre	$ −1.44	$14.70	$ 6.84	$ 8.28	$12.17	$ −1.48
Efficiency factors						
Net cost per bushel	$ .56	$ .61	$ .48	$ .70	$ .42	$ .67
Price per bushel	.53	.93	.60	.92	.60	.63
Net profit or loss per bushel	−.03	.32	.12	.22	.18	−.04
Yield per acre, bushels	47.5	46.5	60.0	38.4	68.9	42.1
Man labor per acre, hours	13.6	14.9	15.8	15.9	18.4	15.8
Horse labor per acre, hours	29.4	32.0	33.6	35.6	41.6	31.1
Tractor labor per acre, hours	.9	1.3	1.4	.7	.7	1.5
Man labor per bushel, hours	.29	.32	.26	.41	.27	.38
Total acres studied	1 671	1 384	1 251	122	153	271

TABLE 40.—OATS: WEST-CENTRAL AND NORTHERN ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1923-1926

Item	Knox and Warren counties			DuPage, Lake and Stephenson counties		
	1923	1924	1925	1924	1925	1926
Growing and harvesting costs per acre						
Man labor	$ 2.16	$ 2.73	$ 2.30	$ 2.28	$ 1.74	$ 1.77
Horse labor	1.63	2.01	1.37	3.17	2.12	1.73
Tractor use	.76	.85	.78	.25	.55	.68
Seed	1.58	1.56	1.75	1.47	1.61	1.45
Machinery	.69	.60	1.54	1.30	.69	.79
Twine	.30	.35	.07	.37	.38	.32
Fuel	.11	.10	.34			
Threshing	1.41	1.72	.59	1.52	1.57	1.18
Manure	1.66	1.73	1.17	2.51	1.53	2.17
General farm expense	1.45	1.62	1.22	.85	.61	.65
Miscellaneous		.06				
Total growing and harvesting costs	$11.75	$13.33	$11.13	$13.72	$10.80	$10.74
Land charges per acre						
Taxes	$ 1.25	$ 1.29	$ 1.33	$ 1.41	1.54	$ 1.31
Interest on land at 5 percent	9.95	9.69	9.89	7.69	7.70	7.38
Total acre-cost	$22.95	$24.31	$22.35	$22.82	$20.04	$19.43
Income per acre						
Grain	$15.47	$26.05	$15.97	$24.42	$20.89	$12.91
Roughage	2.59	1.57	1.41	4.80	3.25	2.62
Pasture	.72	.81	.62	.12	.15	.45
Total acre-income	$18.78	$28.43	$18.00	$29.34	$24.29	$15.98
Net profit or loss per acre	$ −4.17	$ 4.12	$ −4.35	$ 6.52	$ 4.25	$ −3.45
Efficiency factors						
Net cost per bushel	$ .38	$ .37	$ .39	$ .36	$ .30	$ .45
Price per bushel	.30	.44	.30	.49	.38	.35
Net profit or loss per bushel	−.08	.07	−.09	.13	.08	−.10
Yield per acre, bushels	51.1	58.9	52.3	50.2	55.0	36.6
Man labor per acre, hours	8.4	9.2	7.9	10.4	7.7	7.4
Horse labor per acre, hours	11.9	12.2	9.6	18.0	12.1	11.7
Tractor labor per acre, hours	.7	.6	.9	.2	.6	.6
Man labor per bushel, hours	.16	.16	.15	.21	.14	.20
Total acres studied	735	695	671	236	222	209

TABLE 41. — WHEAT: WEST-CENTRAL AND NORTHERN ILLINOIS, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1923-1926

Item	Knox and Warren counties			DuPage, Lake and Stephenson counties		
	1923	1924	1925	1924	1925	1926
Growing and harvesting costs per acre						
Man labor	$ 2.95	$ 3.04	$ 3.22	$ 3.19	$ 1.56	$ 2.19
Horse labor	3.48	2.89	2.76	2.81	1.76	1.62
Tractor use	1.00	1.21	1.74	.92	.60	1.65
Seed	1.46	1.50	2.18	2.02	3.03	2.83
Machinery	.85	1.15	1.23	1.42	.53	.81
Twine	1.31	.06	.09	.43	.40	.50
Fuel	.29	.28	.35		.11	
Threshing	.12	.97	.86	1.88	.88	1.68
Manure	1.44	1.35	1.32	4.77		3.02
General farm expense	2.28	1.52	1.50	.87	.54	.61
Miscellaneous	.07	.56	.06			
Total growing and harvesting costs	$15.25	$14.53	$15.31	$18.31	$ 9.41	$14.91
Land charges per acre						
Taxes	$ 1.24	$ 1.17	$ 1.20	$ 1.97	$ 1.46	$ 1.81
Interest on land at 5 percent	9.95	9.91	9.62	10.26	10.00	9.92
Total acre-cost	$26.44	$25.61	$26.13	$30.54	$20.87	$26.64
Income per acre						
Grain	$21.57	$20.68	$26.79	$38.85	$34.52	$39.26
Roughage	1.57	1.04	1.28	4.42	2.20	2.65
Pasture	.55	.73	.46	.94	.62	.23
Total acre-income	$23.69	$22.45	$28.53	$44.21	$37.34	$42.14
Net profit or loss per acre	$ -2.75	$ -3.16	$ 2.40	$13.67	$16.47	$15.50
Efficiency factors						
Net cost per bushel	$ .98	$ 1.24	$ 1.13	$ .75	$ .78	$ .75
Price per bushel	.87	1.08	1.25	1.15	1.50	1.23
Net profit or loss per bushel	-.11	-.16	.12	.40	.72	.48
Yield per acre, bushels	24.9	19.2	21.4	33.8	23.0	31.8
Man labor per acre, hours	12.4	11.2	11.2	13.4	6.9	10.0
Horse labor per acre, hours	23.4	19.4	17.4	22.4	10.7	12.7
Tractor labor per acre, hours	1.0	1.5	1.8	.8	.7	1.6
Man labor per bushel, hours	.50	.58	.52	.39	.30	.31
Total acres studied	542	416	432.4	39	38	62

Table 42.—Alfalfa, West-Central and Northern Illinois, Cost of Production, Income, and Efficiency Factors, 1923-1926

Item	Knox and Warren counties			DuPage, Lake and Stephenson counties		
	1923	1924	1925	1924	1925	1926
Growing and harvesting costs per acre						
Man labor	$ 4.17	$ 4.74	$ 4.93	$ 3.21	$ 3.57	$ 2.28
Horse labor	2.77	3.42	2.82	3.43	3.27	1.62
Tractor use		.15	.05		.05	.38
Seed	3.75	3.75	3.75	1.09	1.25	1.49
Machinery	2.04	1.74	1.61	1.49	1.32	.94
Manure	2.46	2.01	1.87	3.43	2.20	3.00
General farm expense	2.70	3.77	3.02	1.25	1.20	.75
Total growing and harvesting costs	$17.89	$19.58	$18.05	$13.90	$12.86	$10.46
Land charges per acre						
Taxes	$ 1.25	$ 1.28	$ 1.22	$ 1.42	$ 1.59	$ 1.49
Interest on land at 5 percent	9.85	9.88	10.00	7.77	8.40	6.71
Total acre-cost	$28.99	$30.74	$29.27	$23.09	$22.85	$18.66
Income per acre						
Hay	$51.03	$51.03	$33.46	$48.70	$47.71	$23.54
Pasture	1.74	1.05	.62	.23	.78	1.26
Total acre-income	$52.77	$52.08	$34.08	$48.93	$48.49	$24.80
Net profit or loss per acre	$23.78	$21.34	$ 4.81	$25.84	$25.64	$ 6.14
Efficiency factors						
Net cost per ton	$ 8.79	$ 9.67	$13.02	$ 6.84	$ 7.12	$ 7.56
Price per ton	16.46	16.62	15.21	14.58	15.39	10.23
Net profit or loss per ton	7.67	6.95	2.19	7.74	8.27	2.67
Yield per acre, tons	3.1	3.1	2.2	3.3	3.1	2.3
Man labor per acre, hours	16.52	16.42	17.14	14.29	15.75	10.30
Horse labor per acre, hours	21.21	22.59	24.29	21.98	23.91	14.40
Tractor use per acre, hours		.15	.08		.04	.50
Man labor per ton, hours	5.3	5.4	7.8	4.3	5.1	4.5
Total acres studied	121	150	198	91	95	99

Table 43.—BARLEY: DuPage, Lake, and Stephenson Counties, Cost of Production, Income, and Efficiency Factors, 1924-1926

Item	1924	1925	1926
Growing and harvesting costs per acre			
Man labor......................	$ 2.28	$ 2.20	$ 2.08
Horse labor....................	2.50	2.30	1.53
Tractor labor...................	.13	.47	1.00
Machinery.....................	.98	.80	.70
Seed..........................	1.52	1.79	1.47
Manure.......................	3.17	1.57	1.68
Twine.........................	.40	.47	.43
Threshing and fuel..............	1.71	1.79	2.45
General farm expense...........	.81	.80	.73
Miscellaneous..................	.....	.....	.....
Total growing and harvesting costs	$13.50	$12.19	$12.07
Land charges per acre			
Taxes.........................	$ 1.41	$ 1.46	$ 1.43
Interest on land at 5 percent......	8.15	7.90	7.91
Total acre-cost....................	$23.06	$21.55	$21.41
Income per acre			
Grain.........................	$29.54	$27.50	$21.00
Straw.........................	3.77	1.35	1.74
Pasture.......................	.86	.....	.27
Total acre-income.............	$34.17	$28.85	$23.01
Net profit or loss per acre............	$11.11	$ 7.30	$ 1.60
Efficiency factors			
Net cost per bushel.............	$ .47	$ .51	$ .50
Price per bushel................	.75	.70	.54
Net profit or loss per bushel.......	.28	.19	.04
Yield per acre, bushels...........	39.1	39.3	39.0
Man labor per acre, hours........	10.0	9.4	9.1
Horse labor per acre, hours.......	17.8	16.2	12.5
Tractor use per acre, hours.......	(a)	.5	.9
Man labor per bushel, hours......	.25	.24	.23
Total acres studied.................	112	149	159

a Less than half an hour.

TABLE 44.—HAY: DUPAGE, LAKE, AND STEPHENSON COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1924-1926

Item	Clover hay			Timothy hay		Mixed clover and timothy hay		
	1924	1925	1926	1925	1926	1924	1925	1926
Growing and harvesting cost per acre								
Man labor	$ 2.78	$ 1.34	$ 1.88	$ 1.64	$ 1.23	$ 1.79	$ .89	$ 1.48
Horse labor	3.36	1.45	1.58	1.68	1.07	1.82	1.25	1.56
Tractor use								
Seed	1.76	1.99	3.25	.47	.48	2.01	1.53	2.35
Machinery	1.40	.46	1.39	.46	.43	.71	.31	.53
Manure	7.03	2.39	3.87	1.17	2.37	5.32	2.93	2.30
General farm expense	1.09	.50	.62	.62	.40	.58	.34	.58
Miscellaneous	.04					.10		
Total growing and harvesting costs	$17.46	$ 8.13	$12.59	$ 6.04	$ 5.98	$12.33	$ 7.25	$ 8.80
Land charges per acre								
Taxes	$ 1.41	$ 1.38	$ 1.28	$ 2.03	$ 1.60	$ 1.51	$ 1.38	$ 1.34
Interest on land at 5 percent	6.69	6.73	7.44	8.31	9.43	8.57	8.02	7.09
Total acre-cost	$25.56	$16.24	$21.31	$16.38	$17.01	$22.41	$16.65	$17.23
Income per acre								
Hay	$24.09	$16.87	$16.60	$24.35	$21.33	$24.76	$14.37	$21.95
Pasture	2.49	.97	1.65	.41	1.54	1.08	.63	.73
Seed								
Total acre-income	$26.58	$17.84	$18.25	$24.76	$22.87	$25.84	$15.00	$22.68
Net profit or loss per acre	$ 1.02	$ 1.60	$ -3.06	$ 8.38	$ 5.86	$ 3.43	$ -1.65	$ 5.45
Efficiency factors								
Net cost per ton	$10.63	$12.00	$13.10	$11.82	$10.31	$ 9.78	$16.02	$ 9.71
Price per ton	11.10	13.00	11.06	18.03	14.22	11.36	14.37	12.91
Net profit or loss per ton	.47	1.00	-2.04	6.21	3.91	1.58	-1.65	3.20
Yield per acre, tons	2.2	1.3	1.5	1.4	1.5	2.2	1.0	1.7
Man labor per acre, hours	13.3	5.5	7.6	7.0	5.6	8.5	3.9	6.1
Horse labor per acre, hours	17.3	7.6	13.2	8.4	8.0	11.3	6.9	10.2
Tractor use per ton, hours								
Man labor per ton, hours	6.1	4.2	5.1	5.0	3.5	3.9	3.9	3.6
Total acres studied	84	56	35	34	34	103	92	74

TABLE 45.—HAY: KNOX AND WARREN COUNTIES, COST OF PRODUCTION, INCOME, AND EFFICIENCY FACTORS, 1923-1925

Item	Clover hay			Timothy hay		Mixed clover and timothy hay	
	1923	1924	1925	1923	1924	1923	1925
Growing and harvesting costs per acre							
Man labor	$1.68	$3.14	$2.08	$1.06	$1.73	$1.41	$2.46
Horse labor	1.62	2.52	1.59	.62	.99	1.00	1.52
Tractor use	....	....	....	....	....	.17	.26
Seed	1.45	1.69	1.25	....	....	1.48	2.63
Machinery	.72	1.04	2.38	.63	2.18	.56	1.04
Manure	.35	.84	.82	.39	.96	.91	.92
General farm expense	1.06	1.73	1.30	.58	1.11	.74	1.08
Miscellaneous	1.06	.02	....	....	....	.02	....
Total growing and harvesting costs	$7.94	$10.98	$9.42	$3.28	$6.97	$6.29	$9.91
Land charges per acre							
Taxes	$1.21	$1.40	$1.39	$1.10	$1.16	$1.10	$1.07
Interest on land at 5 percent	10.17	10.83	10.15	8.49	7.67	9.71	9.26
Total acre-cost	$19.32	$23.21	$20.96	$12.87	$15.80	$17.10	$20.24
Income per acre							
Hay	$13.56	$31.54	$14.00	$11.60	$12.16	$8.51	$12.10
Pasture	....	.94	.24	1.17	.41	2.26	1.95
Seed	....	2.20	3.05	....	....	....	....
Total acre-income	$13.56	$34.68	$17.29	$12.77	$12.57	$10.77	$14.05
Net profit or loss per acre	$−5.76	$11.47	$−3.67	$−.10	$−3.23	$−6.33	$−6.19
Efficiency factors							
Net cost per ton	$15.97	$8.36	$16.06	$11.70	$19.00	$23.19	$20.04
Price per ton	11.21	13.14	12.73	11.60	15.01	13.30	13.30
Net profit or loss per ton	−4.76	4.78	−3.33	−.10	−3.99	−9.89	−6.74
Yield per acre, tons	1.2	2.4	1.1	1.0	.81	.64	.91
Man labor per acre, hours	6.8	10.3	7.0	4.0	6.0	5.7	8.6
Horse labor per acre, hours	9.2	14.8	10.4	4.7	5.1	6.7	12.0
Man labor per ton, hours	5.6	5.4	6.4	4.2	7.4	8.9	9.4
Total acres studied	30	147	183	65	52	79	22

LIST OF TABLES AND CHARTS

LIST OF TABLES AND CHARTS (continued)

OTHER ILLINOIS PUBLICATIONS BASED ON
DATA OBTAINED IN COST STUDY

Bulletin 231. The horse and the tractor. W. F. Handschin, J. B. Andrews, and Emil Rauchenstein. 1921.
Bulletin 261. Cattle feeding in relation to farm management. H. C. M. Case and K. H. Myers. 1924.
Bulletin 277. Cost of producing field crops in three areas of Illinois, 1913-1922. Emil Rauchenstein and R. C. Ross. 1926.
Bulletin 329. Organizing the corn-belt farm for profitable production. H. C. M. Case, R. H. Wilcox, and H. A. Berg. 1929.
Bulletin 373. Harvesting the corn crop in Illinois. P. E. Johnston and K. H. Myers. 1931.
Bulletin 374. Management factors that influence farm profits in southwest Illinois. R. H. Wilcox, R. G. Trummel, and C. W. Crickman. 1931.
Bulletin 395. A study of the cost of horse and tractor power on Illinois farms. P. E. Johnston and J. E. Wills. 1933.
Bulletin 428. Soybean costs and production practices. R. C. Ross. 1936.
Circular 396. Reducing costs of corn husking. P. E. Johnston. 1932.

Of the foregoing publications, only *Bulletin 329* and *Circular 396* are now in print and available for distribution.