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Cost Accounts for Six Years on Some Successful New York Farms

G. F. Warren, Van B. Hart, W. I. Myers, R. L. Gillett, C. V. Noble, and others

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CONTENTS

COST ACCOUNTS FOR SIX YEARS ON SOME SUCCESSFUL NEW YORK FARMS

G. F. WARREN, VAN B. HART, W. I. MYERS, R. L. GILLETT, C. V. NOBLE, AND OTHERS

DEVELOPMENT OF THE WORK

In 1874 Professor I. P. Roberts took a complete inventory of the Cornell University farm.[1] From that time he continued to study accounting methods.[2]

In 1907 the senior writer began keeping accounts on a New York farm and he has kept them continuously since that date. The farm has diversified enterprises, and during this period it has gradually changed from a 90-acre to a 300-acre farm, so that a great variety of problems have been involved. Some of the results for this farm have been published.[3]

An attempt is constantly being made to develop methods that will give the most information with the least work. In 1911 the writer believed that the methods had been sufficiently developed so that work might be attempted on several farms. Accounts were kept on five farms by A. L. Thompson,[4] who was then a graduate student in the New York State College of Agriculture. In 1912 a cooperative agreement was made with the Office of Farm Management of the United States Department of Agriculture for extending the work. In that year, accounts were kept on eighteen farms by C. E. Ladd.[5] Since that date the work has been continued by various graduate students.[6]

During all this time the senior writer has been keeping accounts on one farm, and he has made changes in the cooperative accounting methods only after such changes have been in use for some time. Some of the changes that have been made in this farm have not yet been introduced into the general accounting.

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[1] Autobiography of a farm boy, page 184. By I. P. Roberts.

[2] The farmer's business handbook. Pages 1-115. By I. P. Roberts.

[3] Laboratory exercises in farm management, pages 75-109. By G. F. Warren and K. C. Livermore.
Farm management, page 164 and pages 441-493. By G. F. Warren.
Cost accounting on farms. American Farm Management Association, Report for 1916, pages 28-38. By G. F. Warren.

[4] Cost accounts on five New York farms. By A. L. Thompson. Thesis, in Cornell University Library. 1912.

[5] Cost accounts on some New York farms. By C. E. Ladd. Cornell Univ. Agr. Exp. Sta., Bul. 377. 1916.
A system of farm cost accounting. By C. E. Ladd. U. S. Dept. Agr., Farmers' Bul. 572. 1914.

[6] In 1912 and 1913, the accounts were kept by C. E. Ladd; in 1914 by D. S. Fox; in 1915 and 1916 by W. I. Myers and L. E. Harvey; in 1917 by W. I. Myers, C. V. Noble, and R. L. Gillett; in 1918 by C. V. Noble, R. L. Gillett, and W. I. Myers; in 1919 by R. L. Gillett, C. V. Noble, Van B. Hart, D. G. Card, L. J. Norton, and W. H. Bronson. A considerable number of women helped with the clerical work. The most important parts of it were done by Marguerite Taylor, Zella Tailby-Dennis, Ruth Carlson, Dorcas Ball, Florence Bossard-MacMillan, Mildred Campbell, Alice Aiken, Gertrude Huntington, and Alice Carlson. The bulletin was written by G. F. Warren. Van B. Hart assisted in preparing all of the data for it.

The primary purpose of keeping cost accounts is to learn how to farm more successfully. This was the primary purpose in beginning this work. However, the data obtained are frequently of value for many other purposes.

FARM OPERATORS

All the farms on which accounts are included in this work are farms on which the operator is dependent for his living. In all cases the farm operator is a laborer as well as manager. This eliminates all farms operated by hired managers, and, of course, all pleasure or experimental farms. No farms were accepted if the operator was practically retired, or if for any other reason the farm was not being actively operated. There have always been more farmers who desired to cooperate than could be used. The above rules eliminated many of the applicants. In all, 110 farmers cooperated in the work.[7]

In the beginning, none of the cooperators were men trained in agricultural colleges. No effort was made to secure college men; in fact, other men were preferred. Not until this bulletin was being written and a tabulation was made, was it realized how many agriculturally trained men there were on the list. In 1919, accounts were closed on 39 farms. On 21 of these, one or more of the operators had taken courses at the New York State College of Agriculture. One other was a college graduate, and on the remaining 17 farms all had studied agriculture by means of bulletins, farm papers, farmers' weeks, institutes, and the like.

Eight of the operators were farm-reared men who were graduates of the New York State College of Agriculture. One was a graduate but not farm-reared. One was farm-reared and a graduate of Williams College. These ten are grouped together in table 5 (page 29).

One operator was a high-school graduate who had taken two years of special work at the New York State College of Agriculture and was farm-reared. Seven were graduates of high schools, were farm-reared, and had taken a winter course at the State College of Agriculture. Three were winter-course students who were farm-reared but were not graduates of high schools. One was a winter-course student who was not farm-reared and not a high-school graduate. These twelve are grouped together in table 5.

Of the remaining 17 men, one was not farm-reared but was a high-school graduate and had taken two years of college work in civil engineering. Two were not farm-reared but were high-school graduates. All the remaining men were farm-reared. Three were high-school graduates. One other had attended high school for three years, two for two years, and two for one year. One had not been to high school but had attended a business school. Five had a district-school education only.

[7]The following farmers cooperated in keeping the accounts that are here reported: A. T. Blount, 1914-1919; A. D. Brushaber, 1914, 1915, 1919; F. W. Gillett, 1914, 1915; E. J. Nicholson, 1914-1917; L. A. Parke, 1915; F. E. Upson, 1915; R. W. Westlake, 1915; E. L. Gifford, 1915; V. T. Caraher, 1914-1919; C. F. C. Henry, 1914-1919; J. F. Webster, 1914, 1916; J. R. Stevenson, 1914-1919; Hobart Mineah, 1914, 1915; W. W. Reed, 1914-1919; F. A. Wigsten, 1914-1916; Ray Thomas, 1914-1916; C. W. Barker, 1914-1917; W. A. Crandall, 1914-1919; Hall Brothers, 1914-1919; S. A. Young, 1915; Harry Beckwith, 1915; W. J. Spatsker, 1915; J. E. Dalrymple, 1914, 1915, 1916, 1919; Charles Strouse, 1915; G. V. Roberts, 1915-1919; Frank Coombs, 1915; H. B. Adams. 1915; J. J. Swift, 1915-1919; C. H. Riley, 1915-1919; J. T. Bacon, 1915; Burritt Perkins, 1915-1919; Floyd Fanton, 1915; D. R. Stevens, 1915, 1916, 1917, 1919; C. E. McNulty, 1915-1919; F. C. Gibbs, 1915; D. V. Farley, 1915-1919; R. S. Ackerly, 1915-1919; C. B. Coleman, 1915-1917; O. S. Dowd, 1915; Elmer Arnold, 1915; Robert Hall, 1915-1919; W. F. Brown, 1915-1919; G. H. Torrey, 1915, 1917; F. T. Wagner, 1915-1919; W. E. Davis, 1915, 1916; A. S. Chase, 1916, 1917; S. F. Burton, 1916-1919; L. E. Harvey, 1916-1919; F. M. Tibbitts, 1916-1918; George Fitts, 1916, 1917; C. G. Mellen, 1917, 1918; Rowley Brothers, 1917-1919; J. A. Smith, 1917-1919; T. H. Blair, 1917-1919; J. M. Bagwell, 1918; J. W. Hopkins, 1918, 1919; E. H. Smith, 1918, 1919; W. J. Brown, 1918, 1919; D. H. Clements, 1918, 1919; I. B. Mitchell, 1918, 1919; H. L. Creal, 1918, 1919; Mrs. J. Aikin, 1918, 1919; J. F. Johnson, 1919; J. B. Fisher, 1919; Clifford Barber, 1919; E. A. Beers, 1919; Harry Roof, 1919; Alex. Wooden, 1919; C. A. Comfort, 1919; Harry Smith, 1914-1917; C. A. Rogers 1914-1916.

CHARACTER OF THE FARMS

The farms are scattered about the State, as shown in figure 1. Some of them are on the hills of southern New York, but more are in the valleys and the level areas of the State. The farm values per acre in the first inventory of 1918 varied from $33.97 to $260.45 with an average of $96.74, compared with an average of $69.07 for the State in 1920.

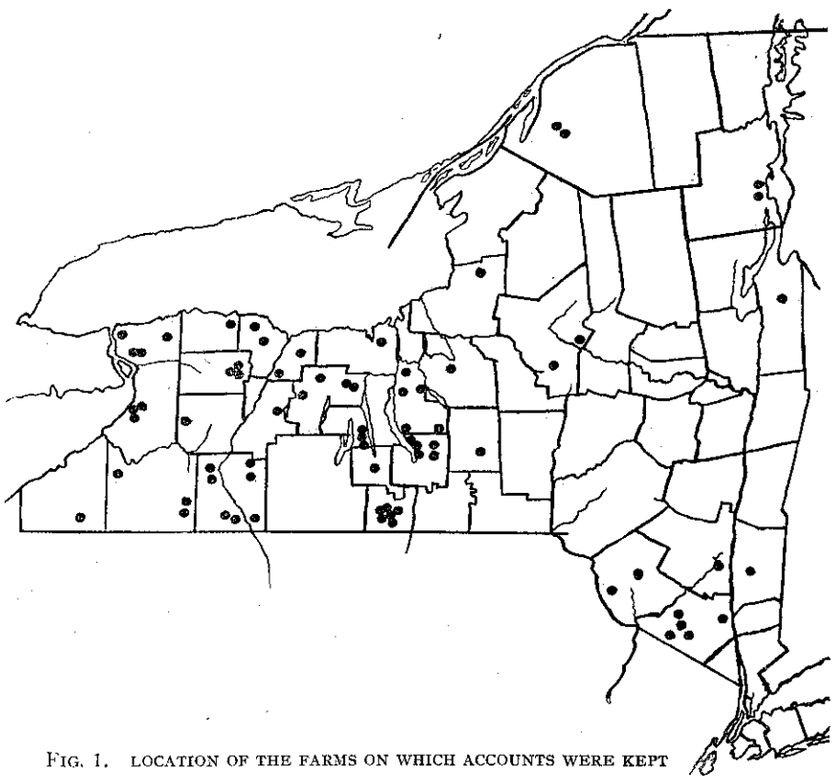

FIG. 1. LOCATION OF THE FARMS ON WHICH ACCOUNTS WERE KEPT

The farms in 1918 varied from 21 to 645.5 acres, with an average of 160.9 acres. This is one-half larger than the average for the State. The crop acres averaged 101.2 as compared with 48.8 acres for the State in 1917.

The capital per farm at the end of the year 1918 varied from $7852.69 to $64,941.63, with an average of $22,516.51. This is over twice the average for the State in 1920.

There was an average of 4.5 horses per farm or 22.1 crop acres per horse in 1918. In 1917 the average for the State was 2.5 horses per farm or 20 crop acres per horse.

The crop yields were 7 per cent better than the State's average as given by the United States Bureau of Crop Estimates; and the production per cow on farms that had six or more cows was about 14 per cent above the average.

Since the farms are larger than the average, but not too large, they were able to save on nearly all costs of operation. The soils were naturally better than the average and are in much better condition due to better care. The buildings are better and more conveniently arranged. All these and other factors have contributed to make these farms much better than the average. They are not, however, spectacular farms.

TABLE 1. A COMPARISON OF FARMS ON WHICH COST ACCOUNTS WERE KEPT, WITH AVERAGE FARMS

	Cost account farms	Averages for the State*
Man equivalent, 5-years average (table 6)	2.8	
Man equivalent, approximate	.....	1.6
Capital, 5-years average (table 4)	$24,829	
Capital, U. S. Census of 1920	.....	$9,879
Number of horses per farm, 5-years average (table 23)	5.0	
Number of horses per farm, State Census of 1918	.....	2.5
Number of cows per farm, 5-years average	14.2	
Number of cows per farm, State Census of 1917	.....	7.4
Acres per farm, 5-years average	165.1	
Acres per farm, State Census of 1917	.....	103.2
Crop acres, 5-years average (table 36)	104.2	
Crop acres, State Census of 1917	.....	48.8
Acres of potatoes per farm, 5-years average	4.3	
Acres of potatoes, State Census of 1917	.....	1.9
Acres of cabbage per farm, 5-years average	1.5	
Acres of cabbage, State Census of 1917	.....	0.3
Mature poultry per farm, 5-years average	101	
Mature poultry per farm, State Census of 1917	.....	64
Bushels of wheat per acre, 5-years average	23.6	21.5
Bushels of oats per acre, 5-years average	35.8	34.8
Tons of hay per acre, 5-years average	1.53	1.37
Crop index, 5-years average	107	100
Pounds of milk per cow, farms with six or more cows, 5-years average	6,290	

*State figures were obtained as follows: man equivalent, from occupation census; capital, from 1920 U. S. Census; horses, and acres of crops, from 1918 State Census; crop yields, from Bureau of Crop Estimates; milk per cow, from investigations of the Department of Agricultural Economics and Farm Management, New York State College of Agriculture.

These farms grew 22 per cent more area of crops per man and kept 11 per cent more cows per man than the average for the State (table 1). As nearly as can be estimated, their business as measured by crop area and numbers of stock was 18 per cent larger per man than the average, but the crop yields were 7 per cent better than the State's average, and production per cow was about 14 per cent above; or they produced 30 per cent more bushels of crops per man and 27 per cent more pounds of milk per man than the average. In addition, they grew a slightly higher proportion of intensive crops. As nearly as can be estimated, they produced 29 per cent more per man than the average farm produces.

It is exceedingly difficult to have cost accounts kept in such a way as to show conditions on all classes of farms. Some farmers do not have enough education to make it possible for them to keep accounts. Others are not sufficiently interested to be willing to take the time to do the work.

In Minnesota, the practice has been followed of having a route man go to the farms each week to get the facts for the accounts. In this way, something approaching average farms could be obtained; but after accounts had been kept for a few years, the methods on the farms changed to such an extent that they ceased to be representative of the average.

Costs on all classes of farms can be obtained by the survey method. By this method, the cost of producing milk in three counties has been obtained, also the cost of producing potatoes and canning-factory crops, the cost of operating tractors, and similar cost data.[8] This department has obtained, by the survey method, 7634 records of farm business operations for a year, taken just as they came in various counties in the State.[9] By comparison with these farms, it is found that the farms on which cost accounts are kept are about like the average of the best 2 per cent.

Because these farms are better farms and better managed than the average, the results of this work should not be used for purposes of price fixing, any more than results from the best coal mines should be used for that purpose. The results give a fair picture of conditions on the best class of farms. The wages allowed for operator's time are much more than the average farmers receive, but the costs of production are much below the average. The results may be taken as high standards for good farms.

METHODS USED

METHOD OF OBTAINING DATA

A representative of the College visits the farm and assists in taking the inventory and in starting the accounts. A map of the farm is made. This is not an absolute essential, because it has been found that farmers with whom accounts are kept know the areas of their fields very well. They have learned these areas by various means, such as drill measure or actual measure. But the maps are exceedingly valuable to the farmer and for the investigation. Maps and a study of farm layout on these farms have been published.[10]

[8] Cost of producing milk on 174 farms in Delaware County, New York. By A. L. Thompson. Cornell Univ. Agr. Exp. Sta., Bul. 364. 1915.

An analysis of the costs of growing potatoes. By D. S. Fox. Cornell Univ. Agr. Exp. Sta., Memoir 22. 1919.

An economic study of dairying on 149 farms in Broome County, New York. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bul. 409. 1922.

An economic study of dairying on 163 farms in Herkimer County, New York. By E. G. Misner. (Ready for publication as a bulletin of the Cornell University Agricultural Experiment Station.)

An economic study of farm tractors in New York. By W. I. Myers. Cornell Univ. Agr. Exp. Sta., Bul. 405. 1921.

An economic study of the production of canning crops in New York. By L. J. Norton. Cornell Univ. Agr. Exp. Sta., Bul. 412. 1923.

[9] The publications containing these records are listed at the end of this bulletin.

[10] An economic study of farm layout. By W. I. Myers. Cornell Univ. Agr. Exp. Sta., Memoir 34. 1920.

How to plan the farm layout. By W. I. Myers. Cornell Extension Bulletin 55. 1922.

At the end of the year the representative of the College returns and spends one or more days in helping to take the inventory, seeing that all entries, particularly such as feed transfers, unpaid labor, and the like, are entered. He makes corrections of the map, and marks on it the new fences, the area in each crop, and the places and rates of application of manure, lime, and fertilizer. Formerly a trip was made to the farms once during the year. It is desirable to make such a trip in the early fall, to get all harvest and feed records adjusted, but this has not been done in later years because of the cost.

WORK REPORT

On all farms a work-report book and a ledger are used. A cashbook and other special books for various purposes are used as occasion requires. The work-report books have at times been printed, but in later years ordinary blank books have been used, with four columns at the right, or, in case a tractor is used, six columns at the right, as shown below. Further columns are added if a truck is used, and sometimes there are additional ones for automobiles.

CORN

Date	Man labor		Horse labor		Tractor	
	Hours	Minutes	Hours	Minutes	Hours	Minutes
April 23 Plowing	8	30			8	30
April 23 Getting seed	1		2			

At times some of the farmers kept this report in diary form, that is, all entries were made in chronological order; but now nearly all of them post the time direct to the particular accounts, as corn, labor, or cows. Gummed index tabs are pasted on both the work report and the ledger so that the correct account may be quickly found.

In 1913-14, four kinds of work reports were tried. One was a daily work sheet for each day, which was sometimes used for the farm, and sometimes for each man, each day. Another was a daily sheet prepared by the Office of Farm Management of the United States Department of Agriculture. This sheet was divided into 15-minute periods, with space to write in the work done during each period or group of periods. The diary and direct posting forms given above were also used. Nearly all the farmers preferred the direct posting form, and the other forms have been dropped.

The direct posting form has the advantage of providing space for full description of the work. Since the farmer posts directly to corn, oats, and other accounts at the time of making the entry of the day's work, the work can be more easily checked. In any form that does not require this posting, there is danger that the description of the work may not indicate to what account it belongs.

The first twelve pages of the work-report book are ruled for chores, as shown below, so that the time spent on chores may be posted by writing the figures only. The same form might be used for the entire

CHORES FOR JANUARY, 1920

Date	Cows		Horses		Hens			
	Hours	Minutes	Hours	Minutes	Hours	Minutes	Hours	Minutes
Jan. 1	4	30	2	15		30		
2								
etc.								
31								

farm, but for this purpose it is unsatisfactory because it does not provide space for describing the kind of work. The description of the kind of work is valuable information, not only for study but also for reference. It is frequently desirable to be able to refer to the work report to determine when some particular piece of work was done, or how long it took to do a particular task.

LEDGER AND CASH BOOKS

A ledger is kept on all farms, and usually the cash receipts and the expenses are posted directly to the proper ledger account. Such entries as "Bran" or "Veterinary" posted direct to the ledger are more likely to reach the right account than they would be if entered in a cashbook first. But by direct posting, cash entries and transfers from one account to another which are not cash are mixed in such a way as to make income tax reporting more difficult. A cashbook is therefore desirable, and is kept by some of the farmers.

BARN BOOKS

For barn use, a book with two holes punched in the upper corners of the cover can be hung on two nails so that it is always open. A string is tied around the used pages on one side, and another around the unused pages on the other side. A pencil is attached. Such a book is very convenient for recording such items as eggs gathered, feed transfers, and all kinds of data that can be best put down at once when the work is done.

LEDGER HEADINGS

On all farms, ledger accounts are opened with Labor, Horses, Equipment, Operator's House, Other Buildings, Crop Land, Interest, Manure, Woods, Pasture and Fences, General Expenses, Feed and Supplies, Accounts Payable, Accounts Receivable, Farm Personal, Gain and Loss, Inventory, and with such of the following as apply to the farm: Tractor,

Truck, Auto, Tenant Houses, Orchard, Colts; also with various crops, animals, and other enterprises. In 1918 there was a total of 176 ledger headings. Of course no one farm had near this number. Truck farms required a large number of headings.

TRANSFERS BETWEEN ACCOUNTS

As in all cost accounting where more than one product or operation is considered, there are many charges and credits that are not cash transactions. One of the important problems is, therefore, the determination of the correct charge for such exchange transactions. Over half of the farm labor is usually unpaid. Over half of the feed used is generally farm-grown, and some of it is not readily marketable.

Products grown solely for use in the production of another product and having no market value, are charged at cost of production when they enter into a second product, or are sometimes kept as a part of that enterprise in the original entries.

Home-grown products that are readily marketable, when they enter into production of another farm product are charged at farm sale value, that is, the market value less the cost of marketing.

These principles result in charging transfers at farm sale value when they are made between profit-and-loss-making enterprises, and at cost when the products of a subsidiary account are transferred.

The primary purpose of the accounts is to analyze the farm business. Corn is raised for sale and for feed. It may be fed to several classes of livestock. If it is charged to hogs at cost, the profit on the hogs would depend primarily on the weather and the skill in raising corn and on the percentage of the ration that the purchased corn made, rather than on the real profits from hogs. When corn is harvested and in the crib, it is just as much a finished product as is a fat hog. Its value is more definitely known than is the value of the hog. If corn costs $2 a bushel to grow but is worth only $1 to sell or buy, there is a loss in growing it. If hogs are so profitable that they could pay $1.50 a bushel for corn, they would show a loss if charged with this corn at cost. The true status of the farm business is a loss on corn and a profit on hogs. Usually some feed is bought. Great confusion would result from the inclusion of some feed at cost and other feed like it at market price. Furthermore, the hogs might be fed on the home-grown corn and the cows on purchased corn. If corn is charged at cost, the profits or losses on hogs and cows would depend on which got the home-grown corn. If one merely wishes to consider the farm as a whole, accounts with each enterprise are not necessary. The very purpose of enterprise accounting is to study the results for each enterprise, so that each will stand or fall on its own merits. When transfer charges are made at cost, it is merely another way of considering the two enterprises as one.

The usual practice in business analysis when more than one business is conducted is to charge transfers at market value. This is sometimes done directly, but in business it is often done by organizing a subsidiary company or is done indirectly. For example, a railroad accomplishes the same result in determining the cost of a bridge by buying the materials delivered, so that freight enters into the cost of the bridge, not at the cost of hauling, but at the regular rates.

With the numerous controversies that arose with governmental price-fixing, this method was sometimes challenged. For example, some persons interested in the price of milk have contended that hay should be charged to cows at cost rather than at farm sale value. Public interest in the price of milk should be in the continuous maintenance of an adequate supply of milk at as low a price as public welfare will allow.

In determining whether to sell a cow for beef and whether to raise or not raise heifer calves, does the farmer think of the cost of hay production or of the price of hay?

In determining whether to increase or decrease the hog business, do farmers consider the cost of producing corn or the price of corn?

Farmers are not likely to continuously choose the less profitable of two ways of disposing of hay or corn. The correct principle was recognized by the Food Administration in its efforts to increase hog production. When an increase in hogs was wanted, the proposed price for hogs was not the cost of producing thirteen bushels of corn, but was the market price of thirteen bushels of corn.

If cows are to be charged with hay at cost when there has been a profit in hay production, they must be charged with the cost of hay when the hay costs much more than it sells for. This usually occurs when the hay crop is very abundant and very cheap. Farmers have not asked that the losses on hay be made up by profits on milk, nor have the writers heard of instances in which consumers proposed an increase in the price of milk because hay was abundant and cheap, so cheap as not to be worth the cost of growing it.

The profits of the farm as a whole are what must be considered when a farmer decides whether to clear more land or to quit farming; but farm sale value of marketable farm-grown products used in subsequent production is the figure considered by farmers when deciding whether or not a particular farm enterprise is to be increased or decreased.

If the public merely wishes to know the status of agriculture, enterprise cost accounts are not needed. The best way to tell the status of agriculture is to find the extent of the movement to and from farms as compared with the normal. The general price level of agricultural products compared with the general price level of all commodities is also a fair measure, but this must be modified by yields. Purchasing power per acre of all crops compared with the normal, corrects for this factor.

A particular crop or animal product may be exceedingly profitable when the farming as a whole is not paying. In that event, the particular product will be increased even tho the farmers may be letting their sons and hired men leave the farms. Or a particular product may be very unprofitable when the farms as a whole are paying very well. In that event, the particular product will be rapidly decreased. If transfers between accounts are made at cost, these facts would all be obscured. In the first case, the profitable product would be given an erroneously high cost. In the second case, it would be given an erroneously low cost. Any public clamor based on the results would in each case be exactly wrong.

If the public wants to know what is the status of a particular enterprise in agriculture, the cost of production as estimated by the methods here employed is a very accurate measure. By this means, it is possible to estimate very accurately whether or not a given enterprise is likely to be increased or decreased.

If mangels are raised solely for feeding cows on advanced registry test and are not marketable, they are charged to cows at cost and the mangel account is studied to see how the cost may be lowered. We have found no case in which they could be grown at a cost that would justify their production except for such special purposes as making large advanced registry records, or to be fed to hens or otherwise used in limited amounts for some special purpose.

In most parts of New York, corn silage is grown solely as cow feed, as it rarely matures enough to have an alternative use. If it is charged to cows at cost, the value must still be estimated in order to see whether the cow account is carrying a burden of unprofitable silage production or has in it a profit that is really due to good crops. Silage was charged at feed value in the earlier years of this work. One advantage of so charging it is that the results of the various efforts are better shown. This furnishes the best basis for analyzing the farm business.

In the Corn Belt, silage is correctly charged at the value of the corn plus the extra cost of putting it in the silo above the cost of selling it as grain, because it is cut from a cornfield that is primarily a grain crop.

Use of land, buildings, pasture, and equipment, are all charged at cost. Pastures are not usually independent enterprises. Pasture might be charged at value. This is usually about the same as cost.

The most important thing is that all details should be shown, so that the accounts can be rearranged and interpreted to meet the use that it is desired to make of them.

COMPARISONS WITH INDUSTRIAL ACCOUNTING

Since some persons believe the foregoing methods to be in disagreement with commercial accounting, letters were written to some of the leading accounting firms in the United States. Replies from five of these firms as to methods used in cost accounting agreed with the methods described above. Three were in partial agreement, and, for example, recognized that coal should be transferred to a railroad at market value when mined by a company that operates both railroads and coal mines. Several called attention to the danger of anticipating profits if inventories are made at market value. One firm was in absolute disagreement and quoted the following from a report by the United States Steel Corporation:

> In respect to such commodities in stock at the close of the year as had been purchased by one subsidiary company from another there has been excluded the approximate amount of profits in such sales price which had accrued to the subsidiaries selling the same or furnishing service in connection therewith. These profits are not carried into the currently reported earnings of the entire organization until converted into cash or a cash asset to it. Accordingly, in the combined assets for all of the companies, the inventories of those materials and products on hand which have been transferred and sold from one subsidiary company to another, are carried, at net values which are substantially the production cost to the respective subsidiary companies furnishing the same.

This report clearly indicates just the opposite of the conclusion drawn by the accountant. It shows that transfers are not made at cost. When an inventory was taken, the profit from transfers of things not yet sold was excluded.

A coal dealer who operated a farm was asked how he charged farm-grown hay to the coal yard. His reply was, at the same price that he would get if the hay were sold. A firm that makes shoes and operates a chain of stores was asked how the shoes were charged to the stores. The reply was, at wholesale prices. A railroad company was asked what freight it charged on materials in determining the cost of a bridge. The company replied that it bought the material delivered. This, of course, would include freight at market prices, not at cost.

The Bureau of Business Research at Harvard University agrees with the practice here used, as is indicated by its bulletins and by the following letter:

> As is explained in our accounting system for retail grocers, the amount debited to the rent account when the store is owned should be the amount for which the store could be leased. By including rent as expense whether the store is owned or leased, every business is placed upon the same footing. The amount debited to Item 29 (Rent), when the store is owned, is of course credited back to the business through Item 41, Interest and Rentals Earned.
>
> The owner of a grocery store operating a farm should be careful to keep the accounts for these two separate. The produce which he takes into the store to sell at retail should be accounted for like any other purchases. When it is received, Purchases of Merchandize should be debited for the same amount that he would allow any other farmer in trade. The produce is then part of the retail grocery stock and its sale is accounted for like other sales.

INTEREST ON INVESTMENT

Beginning with 1918, interest is charged at 6 per cent on all enterprises and reappears as credit in the interest account. Before that year it was charged at 5 per cent.

Some persons have contended that interest is not a cost of production. Others consider it a cost if paid, but not a cost if not paid. Others consider it a cost whether paid or not. Most of the arguments against including interest as a cost apply equally to the value of the farmer's own labor and to that of the unpaid labor of members of his family.[11]

The relative profitableness of different enterprises can be determined only when each enterprise is charged with all the costs incurred in its production, whether or not these costs are cash outlays. The time required in production, whether the labor is hired labor or labor of the farmer, is a cost of production. A charge for the time of capital used in production is likewise a cost, whether the capital is owned or hired. If no charge is made for the use of capital, the enterprise that requires much capital is favored, just as the enterprise that requires much labor is favored if the farmer makes no charge for his time.

The primary ways of benefiting by cost accounts are the comparisons that can be made of successive years and the comparisons with results obtained by other persons. No method of accounting is satis-

[11] The American Economic Review, vol. IX, no. 1, supplement, pages 22-46, March, 1919.
The American Economic Review, vol. X, no. 3, pages 546-563, September, 1920.

factory that does not make such comparisons easy. If any cost is omitted, the farm or the year or the system of farming that has a relatively high charge for this cost is favored.

Objection has been raised to the inclusion of interest as a cost because the profitableness of the business affects the value of the property and consequently the charge for interest. But this is just as true of the charge for the farmer's time and the wages of hired labor. If the business is profitable, farm wages rise and the necessary allowance for the labor of the farmer and of the members of his family is increased. This latter change takes place more quickly than does the change of capital. Any argument for the exclusion of interest on this basis is therefore an argument for the exclusion of all unpaid labor. For example, as a result of relatively high profits in cities in the year ending with February of 1920, there was a decrease of 17 per cent in hired men on New York farms but a decrease of only 3 per cent of all persons.[12] This shows that paid labor adjusts itself more quickly to changed conditions than does unpaid labor. So the man who borrows money must adjust his practices to unfavorable conditions more quickly than the man who owns his capital, but in either case the adjustment is equally certain.

The adjustments that took place to meet the inflation of the currency during the World War show the usual order in which such adjustments occur. The wages paid to farm labor, and necessary allowances for labor performed by the farmer and members of his family, increased very materially before increases took place in the selling prices of cows or land. In cases of exceptionally violent changes in demand for a single article, as wool, a change in prices of sheep took place in advance of changes in labor, but such cases are the exception.

Farm wages rose 25 per cent in 1917 but land values rose only 13 per cent. In the following year wages rose 24 per cent and land values 9 per cent.[13] A part of the fall in prices has been shared by all the persons associated with the agricultural region; only a part is left to be reflected in land values, and often it is the smaller part.

In regions such as Tompkins County, New York, which have been farmed for one hundred years and in which there is some excellent and some poor land, the adjustment in land prices is very far from complete. Apparently less than half of the difference in conditions in adjoining communities is reflected in land prices. The remaining part is diffused thru the returns to all classes of persons associated with the community.

If the farmer desires to know which of his enterprises are the most profitable, he must take account of interest on the capital invested.

If the public desires to know whether or not a given price will result in an increased production of a certain product, account of interest must be taken, and the value of the farmer's time must be taken.

As with all other items, the details of interest charges are set forth so that any one who desires to recalculate the data in some other way can do so.

[12] More people leaving the farms. By J. B. Shepard. Mimeographed report of the Field Agent of the Bureau of Crop Estimates, Ithaca, New York, February 12, 1920.

[13] U. S. Dept. Agr., Yearbook for 1921, table 416.

INVENTORIES

Inventories are made at farm sale value, that is, the market value less the cost of marketing. This is the method used by the Federal Government in farm income tax reporting.

In mercantile accounting, selling is a large part, and sometimes the sole part, of the service rendered. Out of this fact grew the rule that inventories should be "at cost or market price, whichever is lower," so that profits may not be anticipated. This rule is not applicable to making farm inventories for most farm products. Goods in a factory or on a shelf in a store are usually a long way from cash. Corn in a crib or wheat in a bin can be cashed any day. If held, it is in hope of an additional profit rather than because the service has not yet been rendered. The service in the production of corn or wheat is practically complete when the crop is harvested. It is not anticipating profits to inventory them at farm sale value, any more than it is anticipating profits to inventory goods on a shelf at "cost or market price, whichever is lower." The service in the case of corn and wheat is often more nearly completed when they are stored on the farm than is the service of selling goods when the sale is completed, for the costs and uncertainties of collection for goods sold are often greater than the costs and uncertainties in the sale of corn and wheat.

With very high-priced purebred stock, the service is far from complete when the stock is grown. The making of a sale is a large part of the business. Usually such stock is correctly inventoried much below the price at which sales are made. On the other hand, fat hogs in a pen, or corn in a crib, or hay in a mow, can usually be sold by a telephone acceptance of the going price.

Inventories should be taken by principle rather than by rule. The principle is that the inventory should truly reflect the condition of the business, but should be conservative.

If a farmer should have on hand 500 bushels of corn that cost him 75 cents a bushel to grow but that could be sold at the barn to any one of many buyers for $1.50 a bushel, and should have on hand 500 bushels of wheat that could likewise be sold for $2 a bushel but that cost him $3, the true status of the business is not shown by "cost or market value, whichever is lower":

500 bushels of corn @ $0.75
500 bushels of wheat @ $3.00

The true status of the business is shown by farm sale value:

500 bushels of corn @ $1.50
500 bushels of wheat @ $2.00

The service of growing the corn has been rendered. If held longer, it is held speculatively in hope of a rising market. It is not held as goods on a shelf are held in hope of a market. It may be contended that the corn thus held may drop in price before it is sold, but so may goods on a shelf that are listed at "cost or market value, whichever is lower."

Like many of the rules of mercantile accounting, this rule for making inventories is the expression of a rule which if followed in certain circumstances will follow the correct principles, but if followed in other circum-

stances will violate all principles. The true principle of making an inventory is that it shall truly reflect the status of the business and yet be conservative.

IMPORTANCE OF QUANTITIES

In all cost accounting, the hours of labor per cow, per acre, and per bushel, the pounds of grain eaten per cow or horse, the yields per acre, the pounds of gain in hogs per pound of feed, and similar quantities, are much more important than the dollars if one is studying accounts to learn how to make the business pay better. The aim in this work is to give quantities and all other items of cost in detail so that they may be used in any way that is desired. So far as possible, all costs are carried in detail rather than under such charges as General Expense.

HUMAN LABOR

The labor account is charged with all cash paid to labor, with farm products, use of house, and other things furnished to labor. It is charged also with unpaid labor of the operator and of members of his family, at what it would cost to hire the work done. When this accounting work was first begun, the time of the operator was estimated at hired man's wages—not at what the operator would get if hired, but at the rate per month that hired men get. This method is not correct. The operator usually does very much more manual labor than the hired man does. In addition, he takes all the responsibility and trouble of seeing that things go right. It is the operator who must be ready to change his personal plans at any time to conform to the farm needs. If the hired man wants to go hunting or go to the fair, he may go; but if the operator wants to go, he must first considerer whether the farm work will allow it. If there is a sick horse or cow, it is usually the operator who sits up at night with it. Usually the operator calls the hired man in the morning, rather than himself being called. He sees that the stock is economically fed. Such service is exceedingly difficult to hire at any price and is practically impossible to obtain at hired man's wages.

Such a monthly rate was often no more than sufficient to cover the charges made to the operator for use of house and use of horses and garden. The basis now used for charging the operator's labor is "what it would cost to hire some one else to do what the operator does." All results in this bulletin are on this basis.

Since most farm managers are paid a given cash wage in addition to use of house and other privileges, this basis was used in obtaining estimates. The value of the privileges was then added to the cash estimate. As a check on the above estimates, each operator was asked what he could have obtained as a hired farm manager. In addition, members of the Department of Farm Management who were acquainted with the men and who knew also the usual wages paid to farm managers, estimated what they believed each operator would receive as a hired farm manager. These estimates were made independently. Most of the estimates by farmers were obtained by mail, so that the members of the department did not influence these decisions. The results are given in table 2. The

charge shown in the table is greater than the average charge because some operators were not charged for the full year.

TABLE 2. AVERAGE ESTIMATES OF THE PROPER CHARGE TO BE MADE FOR THE FARM OPERATOR'S LABOR IN ADDITION TO THE USE OF A HOUSE AND FARM PRODUCTS

Year	Farmer's estimate of cost to hire	Farmer's estimate of what he would receive as hired manager	Department's estimate of what he would receive as hired manager
1914	$ 859	$ 870	$1,033
1915	900	852	987
1916	1,091	1,000	1,257
1917	1,269	1,189	1,295
1918	1,330	1,257	
1919	1,234		

In 1907 the writers began by following the practice of Professor Roberts, of charging man and horse labor to each enterprise each month. At the end of the year it was found that there was a large loss on both labor and horses, and that some method must be devised for distributing equipment charges. It is not easy to know the cost of labor until the end of the year, after all fuel, house rent, and board have been charged to labor. It also requires nearly twelve times as much labor to charge these monthly, and therefore in 1909 the practice was begun of distributing the charges for man and horse labor, and use of equipment, at the end of the year.

At the end of the year, all accounts are charged with the hours of labor spent on the enterprise at the average labor rate for the farm, except in special cases when such a method of charging would be distinctly unjust to some enterprise. Such cases are not numerous.

The winter wage per month is often lower than the summer wage, but the hours per day are also less. In cases in which the uniform wage rate causes incorrect conclusions, of course it should not be used. The exact method of handling accounts is not so important as is the use of results. Whatever the method, the results must be interpreted in the light of the method used. If any enterprise does not pay, one should calculate what rate per hour could be charged and yet have the enterprise come out even. Before the enterprise is dropped, consideration should be given as to whether the time spent on it could be more profitably used on some other enterprise and whether the profits of the farm as a whole would be larger with this enterprise included or with it omitted. The way to increase profits is sometimes to drop an enterprise, but more frequently it is to analyze the enterprise and find how to make it pay. The benefits of the accounting on farms where accounts have been kept for a number of years are usually in organization and management rather than in decided changes in type of farming, altho such changes have occurred in some cases.

HORSE LABOR

If colts are raised, a separate account is kept with them. If a separate colt account is not kept, it is not possible to make comparisons of grain used, labor per horse, and other costs on successive years or between farms with varying ratios of colts and horses. At the end of the year, the net cost of all horse labor is distributed to the various enterprises in proportion to the hours that horses worked for those enterprises.

Since horses work so few hours per month in winter, the actual cost per hour worked in winter is more than in summer, but work done on rainy days and winter work is worth less than work on the good summer days. As in the case of human labor, an enterprise that uses horses at odd times is charged at the average rate, but consideration is given to its ability to use such odd-time labor when its value in the farming system is being considered.

USE OF EQUIPMENT

Some special equipment, as incubators, is kept in the account with the enterprise for which it is used, but most of the farm equipment is kept in one account. Usually it might as well all be so kept. At the end of the year the net cost of all equipment is charged to the respective enterprises in proportion to the hours of horse labor on the enterprise.

A separate account is kept with the tractor, and its net cost is charged to the various enterprises in proportion to the hours of use.

Automobile and truck costs are distributed at the average net cost per mile, per day, or per trip, as best meets the farm conditions.

Separate accounts are kept with such special tools as threshing machines on farms where they are used.

STOCK ACCOUNTS

If dairying is an important part of the business, an account is kept with cows, with herd bulls, with veal calves, and with heifers. The young heifers may be divided into heifers under one year old, and heifers one to two years old. This division is necessary if the feed used per cow, the feed used per 100 pounds of milk, the labor per cow, and the like, are to be compared for successive years or on different farms that have different ratios of cows and young stock. With purebred stock, it is also desirable in some cases to keep an account with bulls kept to be sold. If only a few cows or a few hogs or a few hens are kept for home use or as a minor enterprise, accounts are kept with the class of animals as a whole and no analysis of the business is attempted. Cows are treated in this way in all cases where there are less than six. If poultry is important, the account is similarly divided into such accounts as hens, chickens, incubation, and the like.

MANURE, LIME, AND GRASS SEED

Some years ago, manure was carried directly from the animal to the crop accounts and residual manure was carried in the inventory. Now a manure account is included. The hauling of manure is charged to this account, and the entire balance of the account is distributed to the accounts that received the benefits of the manure. No manure is carried in the inventory, unless the farm has been decidedly changed. The manure of the year is, by this method, considered to be a direct charge to each crop of that year in proportion as each crop is benefited from the manuring practice on the farm. For example, a hay crop may not have received any manure in a given year, but if manure is regularly used in the rotation, the hay crop has received the benefit from the manuring practice and pays its share each year. The only occasion when the inventory needs to be made is when a very decided change is made in farm practice, either by discontinuing the use of manure or by greatly increasing its use. If the use is decreased, the soil may be depleted so that the inventory should be reduced. If applications much larger than usual are being made, an increase of inventory may be required. Even in such cases the general method can be followed by carrying part of the manure charge to crops, and part to a crop land account where it is added to the inventory. When no better method of distribution is known, 40 per cent of manure costs is charged to the first crop, 30 per cent to the second, 20 per cent to the third, and 10 per cent to the fourth crop following the application. It is possible that this decrease is too rapid.

Lime is similarly disposed of, so that the cost of the year is charged to the expense of the crops grown in proportion to the benefit derived from the liming practice. Fertilizer used in small quantities is usually charged entirely to the crop that receives it. If the benefits to succeeding crops are great, they should, of course, pay part of the cost.

Similarly, grass seed is charged to the hay crop of the year. The hay crop of the year exhausts the seeding of the previous years, which is made good by seed sown this year. Here, again, very striking changes in the amount of seed used may require that account of the change should be made in the inventory.

REAL ESTATE

Formerly an account was kept with the farm, but it was found more useful to split this into separate accounts—operators' houses, tenant houses, barns and other outbuildings, crop land, orchard land, pasture and fences, woodland, and the like.

CROP ACCOUNTS

Accounts are kept with each kind of crop. Sometimes it is desired to keep two accounts with two fields of the same crop; if so, this is done. Separate accounts are kept with the crop of each year until the product is sold. There are always two accounts with winter wheat, and often two accounts with other crops, as "1918 hay" and "1919 hay."

The account with crop land is charged with interest, taxes, upkeep, and all costs of maintaining the crop land. The total net cost for the year is then carried to the various crop accounts. If some land is better than other land, the crop grown on it is charged at a higher rate than the average rate per acre.

SUBSORTING ENTRIES

The entries in the records of the farm on which accounts have been kept for fourteen years are not entered chronologically but are subsorted at the time of entry. For example, under the cow account, a debit page is used in the beginning for the inventory, a series of debit pages for feed purchased, a page for veterinary charges, and other pages for miscellaneous charges. Similarly, a set of credit pages is used for milk sold, and separate pages are used for stock sold. This saves time in sorting the items and is convenient for reference. In making an office copy of a farmer's book, this method of subsorting is used.

CLOSING ACCOUNTS

A considerable list of original entries is made at the end of the year, or else the books are checked to see that they have been made. The following directions are followed in closing accounts:

Enter any accounts payable and receivable that have not been entered, and carry the credits for items sold and charges for items purchased to the proper ledger accounts.

Charge the labor account with milk, wood, and other produce furnished to hired labor, and credit the proper accounts. Similarly, charge the farm operator with farm products used by him, and credit the proper accounts.

Charge labor with board furnished by the operator, and credit the operator's account.

Charge labor with farm products and farm privileges furnished to the operator's family, and credit the proper accounts.

Charge labor with what it would cost in addition to privileges to hire some one to take the place of the farm operator, also charge unpaid labor performed by members of the operator's family, and credit the operator's account. List each item separately, giving time and value.

Transfer heifers that have become cows to the cow account. See that sales of cows state whether the cows are sold for slaughter or for breeding.

Transfer colts that have become horses to the horse account, and see that young colts are transferred to the colt account.

See that the field and acres of each crop are recorded, and that weights per bushel, rates of seeding, and the like are given.

If a field has grown more than one crop, make a record of this fact. If two crops have been grown together as a crop in an orchard, estimate the acres that should be charged to each.

Charge animals and credit crops with hay, grain, and straw obtained from the farm. Distinguish as far as possible between straw for feed and straw for bedding. Also see that all feed transfers from one class of animals to another are correctly made.

Total the chores in the work report for each month and carry to a yearly summary. Carry totals from this to the respective work accounts, and find the total labor on each enterprise. Keep labor of production separate from labor of marketing. Make a summary of all the accounts with hours of labor. In this summary use the nearest hour.

Credit animals and charge the manure account with manure recovered.

Enter the horse, equipment, tractor, and all other inventories except those that involve costs, before the inventory is made.

Men work for horses, horses work for men, and each of these do work for and receive use of equipment. Each work to keep up and are sheltered by buildings. It is therefore manifestly necessary to start the closing of the accounts by making an estimate. A smaller error is likely to occur if the estimates are made for the less important accounts, that is, if the most important one is charged first. This is nearly always labor. After the inventory is made, the following order is used in closing the accounts:

If labor has had the use of buildings, charge labor and credit buildings at 10 per cent of the value of the building unless some other rate is known to be more nearly accurate. Charge labor with any land used at 8 per cent unless a different figure is known to be more nearly correct. These charges are intended to cover taxes, costs of upkeep, and 6 per cent interest.

If horses have worked for labor, charge labor and credit horses at an estimated rate per hour; also, charge labor and credit equipment at an estimated rate per hour for use of equipment.

Divide the total net cost of labor by the total hours of labor, omitting the hours that labor worked for labor.

Credit the labor account with the labor on each enterprise at this rate, and charge the various accounts. For convenience, each of these charges may be to the nearest dollar except the largest account, which is made to carry the fraction of a dollar of balance so that the labor account exactly balances.

If equipment has been used for horses, charge horses and credit the equipment account with the use of equipment at an estimated rate per hour.

Charge interest at 6 per cent on the average inventory of horses, and credit the interest account.

Charge horses with the use of buildings at 10 per cent and with the use of pasture and other land at 8 per cent, unless some other rate is more nearly accurate. Both of these charges are intended to cover taxes, upkeep, and interest at 6 per cent. Credit buildings, pasture, and the like.

Close the horse account in the same manner in which the labor account was closed, except that the labor of horses for labor and for themselves should be omitted.

Charge equipment with the use of buildings at 10 per cent and interest on the average inventory at 6 per cent, and credit buildings and interest.

Find the net cost of equipment, and divide by the hours of horse labor, omitting time on labor, horses, and equipment. Charge each account with the use of equipment at this rate, and credit equipment.

Charge the tractor account with use of buildings at 10 per cent and with interest at 6 per cent. Distribute the net cost in proportion to the hours worked.

Similarly, close the automobile, truck, threshing machine, and any other like accounts.

Find the balance of the barn account, and distribute this balance to the various crop and animal accounts, omitting equipment and work horses.

Find the balance of the crop land account and distribute to the various crops.

Find the balance of the pasture account and distribute to the various animals, omitting work horses.

Find the balance of the manure account and distribute to the various crops.

Find the balance of the general expense account and distribute. This account should be kept very small.

Transfer the herd bull account to the cow account. Similarly, distribute other accounts that have been carried separately for the various enterprises.

Enter all remaining inventories.

Charge interest to all accounts that have had considerable use of capital.

Close all accounts.

CAPITAL INVESTED

The capital per farm is shown in table 3, and averaged about $19,000. The net capital above indebtedness averaged approximately $16,000. The values of the crop land and the orchards are the market values at the present time. Usually the market value of the farms is less than enough to cover the cost of drainage, residual manure, growing crops, buildings, and other improvements, at pre-war prices. In other words, there is little, if any, "unearned increment" represented in any of the values.

The capital per worker for five years averaged $8867.

TABLE 3. CAPITAL AT THE END OF THE YEAR*

	1914		1915		1916	
	Total	Average per farm	Total	Average per farm	Total	Average per farm
Number of farms	18		46		31	
Operators' houses	$ 28,130.00	$ 1,562.78	$ 77,955.00	$ 1,694.67	$ 55,093.66	$ 1,777.21
Tenant houses	6,450.00	358.33	16,350.00	355.43	17,910.00	577.74
Barns and other buildings	51,102.27	2,839.02	126,956.00	2,759.91	101,983.00	3,289.77
Crop land and orchard	144,498.00	8,027.66	298,194.00	6,482.50	254,672.68	8,215.26
Pasture and fences	14,989.50	832.75	39,325.00	854.89	28,453.50	917.85
Woodland	6,022.00	334.56	15,674.00	340.74	9,954.00	321.10
Growing wheat, cost to end of year	1,850.94	102.83	4,039.68	87.82	4,224.40	136.27
Other next-year crops	2,559.90	142.22	7,510.12	163.26	3,842.25	123.94
Other real estate	1,500.00	83.33	4,050.00	88.04	5,800.00	187.10
Total value of farm	$257,102.61	$14,283.48	$590,053.80	$12,827.26	$481,933.49	$15,546.24
General equipment	$ 16,524.24	$ 918.01	$ 37,053.41	$ 805.51	$ 27,254.98	$ 879.19
Special equipment	2,417.00	134.28	8,511.00	185.02	7,772.80	250.74
Horses	17,307.00	961.50	39,830.00	865.87	29,295.00	945.00
Cattle	26,137.50	1,452.07	63,774.50	1,386.40	59,949.15	1,933.84
Sheep	849.00	47.17	2,749.50	59.77	1,040.00	33.55
Hogs	647.00	35.94	2,506.00	54.48	1,048.00	33.81
Poultry	3,925.40	218.08	8,493.13	184.63	6,459.50	208.37
Feed and supplies	15,891.78	882.88	56,740.97	1,233.50	46,716.29	1,506.98
Accounts receivable	1,210.79	67.27	19,919.41	433.03	9,259.99	298.71
All else	5.00	0.28	39.00	0.85	175.46	5.66
Total resources	$342,017.32	$19,000.96	$829,670.72	$18,036.32	$670,904.66	$21,642.09
Accounts payable	$ 49,760.97	$ 2,764.50	$136,084.73	$ 2,958.36	$143,175.77	$ 4,618.58
Net resources	$292,256.35	$16,236.46	$693,585.99	$15,077.96	$527,728.89	$17,023.51

*In this and later tables, apparent discrepancies of 1 cent will occasionally be found. For example, if the averages came out with six-tenths, seven-tenths, and eight-tenths of a cent each, they would each be raised to 1 cent but the total would then be 1 cent too much. In such a case the six-tenths of a cent is dropped.

PROFITS

In most industries there is no unpaid labor. A corporation or a partnership usually hires all its employees and computes its profits in percentage made on the capital. In agriculture, the unpaid labor of the farmer and of members of his family is usually a larger item than interest on the capital. The returns are pay for the farmer's time and for the use of his capital.

If the capital is very small, as is the case with many farmers, a slight error in assigning a value to the operator's time results in preposterous percentages. Let it be supposed that a tenant farmer has a capital of $1000 and that he makes $800 above his expenses in addition to the use of the house and some garden products. This is his reward for a year's work and for the use of $1000. If an error of $100 is made in estimating the pay for his time, it results in a 10 per cent difference in the profit that he makes. As a matter of fact, it is his labor rather than his capital that is the significant figure. By subtracting interest on the $1000 at the usual rate of interest, which is well known, the balance may be said to be what he received for his year's work. This is called *labor income.* This figure may be compared directly with the wages paid to persons hired to operate farms. It is not to be compared with city wages without making many allowances. But there are no easy means of comparing city and country wages.

The farms on which accounts were kept had about three times the average capital, so that the advantages of the labor income method of expressing profits are less than on the average farm. Even on these farms, the value of unpaid labor is more than the normal interest on the capital invested. The profits are due to the combination of unpaid labor and capital. It is not accurate to say that either is the cause, nor is it possible to say exactly how much is due to each.

Both methods of calculating returns are shown in table 4. The labor incomes average from $453 to $2111 in the successive years. With the allowance made for the operator's time, the interest made would amount to from 3 to 10 per cent in the different years.

TABLE 4. RETURNS EXPRESSED AS LABOR INCOME, 1914 TO 1919

	1914	1915	1916	1917	1918	1919
Average capital invested	$19,000.96	$18,036.32	$21,642.09	$20,867.81	$22,079.49	$22,516.51
Net income from capital and operator's labor	1,403.07	1,512.25	2,257.71	3,005.12	3,266.50	3,461.83
Interest paid on borrowed capital	166.26	191.69	298.14	251.92	295.24	340.20
Allowance for interest on operator's net capital	783.79	710.13	783.96	791.47	1,029.53	1,010.79
Labor income	453.02	610.43	1,175.61	1,961.73	1,941.73	2,110.84

Interest on investment

	1914	1915	1916	1917	1918	1919
Average capital invested	$19,000.96	$18,036.32	$21,642.09	$20,867.81	$22,079.49	$22,516.51
Net income from capital and operator's labor	1,403.07	1,512.25	2,257.71	3,005.12	3,266.50	3,461.83
Allowance for operator's time	825.90	878.76	1,043.71	1,231.63	1,278.00	1,233.85
Interest earned (per cent)	3.0	3.5	5.6	8.5	9.0	9.9

EDUCATION OF OPERATORS

No selection was made for farms except for the requirement that the operator should be one of the farm laborers. This was done to eliminate pleasure farms and other non-typical farms. In the beginning, no college graduates were on the list, but there has been a tendency for college-trained men to desire to do the work. On counting the numbers for 1919, the writers were surprised to find so many agriculturally trained men. The desire to do such work is in itself a selection.

In 1919 there were nine graduates of the New York State College of Agriculture. One graduate of Williams College had given so much study to technical agriculture that he is included with the agricultural graduates.

There were eleven winter-course students and one who had taken both a winter and a special course in the College of Agriculture. He was placed in the winter-course group. Of these, eight were also high-school graduates, one had attended high school for one year, and three had had no high-school work.

The remaining seventeen had had no agricultural education in school. One had taken two years of engineering work, five others were high-school graduates, six had had some high-school work but were not graduates, and five had had no high-school training.

It is shown in table 5 that the college graduates made interest on the capital, and, in addition to farm privileges, had left an average of $3395.21 to pay for their own labor and supervision. The lowest figure for this item was $785.64 and the highest was $6825.58. In only one case was the figure as low as the average of the group that received no technical education.

The winter-course men made interest on the capital, and, in addition to farm privileges, had left an average of $2422.78 as pay for labor and supervision. The lowest figure was $282.37 and the highest was $4164.44.

Those who had received no technical agricultural education in school made interest on the capital, and, in addition to farm privileges, had left $1135.14 to pay for labor and supervision. The lowest figure was −$1001.52 and the highest was $3144.39. No one in this group made as much as the average of the college graduates.

Many comparisons were made between the different educational groups in order to find the reasons for the differences in labor income. In all, 175 different factors were compared. A few of these are given in table 5. They included distribution of capital; man equivalent; hours worked per day; cost of labor per hour; feeding, care, and cost of horses; equipment and its cost; production, feeding, care, and size of flocks and herds; and similar factors for crops.

The only striking differences were found in size of farms, management of dairy herds, and management of apple orchards. These three items were sufficient to account for all differences in labor income. While the college men did not have much more capital than the others, they had more money invested in land and less in other things. They had larger farms and the usual savings that go with larger farms.

The larger allowance for the value of the operator's time was offset by the greater amount of hired labor that goes with large farms, so that

TABLE 5. AVERAGES FOR FARMS OPERATED BY PERSONS WITH DIFFERENT DEGREES OF EDUCATION, 1919

	College graduates	Winter-course students	Men with no agricultural-college training
Number of farms	10	12	17
Capital at beginning of year	$22,225.65	$24,917.54	$20,992.75
Value of farm	$17,606.15	$15,919.38	$14,313.07
Acres per farm	219	171	153
Acres of crops	117	110	89
Man equivalent	3.0	2.87	2.35
Cost of human labor per hour	$0.4458	$0.4312	$0.4523
Hours worked per man per year	2,999	3,141	3,111
Number of horses	4.9	5.0	4.2
Pounds of grain per horse	2,789	2,857	2,662
Hours of labor taking care of horses	113	115	134
Hours worked per horse per day	3.3	2.9	2.8
Cost per hour of horse labor	$0.2371	$0.2403	$0.2688
Number of farms having six or more cows	6	9	13
Number of cows per farm	18.0	22.7	17.6
Pounds of grain per cow	1,888	1,814	1,556
Pounds of hay per cow	3,798	3,796	3,934
Hours of labor taking care of cows	162	156	198
Pounds of milk per cow	6,791	6,708	5,907
Profit or loss per cow	+$20.00	+$19.71	−$0.82
Value of operator's labor in addition to privileges	$1,340.00	$1,302.00	$1,124.00
Value of operator's farm privileges	$692.12	$693.71	$676.90
Labor income	$3,395.21	$2,422.78	$1,135.14

the average cost per hour of all labor was about the same. This is because the hired labor costs less per hour than the value of the operator's time. The hours worked per person per day in the college and non-college groups were about the same.

As usual, the large farms resulted in more acres of crops per man and horse, more hours of work per horse, and consequently less cost of horse labor per hour. The hours spent in taking care of horses were also less, so that this figure was lowered still more.

Of those who kept six or more cows, the college group had about the same sized herds as the non-college group. The college group spent less time per cow in doing the work, fed more grain, and got 884 pounds more milk per cow, with a slightly less total cost per cow. This resulted in a profit per cow of $20 in the college group, and a loss of 82 cents in the non-college group.

The few college men who had orchards spent more on them than did the non-college men and obtained much better yields, which resulted in cheaper production and higher profits.

These statements are not to be taken as reflecting discredit on those who had received no agricultural training, for they were making from two to three times as much as the average farmer. All these figures indicate that the results for these farms are typical of the highly profitable farms of the State.

The year 1919 was a year of high prices. This favored the larger and more intensive enterprises such as college men were inclined to run. When farming is unprofitable, a large business, high grain-feeding of cows, and the like, are likely to result in large losses. Preliminary comparisons have been made for 1920. The labor incomes of college men averaged $649, of winter course men $347, and of others $303. Results for some of the farms for which tables are completed for 1921 show minus labor incomes for all group averages. The largest losses are for the college men, with average labor incomes of −$419; the labor incomes of winter-course men averaged −$180, and those of others −$318.

HUMAN LABOR

SOURCES AND AMOUNTS OF LABOR

On the average for five years, 34 months of labor were performed per farm per year. Some of this work was done by boys and other persons who could not do as much as a man. In table 6 a column headed "Man-equivalent months" is included. If in a day a boy did two-thirds as much work as a man, a day of his time is counted as two-thirds of a day in the column headed "Man-equivalent months." The man equivalent of the work done per farm was 33.7 months per year, or not quite equivalent to the time of 3 men per farm. In all work reports, the hours of labor are the actual hours, not man-equivalent hours.

Over half of the labor on the farms was done by the farm operator and members of his family who received no wages (table 6). Hired labor made 56 per cent of the total in 1914, 50 per cent in 1915, 49 per cent in 1916, 45 per cent in 1917, and 43 per cent in 1918. The decrease in proportion of hired labor agrees with results for the State. Hired men decreased 18 per cent in the year ending February 1, 1918, but the number of workers on farms decreased only 4 per cent.[14]

Since these farms are much larger than the average, the percentage of labor performed by hired men is much higher than the average for the State. In the State about one-fourth of the farm workers are hired.[14]

TABLE 6. SOURCES OF LABOR. AVERAGE PER FARM FOR FIVE YEARS, 1914 to 1918

	Months of labor	Man-equivalent months
Labor not paid in cash:		
Farm operators	14.3	14.3
Operators' wives	0.3	0.3
Operators' daughters	0.1	0.1
Operators' mothers	0.2	0.2
Operators' sons	1.4	1.3
Operators' fathers	1.0	0.9
Operators' brothers	0.1	0.1
Other members of family	0.2	0.2
Hired labor	16.4	16.3
Total	34.0	33.7

[14]Census of the agricultural resources of New York, page 11. 1918.

On only two farms was there a man equivalent as high as 5 (table 7). The most frequent man equivalent was in the 2-2.99 group. The average for the State is about 1.5. These farms employ twice as much labor, but produce more than twice as much, as the average farm.

TABLE 7. NUMBER OF FARMS HAVING DIFFERENT NUMBERS OF MAN EQUIVALENT

Man equivalent	1914	1915	1916	1917	1918	1919	Total
1 − 1.49	0	6	1	1	1	2	11
1.5 − 1.99	3	5	6	5	4	6	29
2 − 2.99	7	19	14	14	12	18	84
3 − 3.99	3	9	4	7	13	8	44
4 − 4.99	5	7	6	4	1	4	27
5 − 5.99	0	0	0	0	1	1	2

The farms employing the equivalent of from one to two men besides the operator were enough more profitable than those employing fewer men so that they were able to pay the operators more for their time and yet show a greater profit. In years of large losses, these farms would also show the greatest losses. They are, however, more profitable on the average.

Those who employed the most help had the largest farms and the most capital. They used the least capital per man, having an average of $8269 per man.

Various reasons why the large farms are more profitable are discussed in Bulletin 295 of this station.[15]

The farms employing the greatest number of men made more per man above interest on capital than did the farms employing the least number of men (table 8). The larger labor income is therefore in part due to increased return of labor, and not due merely to the operator's profit coming from more men. It should be noted that the larger farms are not elaborate places. All of them are farms on which the operator is a laborer as well as manager.

TABLE 8. RELATION OF MAN EQUIVALENT TO OTHER FACTORS, 39 FARMS, 1919

	Man equivalent		
	Under 2	From 2 to 3	Over 3
Number of farms	9	18	12
Average man equivalent	1.60	2.43	3.85
Average capital at beginning of year	$15,081.94	$19,966.42	$31,917.56
Value of operator's time above farm privileges	$1,144	$1,179	$1,383
Cost per hour of labor	$0.5196	$0.4377	$0.3973
Hours of labor per person per month	236.2	247.0	270.6
Average labor income	$1,388	$1,427	$3,679
Value of operator's farm privileges	$635.02	$649.74	$778.54

[15]An agricultural survey. By G. F. Warren and K. C. Livermore. 1911.

HOURS OF LABOR

All labor is usually charged in the work report book in hours, not in man equivalent. The number of months is also known, so that the average hours of work per person per month can be calculated. This contains a small error, because some day-work was reduced to a month basis by estimating 260 hours as one month. The five-years average hours worked per person per year was 3036, or 253 hours per month.

In 1919 the average hours of labor per person per month varied from 166 to 379 on the different farms. The average was 252 hours. On one-third of the farms the hours worked per person per month was less than 230; on one-third it was from 230 to 260; and on one-third it was over 260, with an average of 300. Those who worked the greatest number of hours had the most capital, employed the most labor, estimated their own time at a higher figure, had the lowest cost of labor per hour, and made the largest labor incomes. The differences are in large part due to the larger business. Sorting by hours worked per person per month placed the larger farms in the group with the most hours of labor per person.

RELATION OF ALLOWANCE FOR OPERATOR'S TIME TO PROFITS

On the average, the operators whose time was valued most highly were able to make this higher allowance and still make more profit (table 9). When subsorted by man equivalent, the figures indicated that the operator's time should not be valued too highly if he does not employ much help.

TABLE 9. RELATION OF ALLOWANCE FOR OPERATOR'S TIME TO PROFITS, 39 FARMS, 1919

Allowance for operator's time	Number of farms	Average allowance for operator's time	Average capital at beginning of year	Man equivalent	Cost of labor per hour	Labor income*
Under $1800	15	$1,624.97	$17,336.97	2.15	$0.4398	$1,526.52
$1800–$1999	11	1,899.43	23,207.13	2.83	0.4408	1,878.76
$2000 or more	13	2,277.28	27,908.52	3.16	0.4520	2,981.44

*The figures in this column are what is left as profit and pay for operator's time after deducting interest on investment.

COST OF LABOR

The estimated cost to hire persons to take the place of the farm operators in 1918 averaged $1278 in cash and $711.15 in perquisites. In that year, hired labor cost an average of $46.64 per month in cash and $18.55 in perquisites.

The charge for operator was about two and one-half times the cost of hired labor. This is a much greater difference than would occur on average farms, because these farm operators are much more valuable men than the average farmer.

TABLE 10. COST OF LABOR PER HOUR, SIX YEARS

Year	Number of farms	Average cost per hour	Per cent (1914 figure as 100)	Wages reported by U. S. Bureau of Crop Estimates for men hired by year boarded (1914 figure as 100)
1914	18	$0.2508	100	100
1915	46	0.2599	104	100
1916	31	0.3026	121	116
1917	31	0.3563	142	138
1918	32	0.3957	158	157
1919	39	0.4162	166	170

The wages paid to hired men are also higher than the average for the State, but the rate of increase in the cost of labor year by year agrees with the increases shown by the Bureau of Crop Estimates (table 10).

The cost of man labor on different farms in 1919 varied from 27 cents to 66 cents (table 11). The weighted average cost (the total cost of labor divided by the total number of hours) was 42 cents. The average of the averages per farm and the median was 44 cents.

TABLE 11. VARIATIONS IN THE COST OF MAN LABOR PER HOUR IN 1919

Cost per hour	Number of farms
$0.2691	1
$0.30 to $0.3499	6
$0.35 to $0.3999	6
$0.40 to $0.4499	9
$0.45 to $0.4999	5
$0.50 to $0.5499	7
$0.55 to $0.5999	3
$0.6054	1
$0.6620	1

The costs of labor for different years are shown in table 12.

TABLE 12. COSTS OF LABOR PER FARM, 1914 TO 1918

	1914 (18 farms)		1915 (46 farms)		1916 (31 farms)		1917 (31 farms)		1918 (32 farms)	
	Months	Value	Months	Value	Months	Value	Months	Value	Months	Value
First operator	10.91	$825.90	11.66	$878.76	11.50	$1,043.71	11.68	$1,231.63	11.61	$1,278.00
Second operator	1.22	63.33	1.61	60.89	1.45	67.42	3.48	191.61	3.70	293.59
Third operator	0.56	33.33	0.01	13.04	——	——	0.90	40.65	1.10	79.27
Farm privileges furnished to operator	——	383.07	——	463.99	——	524.76	——	554.90	——	711.15
Unpaid family labor	3.36	101.33	2.88	102.34	4.24	168.03	2.76	97.45	3.42	184.01
Cash paid for labor	20.19	618.50	15.89	490.67	16.30	583.70	15.08	602.29	14.79	689.84
Value of farm products furnished to hired labor	——	220.83	——	179.76	——	184.81	——	233.38	——	274.39
Total	36.24	$2,246.29	32.05	$2,189.45	33.49	$2,572.43	33.90	$2,951.91	34.62	$3,510.25
Total hours of labor	8,956		8,424		8,501		8,285		8,870	
Cost per hour of labor		$0.2508		$0.2599		$0.3026		$0.3563		$0.3957

In 1918, cash paid to hired men was 20 per cent of the total labor cost. Cash and farm privileges of hired men combined made 27 per cent of the total cost. On the average, over one-fifth of the pay of hired men is in farm privileges.

The details of costs of labor for the year 1918 are shown in table 13. Farm privileges of the operator are not itemized for one farm. All the farm operators received milk from the farm. In two cases this is charged as the balance of a family cow account, so that the quantity is not known. The 29 farms for which quantity is given show that the farm operators received an average of 2622 pounds per year, or 3.3 quarts per day. Some farms had more than one operator's family, so that the average per family is slightly less.

TABLE 13. DETAILS OF COSTS OF LABOR, 32 FARMS, 1918

	Number of farms having expense	Total quantity	Total value	Average value per farm
Operator's labor:				
Cash allowance	32	371.3 mos.	$40,896.00	$1,278.00
Farm privileges:				
Details not itemized	1	——	711.15	22.22
Use of house	31	383 mos.	4,578.82	143.08
Use of other buildings	14	——	87.75	2.74
Human labor	31	8,432 hrs.	2,436.57	76.14
Horse labor	31	5,497 hrs.	1,230.93	38.47
Use of equipment	31	——	335.57	10.49
Wood	22	493.5 cds.	873.50	27.30
Balance of cow account	2	——	236.13	7.38
Milk	29	76,028 lbs.	2,587.04	80.84
Butter	12	1,204 lbs.	574.03	17.94
Other dairy products		——	172.24	5.38
Beef	5	904 lbs.	144.78	4.52
Veal	2	249 lbs.	32.25	1.01
Pork	21	10,294 lbs.	2,130.48	66.58
Mutton	1	66 lbs.	11.97	0.37
Balance of poultry account	4	——	510.93	15.97
Poultry	23	427 head	464.51	14.52
Eggs	25	3,728 doz.	1,605.69	50.18
Potatoes	30	1,193 bu.	1,194.66	37.33
Other vegetables		——	871.24	27.23
Apples	25	38,030 lbs.	555.09	17.35
Other fruits		——	160.43	5.01
Maple sirup	7	132 gal.	199.50	6.23
Honey	3	285 lbs.	57.35	1.79
Beans	9	10 bu.	50.19	1.57
Buckwheat	5	23 bu.	36.70	1.15
Wheat	8	174 bu.	370.82	11.59
Rye	2	18 bu.	37.00	1.16
All else		——	499.49	15.61
Total operator's privileges			$22,756.81	$711.15
Total for operator's labor			$63,652.81	$1,989.15
Second operator	11	119 mos.	$9,395.00	$293.59
Third operator	3	35 mos.	$2,536.67	$79.27
Unpaid family labor		109.4 mos.	$5,888.25	$184.01

TABLE 13 (*concluded*)

	Number of farms having expense	Total quantity	Total value	Average value per farm
Hired labor:				
Cash paid	32	473.3 mos.	$22,075.00	$689.84
Farm privileges:				
Use of house	13	166.5 mos.	910.24	28.44
Use of other buildings	3		19.53	0.61
Horse labor	17	1,372 hrs.	315.56	9.86
Use of equipment			96.04	3.00
Wood	12	195 cds.*	322.13	10.07
Board (including lodging)	26	246.2 mos.	6,063.03	189.48
Milk	12	18,872 lbs.	688.44	21.51
Other dairy products			29.20	0.91
Beef	1	169 lbs.	23.66	0.74
Pork	2		8.60	0.27
Potatoes	7	137 bu.	142.75	4.46
Other vegetables			17.25	0.54
Apples	10	78 bu.	74.25	2.32
Other fruits			25.60	0.80
All else			44.11	1.38
Total farm privileges furnished to hired labor			$8,780.39	$274.39
Total for hired labor			$30,855.39	$964.23
Total cost of labor			$112,328.12	$3,510.25

*Stove length.

SEASONAL DISTRIBUTION OF LABOR

The seasonal distribution was very nearly the same in every year. This distribution on each kind of crop and stock enterprise for four years is given in table 14. The horse labor distribution is given in table 29 (page 57). The hours of labor per farm increased until the last ten days of July. There was a secondary period of increase in October. The total hours of work in the busiest ten-days period was twice as much as in the slack season. This extra work is in part done by extra hired labor, but is largely done by working very long hours and with the help of the farmers' wives and children. The harvest season varies with the type of farming, but the results given in table 14 probably represent conditions in the State as a whole. This is due to the two harvest periods, one for hay and grain in July and August, and one for corn, potatoes, apples, beans, and cabbage in the fall.

TABLE 14. DISTRIBUTION OF TOTAL HOURS OF LABOR FOR FOUR YEARS, BY TEN-DAYS PERIODS
(18 farms in 1914; 46 farms in 1915; 31 farms in 1916; 30 farms in 1917)

Month	Ten-days period	Building repairs	Building improvement	Fence repairs	New fence	Drainage repairs	New drainage	Brush and weeds cut	Picking stone	Clearing land	Wood and lumber	Other real estate work	Total hours on real estate work
January	First	472	412	26	—	2	—	9	—	—	201	150	1,272
	Second	409	442	4	—	1	—	2	—	46	330	238	1,472
	Third	262	656	19	64	3	—	6	—	47	402	290	1,749
February	First	255	334	23	7	—	—	16	—	54	374	243	1,306
	Second	286	389	7	3	—	—	9	—	28	364	197	1,290
	Third	301	344	41	26	4	2	2	—	39	387	170	1,316
March	First	376	372	79	2	—	4	54	—	78	463	343	1,771
	Second	416	523	48	—	10	37	35	4	27	309	185	1,684
	Third	469	527	80	12	22	24	28	93	4	534	168	1,903
April	First	491	517	103	106	37	80	128	28	35	336	256	2,386
	Second	376	473	252	130	34	295	139	70	117	213	456	2,513
	Third	468	345	497	196	54	214	100	150	280	37	306	2,567
May	First	458	312	822	260	46	321	41	234	226	75	278	2,989
	Second	347	444	891	212	36	518	54	169	318	27	276	3,357
	Third	676	603	590	415	52	152	120	238	238	92	464	3,571
June	First	632	902	472	270	104	238	294	186	266	121	425	3,910
	Second	495	895	386	193	86	104	279	148	146	64	249	3,045
	Third	446	933	166	22	36	152	294	96	40	46	217	2,448
July	First	611	929	256	16	38	40	124	14	6	4	163	2,201
	Second	478	530	204	36	36	80	208	10	26	9	215	1,832
	Third	251	596	146	19	14	16	249	25	2	14	84	1,416
August	First	280	721	270	16	17	54	354	28	54	7	248	2,049
	Second	337	836	196	137	16	94	412	30	48	42	148	2,296
	Third	476	1,550	257	70	74	301	571	96	216	14	418	4,043
September	First	602	1,767	136	51	84	593	300	84	334	96	537	4,584
	Second	320	1,611	125	1	94	330	85	116	168	8	335	3,193
	Third	299	1,107	108	40	15	282	60	58	71	4	359	2,403
October	First	338	778	201	54	12	245	34	102	4	20	136	1,924
	Second	502	641	108	107	8	220	16	60	26	19	79	1,786
	Third	677	578	50	12	12	181	16	64	52	17	135	1,794
November	First	715	729	26	—	24	436	—	10	76	26	229	2,261
	Second	995	607	54	36	164	532	16	18	68	22	332	2,844
	Third	619	658	46	48	124	489	14	40	166	230	198	2,632
December	First	595	696	104	20	8	330	4	30	194	62	323	2,366
	Second	816	430	13	20	10	70	14	—	192	155	201	1,921
	Third	453	618	73	—	—	—	—	—	5	262	163	1,574
Total		16,999	24,805	6,879	2,601	1,284	6,424	4,087	1,967	3,932	5,476	9,214	83,668

TABLE 14 (*continued*)

		General equipment	Special equipment	Horses	Cattle	Hogs	Mature poultry	Young poultry and incubation	Farm poultry	Sheep	Bees	Total hours on livestock
Number of farms		122	12	125	125	86	12	12	101	18	4	—
Animal units		—	—	711.73	2,241.11	68.31	81.19	—	131.48	106.49	—	—
Month	Ten-days period											
January	First	194	—	2,407	9,314	494	358	8	697	151	—	13,429
	Second	232	3	2,418	9,206	425	322	—	654	155	—	13,180
	Third	268	—	2,617	10,035	443	385	7	772	165	—	14,424
February	First	339	4	2,394	9,171	415	398	9	705	155	—	13,247
	Second	245	2	2,533	9,131	408	469	2	739	148	—	13,430
	Third	332	14	2,009	7,608	312	357	5	625	153	—	11,069
March	First	346	15	2,526	9,031	423	360	124	736	145	—	13,345
	Second	464	26	2,478	9,047	350	348	91	814	138	—	13,266
	Third	551	40	2,812	10,049	460	371	139	932	132	—	14,895
April	First	577	48	2,839	8,955	393	376	299	1,030	154	—	14,046
	Second	492	106	2,763	8,813	367	404	257	932	190	2	13,728
	Third	467	216	2,654	8,869	369	380	342	945	166	—	13,725
May	First	481	198	2,719	8,369	359	347	313	953	181	4	13,245
	Second	342	144	2,699	7,900	361	358	304	955	82	—	12,659
	Third	605	40	2,907	8,156	345	374	270	1,028	64	2	13,146
June	First	483	71	2,597	6,659	315	331	231	905	67	—	11,105
	Second	474	32	2,503	6,647	298	311	268	884	37	3	10,951
	Third	580	22	2,496	6,656	291	287	187	816	35	3	10,771
July	First	624	4	2,418	6,312	326	300	157	729	14	7	10,263
	Second	575	6	2,289	6,302	330	277	140	726	7	—	10,071
	Third	521	4	2,525	6,786	356	300	163	816	4	1	10,951
August	First	477	9	2,339	6,078	324	240	122	745	9	3	9,860
	Second	406	9	2,296	6,109	325	264	136	727	21	1	9,879
	Third	388	25	2,468	6,699	411	262	119	830	28	1	10,818
September	First	242	92	2,202	6,245	354	218	126	641	10	—	9,796
	Second	344	52	2,288	6,346	333	218	134	644	12	—	9,975
	Third	302	82	2,303	6,426	338	222	116	660	10	3	10,078
October	First	500	14	2,244	6,825	410	237	107	597	14	—	10,434
	Second	328	23	2,233	6,991	453	208	118	627	34	—	10,664
	Third	215	17	2,451	7,926	487	321	122	638	39	—	11,984
November	First	152	14	2,320	8,063	463	267	37	639	54	1	11,844
	Second	183	9	2,378	8,303	501	294	69	698	89	—	12,332
	Third	277	17	2,376	8,486	596	294	5	620	156	—	12,533
December	First	240	2	2,411	9,013	564	304	2	633	123	—	13,050
	Second	363	—	2,410	9,289	606	316	2	668	132	—	13,423
	Third	241	9	2,640	10,225	661	380	3	731	150	—	14,790
Total		14,050	1,369	88,962	286,040	14,666	11,458	4,534	27,491	3,224	31	436,406

TABLE 14 (*continued*)

		Alfalfa	Apples	Barley	Beans	Buckwheat	Cabbage	Corn for grain	Corn for silage	Cucumbers	Garden	Hay
Number of farms		56	25	25	34	44	38	56	75	6	47	124
Acres		422.95	355.61	163.4	384.65	260.3	206.1	350.09	1,004.1	2.4	25.27	4,770.34
Month	Ten-days period											
January	First	54	362	15	126	30	286	347	—	—	1	60
	Second	18	199	—	44	7	192	230	—	—	—	601
	Third	52	415	—	16	5	157	202	1	—	—	442
February	First	81	216	—	54	8	235	129	—	—	2	297
	Second	19	426	—	13	5	156	178	—	—	2	380
	Third	9	512	15	39	16	8	116	1	1	14	583
March	First	4	778	3	23	—	65	44	11	—	1	212
	Second	94	955	6	41	—	175	87	15	2	20	320
	Third	24	1,616	6	18	2	246	125	21	20	90	436
April	First	60	1,757	3	7	1	10	90	72	24	62	387
	Second	176	1,891	149	170	2	188	307	300	18	142	592
	Third	94	1,973	319	400	13	192	384	707	54	201	389
May	First	115	1,041	319	527	111	552	630	832	12	277	393
	Second	282	906	420	454	118	322	1,297	1,377	69	393	331
	Third	83	1,236	200	445	140	371	1,083	2,964	28	247	188
June	First	375	774	79	769	343	639	827	2,420	23	244	317
	Second	1,242	535	14	784	546	769	873	1,842	43	338	421
	Third	2,308	297	1	1,226	477	2,546	1,113	2,396	44	312	1,611
July	First	960	234	—	821	726	1,972	851	1,577	26	360	5,723
	Second	355	212	4	857	246	1,438	728	1,587	44	279	9,855
	Third	820	380	110	735	64	816	781	973	46	159	11,103
August	First	1,228	764	331	526	4	554	275	640	58	118	7,175
	Second	831	696	750	305	33	447	127	311	68	83	4,468
	Third	370	620	306	320	52	186	100	303	80	179	1,734
September	First	216	916	208	242	80	83	127	752	70	82	1,693
	Second	378	1,664	201	664	270	174	668	2,099	61	88	734
	Third	488	3,393	172	1,040	522	120	1,474	3,228	27	57	603
October	First	176	5,171	34	859	475	294	1,345	6,165	2	79	141
	Second	204	6,634	39	430	377	447	866	3,248	—	59	190
	Third	92	5,910	13	347	406	407	1,009	2,061	—	95	242
November	First	20	1,702	53	987	242	1,638	1,405	631	—	100	113
	Second	—	774	55	340	132	1,698	1,346	138	—	142	133
	Third	—	423	21	152	28	857	1,272	131	—	30	186
December	First	498	298	25	295	28	300	1,241	164	—	19	716
	Second	260	80	12	51	16	85	654	55	—	—	379
	Third	61	228	1	23	46	48	599	2	—	—	199
Total		12,047	45,988	3,884	14,150	5,571	18,673	22,930	37,024	820	4,275	53,347

TABLE 14 (*continued*)

		Mangels	Oats	Onions	Peaches	Pears	Peas for market	Canning-factory peas	Potatoes	Rye	Sweet corn	Tobacco
Number of farms		16	102	5	15	12	8	9	109	21	14	4
Acres		15.1	1,452.2	4.6	99.9	38.11	74.95	41.6	623.83	185.6	114.05	24.7
Month	Ten-days period											
January	First	—	65	—	6	12	—	—	316	—	—	170
	Second	21	30	—	24	21	—	—	563	—	—	279
	Third	—	112	—	2	26	—	—	464	—	—	323
February	First	—	1	—	20	—	—	—	625	—	—	248
	Second	—	20	—	16	54	4	—	452	—	3	214
	Third	—	18	4	3	80	4	—	456	7	1	63
March	First	11	17	6	158	8	5	—	330	—	11	—
	Second	6	54	13	252	94	2	—	380	20	6	—
	Third	—	93	—	244	172	56	2	391	25	27	—
April	First	—	450	7	493	69	189	34	465	—	93	—
	Second	34	2,489	68	403	80	166	109	709	1	159	43
	Third	4	3,049	150	274	103	109	107	1,128	5	368	125
May	First	40	2,235	69	318	214	72	118	1,555	13	701	86
	Second	117	1,712	76	199	119	64	21	2,741	1	445	193
	Third	44	769	147	212	110	43	—	3,103	7	290	187
June	First	90	166	40	248	155	12	6	3,751	—	355	213
	Second	46	147	106	210	72	30	12	3,415	—	355	567
	Third	134	16	228	203	79	69	113	2,494	6	635	689
July	First	211	6	80	172	36	279	112	1,679	76	308	356
	Second	132	36	100	77	19	367	313	2,028	153	276	118
	Third	160	146	334	47	14	277	148	2,286	506	427	450
August	First	122	1,906	152	40	74	123	1	1,396	313	971	267
	Second	94	4,891	136	46	47	44	2	1,094	269	1,050	194
	Third	40	4,145	34	218	32	5	5	806	509	1,279	283
September	First	24	2,934	29	798	804	17	4	542	310	950	890
	Second	30	1,945	120	1,842	447	16	14	847	255	808	957
	Third	—	1,140	169	1,870	342	7	7	1,534	176	215	124
October	First	—	561	108	292	129	3	2	1,588	172	222	2
	Second	—	643	62	94	131	9	2	3,508	262	57	2
	Third	334	508	38	41	135	2	2	6,964	160	31	3
November	First	346	858	5	23	2	4	5	5,161	171	59	6
	Second	113	426	—	14	1	4	3	2,083	—	11	4
	Third	12	267	—	20	17	3	3	652	5	17	4
December	First	74	437	—	32	8	8	25	465	40	9	116
	Second	—	25	—	24	—	1	—	254	—	1	128
	Third	5	155	—	41	2	—	—	307	10	1	187
Total		2,244	32,472	2,281	8,967	3,708	1,994	1,170	56,532	3,472	10,231	7,491

TABLE 14 (*concluded*)

		Market tomatoes	Wheat	Maple sugar	All other crops	Total hours for all crops	Manure hauling	Lime	All else	Grand totals
Number of farms		7	79	11	—	—	125	54	—	—
Acres		17.3	1,069.57	—	—	—	—	—	—	—
Month	Ten-days period									
January	First	—	74	—	179	2,103	1,038	50	1,619	19,705
	Second	—	38	—	179	2,446	951	33	1,599	19,916
	Third	—	26	—	172	2,415	1,191	78	2,469	22,594
February	First	—	—	41	108	2,065	1,022	45	2,265	20,293
	Second	—	66	—	169	2,177	1,354	95	2,420	21,013
	Third	—	2	64	253	2,269	952	100	2,024	18,076
March	First	—	68	146	381	2,282	1,423	60	3,382	22,824
	Second	14	13	328	680	3,577	1,185	15	2,710	22,927
	Third	7	56	580	1,055	5,312	1,707	99	3,328	27,835
April	First	9	112	672	1,522	6,588	1,289	120	3,017	28,071
	Second	46	34	658	2,377	11,311	1,396	199	2,362	32,107
	Third	64	22	149	2,536	12,919	1,408	218	1,939	33,459
May	First	57	57	—	2,568	12,912	1,253	191	2,002	33,271
	Second	44	40	—	2,227	13,959	900	178	1,747	33,286
	Third	118	65	—	2,517	14,597	763	15	1,550	34,287
June	First	249	64	—	2,411	14,570	789	37	1,541	32,506
	Second	102	34	—	1,453	13,956	568	28	1,520	30,574
	Third	100	116	25	1,614	18,852	232	10	1,471	34,386
July	First	37	—	36	2,054	18,692	316	12	1,373	33,485
	Second	25	650	2	2,331	22,232	201	1	1,458	36,376
	Third	33	4,939	—	2,160	27,914	214	—	1,145	42,165
August	First	56	3,410	—	1,755	22,259	478	—	1,264	36,396
	Second	132	2,115	—	1,624	19,857	651	10	1,054	34,162
	Third	270	2,321	—	1,816	16,013	1,153	90	1,770	34,300
September	First	567	2,743	—	1,517	16,598	876	32	1,585	33,805
	Second	738	2,857	—	2,510	20,477	581	187	1,145	35,954
	Third	672	2,470	—	2,094	21,944	332	94	1,021	36,256
October	First	294	1,023	1	2,374	21,512	420	73	1,149	36,026
	Second	22	798	—	3,757	21,841	352	20	927	35,941
	Third	6	392	—	3,617	22,815	716	46	1,141	38,728
November	First	1	286	19	2,838	16,675	1,024	24	1,194	33,188
	Second	—	81	—	1,724	9,222	886	43	1,383	26,902
	Third	—	216	20	1,614	5,950	1,387	127	1,305	24,228
December	First	—	82	29	1,050	5,959	1,154	5	1,509	24,285
	Second	—	61	—	241	2,327	936	—	1,835	20,805
	Third	—	76	—	106	2,097	1,257	—	1,634	21,602
Total		3,663	25,407	2,770	57,583	438,694	32,355	2,335	62,857	1,071,734

WEEK-DAY AND SUNDAY LABOR

The distribution of week-day, Sunday, and total labor by months for 1917 is shown in tables 15 to 17. On dairy farms the Sunday labor on the dairy enterprise is almost as much as the week-day labor. This makes the Sunday labor very high on farms that keep cows. An average of 24 minutes per cow was expended on the dairy enterprise on Sunday, and an average of 26 minutes on week days. On farms having more than six cows, the average number of hours of Sunday labor per worker was 5. On farms having less than six cows, the Sunday labor averaged less than 3 hours, of which nearly one-third was on the dairy enterprise. On all farms, 85 per cent of the Sunday labor was on livestock. Judged by the standards of industry, the Sunday and holiday labor on cows should be paid for at higher rates. But it seems probable in agriculture that the total reward for a year's work is no greater in those types of farming that require continuous labor than in those that allow some time off.

On farms having six or more cows, the distribution of labor was much more uniform in the different months than on farms having less than six cows. The farms having less than six cows required more help in summer, and probably worked longer hours in summer and shorter hours in winter, than the dairy farms. The total hours per year per person were slightly higher on farms having six or more cows.

TABLE 15. HOURS OF LABOR, WEEK DAYS AND SUNDAYS

(Averages for 30 farms in 1917. Average number of months of labor per farm, 34.27, equivalent to 2.86 persons)

Month	Sunday labor for dairy enterprises	Sunday labor for other livestock	Other Sunday labor	Week-day labor for dairy enterprises	Week-day labor for other livestock	Other week-day labor	Total week-day labor	Total Sunday labor	Total labor
January	31	11	3	211	81	169	461	45	506
February	32	12	4	189	77	172	438	48	486
March	31	12	5	214	93	269	576	48	624
April	39	18	7	199	98	412	709	64	773
May	28	14	7	192	101	493	786	49	835
June	23	12	10	146	87	466	699	45	744
July	28	15	7	145	75	589	809	50	859
August	21	10	7	144	71	596	811	38	849
September	27	13	11	139	62	566	767	51	818
October	25	10	11	170	71	516	757	46	803
November	29	11	10	186	74	384	644	50	694
December	37	14	4	208	76	182	466	55	521
Total	351	152	86	2,143	966	4,814	7,923	589	8,512
Average hours per year per person	123	53	30	749	338	1,683	2,770	206	2,976

TABLE 16. HOURS OF LABOR, WEEK DAYS AND SUNDAYS

(Average per farm, 20 farms in 1917 having six or more cows. Average number of cows, 22.1. Average number of months of labor, 33.07, equivalent to 2.76 persons)

Month	Sunday labor for dairy enterprises	Sunday labor for other livestock	Other Sunday labor	Week-day labor for dairy enterprises	Week-day labor for other livestock	Other week-day labor	Total week-day labor	Total Sunday labor	Total labor
January	40	10	4	289	75	168	532	54	586
February	40	11	6	262	72	126	460	57	517
March	41	10	6	294	84	170	548	57	605
April	52	17	7	273	92	299	664	76	740
May	38	12	7	265	100	381	746	57	803
June	30	11	12	203	87	370	660	53	713
July	38	13	6	201	77	479	757	57	814
August	28	9	7	198	72	470	740	44	784
September	37	12	10	191	62	387	640	59	699
October	33	9	13	236	67	388	691	55	746
November	37	9	12	256	69	318	643	58	701
December	51	12	6	288	76	153	517	69	586
Total	465	135	96	2,956	933	3,709	7,598	696	8,294
Average hours per year per person	168	49	35	1,071	338	1,344	2,753	252	3,005

TABLE 17. HOURS OF LABOR, WEEK DAYS AND SUNDAYS

(Average per farm, 10 farms having less than six cows. Average number of months of labor per farm, 36.69, equivalent to 3.06 persons.)

Month	Sunday labor for dairy enterprises	Sunday labor for other livestock	Other Sunday labor	Week-day labor for dairy enterprises	Week-day labor for other livestock	Other week-day labor	Total week-day labor	Total Sunday labor	Total labor
January	11	15	1	58	92	170	320	27	347
February	12	14	2	44	86	265	395	28	423
March	12	16	2	54	110	468	632	30	662
April	15	21	6	48	112	638	798	42	840
May	9	17	8	47	103	715	865	34	899
June	8	16	6	30	88	659	777	30	807
July	10	18	7	30	72	810	912	35	947
August	7	12	8	36	70	848	954	27	981
September	9	13	12	32	63	925	1,020	34	1,054
October	8	13	7	39	80	769	888	28	916
November	10	14	8	47	84	518	649	32	681
December	13	16	0	47	78	237	362	29	391
Total	124	185	67	512	1,038	7,022	8,572	376	8,948
Average hours per year per person	41	60	22	167	339	2,295	2,801	123	2,924

DISTRIBUTION OF LABOR BY ENTERPRISES

Over one-fourth of the total labor on the farms studied was spent in care of cattle. This is probably about the average for the State, as the ratio of cattle to crop acres is about the average for the State. Corn, potatoes, and hay required 16 per cent of the total labor. Results for other enterprises are shown in table 18:

TABLE 18. DISTRIBUTION OF LABOR
(Four-years averages, 1914 to 1917, from table 14)

Enterprise	Hours of labor	Hours per acre or per animal unit	Per cent of total labor
Real estate	83,668	——	7.8
Equipment	15,419	——	1.4
Livestock:			
Horses	88,962	125.0	8.3
Cattle	286,040	127.6	26.7
Hogs	14,666	214.7	1.4
Poultry*	43,483	204.5	4.1
Sheep	3,224	30.3	0.3
Bees	31	——	——
Total livestock	436,406		
Crops:			
Alfalfa	12,047	28.5	1.1
Apples	45,988	129.3	4.3
Barley	3,884	23.8	0.4
Beans	14,150	36.8	1.3
Buckwheat	5,571	21.4	0.5
Cabbage	18,673	90.6	1.7
Corn for grain	22,930	65.5	2.1
Corn for silage	37,024	36.9	3.5
Cucumbers	820	341.7	0.1
Garden	4,275	169.2	0.4
Hay	53,347	11.2	5.0
Mangels	2,244	148.6	0.2
Oats	32,472	22.4	3.0
Onions	2,281	495.9	0.2
Peaches	8,967	89.8	0.8
Pears	3,708	97.3	0.3
Peas for market	1,994	26.6	0.2
Canning-factory peas	1,170	28.1	0.1
Potatoes	56,532	90.6	5.3
Rye	3,472	18.7	0.3
Sweet corn	10,231	89.7	1.0
Tobacco	7,491	303.3	0.7
Market tomatoes	3,663	211.7	0.3
Wheat	25,407	23.8	2.4
Maple sirup†	2,770	2.5	0.3
All other crops	57,583	——	5.4
Total crops	438,694		
Manure hauling	32,355	——	3.0
Lime	2,335	——	0.2
All else	62,857	——	5.9
Total	1,071,734		100.0

*Includes labor on chicks and incubation.
†Hours per gallon of maple sirup produced (sugar reduced to sirup by using 8 pounds of sugar to 1 gallon of sirup).

DISTRIBUTION OF DIRECT AND INDIRECT LABOR

If a coal mine burns some of its own coal in running machinery, the total hours of work divided by the net product gives the hours required per ton of coal available for sale. Similarly, the net product of a wheat field may be obtained by subtracting the amount required for seed.

If a farm produced but one thing, the total product less the amounts of seed and feed consumed in the production, divided into the hours of labor required to operate the farm, would give the hours per unit of product.

When there is more than one product, the same result may be obtained by first distributing all the labor of the farm to productive enterprises. Much of the labor on a farm is carried under nonproductive headings. The care of work horses and equipment, while kept separate from the direct labor, is a charge to the productive enterprises. Similarly, the labor of upkeep of buildings is a charge to the crops and animals. Since on these farms horses are kept as tools, not as an enterprise, the labor of raising feed is a charge that the productive enterprises must carry. Similarly, the time spent in raising cow feed may be charged to cows.

In cost accounting, the labor required to keep up buildings does not appear in the cow account as labor but appears as charge for the use of buildings. Labor of growing feed does not appear as labor but is charged as feed. Another form of expression, which would determine the total labor of all kinds involved in the keeping of a cow, is desirable.

The hours of labor distributed in various ways are shown in tables 19 and 20. In table 19, the second column of figures shows the way in which the total labor (over a million hours) was charged in the accounts for four years. In the third column of figures the hours spent in the care of horses and equipment are distributed to the various enterprises in proportion to the hours that horses worked for that enterprise. The fourth column gives the hours spent on manure and lime, distributed as the manure and lime were charged. In the fifth column the labor spent in upkeep of buildings, and other miscellaneous labor, is distributed to the productive enterprises in proportion to the direct human labor on the enterprise.

Since horses are kept as tools, the time spent in raising grain and hay for them is also a labor cost chargeable to the enterprises for which horses work. On these farms, out of each 111.725 hours of man labor 11.725 are required to raise oats and hay to feed the horses.[16] The time required to raise horse feed is distributed to the various enterprises in proportion to the hours that horses worked for those enterprises.

The foregoing method of calculating farm labor involved in production does not include all the farm labor, for clearing land, tile drainage, construction of buildings, and the like, are also farm labor charges that must be charged to crops over a series of years.

The labor charged directly to wheat per acre averaged 23.8 hours (table 20). Wheat's share of the indirect labor amounted to 14.9 hours

[16]This includes labor required to raise the feed used by horses while their feed is being grown. These farms raised more than enough oats to feed the horses, but some of the oats were used for other purposes and some other feeds were used for horses.

TABLE 19. DISTRIBUTION OF DIRECT AND INDIRECT HUMAN LABOR

Enterprise	Acres of animal units	Labor hours charged directly to enterprise	Labor hours on equipment and horses, distributed	Labor hours on manure and lime, distributed	Labor hours on real estate and all else, distributed	Total labor hours	Additional hours required to raise horse feed
Real estate		83,668	5,928	—	—	—	—
Equipment		15,419	—	—	—	—	—
Livestock:							
Horses	711.73	88,962	—	—	—	—	—
Cattle	2,241.11	286,040	6,931	256*	52,768	345,995	11,259
Hogs	68.31	14,666	303	—	2,698	17,667	490
Poultry†	212.67	43,483	866	—	7,980	52,329	1,407
Sheep	106.49	3,224	84	12*	605	3,925	126
Bees	—	31	—	—	—	31	—
Total livestock		436,406					
Crops:							
Alfalfa	422.95	12,047	2,119	1,295	2,780	18,241	3,443
Apples	355.61	45,988	3,528	1,318	9,141	59,975	5,730
Barley	163.4	3,884	1,023	849	1,030	6,786	1,659
Beans	384.65	14,150	3,142	893	3,270	21,455	5,102
Buckwheat	260.3	5,571	1,461	179	1,292	8,503	2,375
Cabbage	206.1	18,673	2,839	1,429	4,137	27,078	4,612
Corn for grain	350.09	22,930	3,340	1,429	4,987	32,686	5,416
Corn for silage	1,004.1	37,024	8,611	6,164	9,320	61,119	13,986
Cucumbers	2.4	820	21	27	164	1,032	38
Garden	25.27	4,275	209	536	899	5,919	339
Hay	4,770.34	53,347	9,175	13,813	13,735	90,070	14,903
Mangels	15.1	2,244	188	107	458	2,997	314
Oats	1,452.2	32,472	7,745	5,986	8,323	54,526	12,566
Onions	4.6	2,281	63	36	425	2,805	101
Peaches	99.9	8,967	772	152	1,782	11,673	1,257
Pears	38.11	3,708	313	156	818	4,995	515
Peas for market	74.95	1,994	407	406	507	3,314	666
Canning-factory peas	41.6	1,170	344	165	294	1,973	553
Potatoes	623.83	56,532	6,691	2,993	11,920	78,136	10,857
Rye	185.6	3,472	825	402	850	5,549	1,332
Sweet corn	114.05	10,231	1,117	849	2,191	14,388	1,810
Tobacco	24.7	7,491	522	491	1,537	10,041	842
Market tomatoes	17.3	3,663	136	147	703	4,649	214
Wheat	1,069.57	25,407	6,409	3,261	6,312	41,389	10,405
Maple sirup	—	2,770	303	—	556	3,629	478
All other crops	—	57,583	7,923	1,318	12,035	78,859	12,866
Total crops	—	438,694	—	—	—	—	—
Manure hauling	—	32,355	9,311	—	—	—	—
Lime	—	2,335	668	—	—	—	—
All else	—	62,857	11,064	—	—	—	—
Total	—	1,071,734	104,381	44,669	163,517	1,071,734	25,661

*Manure and lime charged to livestock was used on pasture.
†Includes labor on chicks and incubation.

TABLE 20. DISTRIBUTION OF DIRECT AND INDIRECT HUMAN LABOR
(Four-years averages, 1914 to 1917, from table 19)

Enterprise	Labor hours charged directly per acre or per animal unit	Hours of indirect labor per acre or per animal unit	Additional hours required to raise horse feed per acre or per animal unit	Total labor hours per acre or per animal unit	Average yield per acre	Amount used for seed per acre (bushels)	Net yield (bushels)	Hours per unit of product above seed
Cattle	127.6	26.8	5.0	159.4	—	—	—	—
Hogs	214.7	43.9	7.2	265.8	—	—	—	—
Poultry*	204.5	41.6	6.6	252.7	—	—	—	—
Sheep	30.3	6.6	1.2	38.1	—	—	—	—
Alfalfa	28.5	14.6	8.1	51.2	2.6 tons	—	—	19.7
Apples	129.3	39.4	16.1	184.8	—	—	—	—
Barley	23.8	17.7	10.2	51.7	24.25 bu.	1.9	22.35	2.3
Beans	36.8	19.0	13.3	69.1	10.25 bu.	0.8	9.45	7.3
Buckwheat	21.4	11.3	9.1	41.8	15.4 bu.	1.1	14.3	2.9
Cabbage	90.6	40.8	22.4	153.8	6.2 tons	—	—	24.8
Corn for grain	65.5	27.9	15.5	108.9	27.0 bu.	—	—	4.0
Corn for silage	36.9	24.0	13.9	74.8	6.0 tons	—	—	12.5
Cucumbers	341.7	88.3	15.8	445.8	—	—	—	—
Garden	169.2	65.0	13.4	247.6	—	—	—	—
Hay	11.2	7.7	3.1	22.0	1.52 tons	—	—	14.5
Mangels	148.6	49.9	20.8	219.3	266.0 bu.	—	—	.8
Oats	22.4	15.1	8.7	46.2	32.7 bu.	2.5	30.2	1.5
Onions	495.9	113.9	22.0	631.8	—	—	—	—
Peaches	89.8	27.0	12.6	129.4	—	—	—	—
Pears	97.3	33.8	13.5	144.6	—	—	—	—
Peas for market	26.6	17.6	8.9	53.1	—	—	—	—
Canning-factory peas	28.1	19.3	13.3	60.7	—	—	—	—
Potatoes	90.6	34.7	17.4	142.7	104.7 bu.	13.8	90.9	1.6
Rye	18.7	11.2	7.2	37.1	17.8 bu.	1.6	16.2	2.3
Sweet corn	89.7	36.5	15.9	142.1	—	—	—	—
Tobacco	303.3	103.2	34.1	440.6	—	—	—	—
Market tomatoes	211.7	57.0	12.4	281.1	—	—	—	—
Wheat	23.8	14.9	9.7	48.4	24.45 bu.	2.0	22.45	2.2

*Includes labor on chicks and incubation.

per acre. This includes wheat's share of the labor in care of horses and equipment, hauling of lime and manure, upkeep of buildings, and other labor, as explained on page 45.

To raise enough oats and hay to feed the horses for the number of hours that they worked for wheat, would require 9.7 hours of man labor.

The average yield of wheat on these farms was 24.45 bushels, or enough to furnish the required 2 bushels of seed and have 22.45 bushels of net product. The total amount of direct and indirect farm labor required to raise a bushel of wheat and raise the wheat's share of the horse feed averaged 2.2 hours.

Alfalfa requires more hours per ton than does other hay. The very high number of hours per ton of silage explains the high cost of this crop. The high labor cost of mangels shows why this excellent feed crop is not grown. Root crops are used in countries where labor is cheap.

ESTIMATED LABOR REQUIREMENTS ON AVERAGE NEW YORK FARMS

The yield of wheat per acre on the cost-account farms was 2.1 bushels above the average for the State. In addition to obtaining better yields, the cost-account farms handled about 18 per cent more crops and animals per man (page 8). These differences are due to size of farm, other natural conditions, and ability in management. The average amount of time required to raise a bushel of wheat in this State, therefore, appears to be 2.8 hours (table 21). This includes direct and indirect labor, and time required to raise the horse feed and to raise the seed wheat for the next year.

TABLE 21. ESTIMATED AVERAGE HOURS OF DIRECT AND INDIRECT LABOR FOR AVERAGE NEW YORK FARMS, 1914 TO 1917*

Enterprise	Estimated hours per acre or per animal unit	Average yield for State	Estimated hours per bushel or per ton
Cattle unit	188.1	.....	.....
Hogs	313.6	.....	.....
Poultry	298.2	.....	.....
Sheep	45.0	.....	.....
Barley	61.0	27.8 bu.	2.4
Beans	81.5	9.8 bu.	9.1
Buckwheat	49.3	18.0 bu.	2.9
Cabbage	181.5	7.4 tons	24.5
Corn for grain	128.5	35.5 bu.	3.6
Corn for silage	88.3	8.3 tons	10.6
Hay	26.0	1.4 tons	18.6
Oats	54.5	33.3 bu.	1.8
Potatoes	168.4	93.0 bu.	2.1
Rye	43.8	18.4 bu.	2.6
Wheat	57.1	22.4 bu.	2.8

*These estimates are based on 18 per cent more labor per acre and per animal unit than on the cost account farms, and on the same seed requirements. State yields are as reported by the Bureau of Crop Estimates of the United States Department of Agriculture.

A check on the accuracy of the estimates for the State was made by using the hours per acre and per animal unit for the total acres of crops and animals in the State. This gave an average of 4911 hours of labor per farm, or about full work for the number of persons engaged in agriculture, that is, 1.6 workers per farm.[17]

LABOR IN MILK PRODUCTION INCLUDING THE RAISING OF SILAGE AND HAY

The labor in milk production is shown in table 22. For each 100 pounds of milk produced above the milk fed to cattle, 5.7 hours of labor were expended for cattle. This includes direct and indirect labor, and the labor required to raise hay and silage for the cattle.

Of course there are many other costs of milk production, such as grain feed, insurance, taxes, veterinary service, and the like. With the greater production of herds with six or more cows, the labor per 100 pounds of milk is about 5 hours.

TABLE 22. DIRECT AND INDIRECT LABOR IN MILK PRODUCTION, 1914 TO 1917

Number of cattle units	2,241.11
Number of cows	1,707.18
Total milk above milk fed to cattle* (pounds)	8,727,096
Milk above milk fed, per cattle unit (pounds)	3894
Milk above milk fed, per cow (pounds)	5112
Hours of direct labor per cattle unit (table 20)	127.6
Hours of indirect labor per cattle unit (table 20)	26.8
Cattle's share of labor hours to raise horse feed (table 20)	5.0
Labor to raise silage and hay for cattle† (hours)	63.6
Total hours	223.0
Labor per 100 pounds of milk (hours)	5.7

*The four-years total for farms with six or more cows was 69 farms having 1316.9 cows. They produced 7,821,256 pounds of milk above the amount fed to cattle, or 5939 pounds per cow. On 57 farms having less than six cows, there were 390.28 cows. On 41 of these farms the production per cow above milk fed to cattle was 2321 pounds per cow. Assuming the same production per cow for the other farms gives a total of 905,840 pounds. The average production for all farms above milk fed to cattle was therefore 5112 pounds per cow or 3894 pounds per cattle unit.

†The hay per cow averaged 3459 pounds and the labor to raise it 25 hours. The silage per cow averaged 6220 pounds and labor to raise it 38.6 hours. A cattle unit is a cow or equivalent in bulls or young stock.

The average hours of labor per person per year was 3036 (page 32). This is enough to cover the direct and the indirect labor for 13.6 cattle units, or 10.4 cows and 3.2 other cattle units. It means that on these farms, two men did work equivalent to raising the hay and oats for horses and silage and hay for cattle, and other work for 21 cows, 1 bull, and about 10 head of young stock. This would allow a replacement of nearly one-fourth of the cows each year. However, the farms that keep twenty cows (table 16) employ about one person for each eight cows. They then produce other things besides cattle products for sale.

The milk production for the State is lower per cow and the labor required is higher; hence, average figures for the State are considerably higher than the hours here shown.

The greater efficiency on these farms places the average of all about in the class with the State's average for farms with six or more cows; that is, a little less than 6 hours per 100 pounds of milk, or about double the direct labor on cows. It is commonly stated that 3 hours of labor are

[17]On February 1, 1917, there were 273,322 persons devoting full time to farm work on 185,051 farms, but on April 1 there were 30,671 more hired men. If these devoted two-thirds of the year to farmwork it would give an average of 1.59 workers per farm. The number of males fourteen years old or older residing on farms was 1.64. (From *Census of the Agricultural Resources of New York*, 1919.)

required to produce 100 pounds of milk. This refers to the direct labor only. It does not include raising crops, care of buildings, pasture and the like.

Results for 149 farms in Broome County having six or more cows showed a use of 1.976 tons of dry forage and 1.945 tons of silage per cattle unit, with a milk production of 4046 pounds per cattle unit above milk fed to cattle. The direct labor per cattle unit averaged 142.7 hours. Indirect labor at the same percentage as on cost-account farms would amount to 35.7 hours per cattle unit. From table 21, the time to raise the silage would amount to 20.6 hours and to raise the hay 36.8 hours, or a total of 235.8 hours per cattle unit, or 5.8 hours per 100 pounds of milk produced above that fed to livestock. This includes all labor directly on cattle, cattle's share of labor for horses, for raising hay and oats for horses, and for building upkeep, and labor required to raise hay and silage for cattle.

At the rates shown above, 20 cows, 1 bull, and 10 head of young stock, on the average, would require as much labor as two men could perform. Usually, fewer cows are kept per man and other things are produced.

In Broome County, the dairy herds ate 29.7 pounds of grain for each 100 pounds of milk produced above the milk fed to cattle.[18] Some veal and beef also is produced, and many other expenses are involved, such as interest on investment, taxes, insurance, veterinary service, and repairs for buildings, fences, and equipment. The yearly average cost of producing milk may be very roughly approximated by adding the value of 5.8 hours of labor to the cost of 29.7 pounds of purchased grain.[19] On this basis of estimating, manure used in the production of pasture, hay, silage, and the like, is omitted. If included as a return from cows, it would have to be added in as a cost for this feed.

HORSE LABOR

Work horses were kept separate from other horses. Very few others were kept. Horse labor is charged to all enterprises at the same rate per hour. The horses work so few hours in winter that the actual cost per hour is then high; but, since there is so little to do, the time of horses is worth less per hour. An enterprise that uses horse labor at odd times is charged at the average rate, but, when considering the profits from it, this must be taken into consideration. Similarly, enterprises that require labor at the time when horses are very busy should be considered less profitable than they appear.

Figures showing the average cost of keeping a horse for the years 1914 to 1919 are given in table 23.

The number of work horses per farm in 1919 varied from 2 to 7.25. Eleven farms had less than 4 work horses, nine had from 4 to 4.9, ten had from 5 to 5.9, and eight had 6 or more.

The average weight of horses on each farm was estimated for 1919. The weights varied from 929 to 1400 pounds. On thirteen farms the horses averaged less than 1200 pounds, on ten farms they averaged from 1200 to 1299 pounds, and on fifteen farms they averaged 1300 pounds or more.

[18] An economic study of dairying on 149 farms in Broome County, New York. By E. G. Misner Cornell Univ. Agr. Exp. Sta., Bul. 409, pages 281, 297, 298. 1922.

[19] A basis for estimating costs that does not analyze the farm feed back to its labor basis is given in *Milk Production in New York*, by G. F. Warren. (New York State Dept. Farms and Markets, Circ. 186. 1919.)

TABLE 23. AVERAGE COST OF KEEPING A HORSE, 1914 TO 1919

	1914 (18 farms)		1915 (46 farms)		1916 (31 farms)		1917 (31 farms)		1918 (32 farms)		1919 (38 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Number of horses	91.5		225.5		165.5		158		144.5		175.9	
Number of horses per farm	5.1		4.9		5.3		5.1		4.5		4.6	
Average value per head		$155.58		$154.49		$155.20		$147.97		$152.21		$146.04
Grain fed per horse (pounds)	3,357	49.11	3,074	47.47	3,210	51.48	2,736	64.13	3,295	87.49	2,804	
Roughage fed per horse (pounds)	7,376	44.57	6,094	38.89	7,289	40.54	7,755	50.13	7,499	68.04	6,769	
Other feed costs per horse		3.88		5.61		3.87		3.47		5.63		
Bedding per horse (pounds)	2,447	6.60	1,573	4.84	1,805	5.60	1,678	5.36	1,609	5.74		
Veterinary charges per horse		0.62		0.76		0.96		0.91		0.63		5.74
Shoeing per horse		4.99		4.66		4.51		4.68		5.56		
Fire insurance per horse		0.17		0.24		0.23		0.68		0.25		
Interest per horse		7.78		7.72		7.76		7.40		9.13		
Depreciation per horse		12.81		15.97		14.51		18.33		17.42		18.35
Use of buildings per horse		3.74		3.81		3.78		3.61		4.49		
Man labor per horse (hours)	144	36.05	143	37.07	116	35.11	116	41.46	124	48.91	122	52.24
All else per horse		1.35		1.50		1.69		2.45		2.16		
Total costs		171.67		168.54		170.04		202.61		255.45		237.60
Manure per horse (tons)	7.5	11.36	9.5	11.17	10.5	13.04	10.6	16.28	10.8	17.95		
Value of colts per horse*		1.37		1.97		2.62		1.52		1.27		
Net cost of keeping a horse		158.94		155.40		154.38		184.81		236.23		
Hours worked per horse per year	1,040		1,016		933		922		1,041			
Costs per hour of horse labor†		0.1580		0.1548		0.1666		0.1970		0.2259		0.2434

*On 18 farms in 1914, four colts were born that lived. On 46 farms in 1915, ten colts were born. On 31 farms in 1916, twelve were born. On the same number of farms in 1917, seven were born. On 32 farms in 1918, six were born. On 38 farms in 1919, three were born.

†The rates of labor per hour are the rates as found after a part of the labor had been distributed at an estimated rate (page 23), and therefore are not exactly the total cost divided by the total hours. This applies to all tables for horse labor.

The average value of horses per head in 1919 varied from $69 to $239 on the different farms. On eight farms the average value per horse was less than $125, on nine farms it was from $125 to $149, on fifteen farms it was from $150 to $174, and on six farms it was over $175.

Grain represents about one-third, hay one-fourth, labor one-fifth, and all other costs about one-fifth, of the cost of keeping a horse. With rising prices there has been a tendency to economize on hay, grain, labor, and other costs in the care of horses.

In 1919 the human labor in taking care of a horse varied from 43 to 366 hours. On fourteen farms, less than 100 hours were spent in this work; the average was 76 hours. On sixteen farms from 100 to 145 hours were spent, averaging 118 hours. On eight farms over 150 hours were spent, averaging 211 hours.

Shoeing cost from $1 to $11.71 per horse on different farms in 1919. On fifteen farms it was less than $4, on thirteen farms it was from $4 to $8, and on ten farms it was over $8.

Depreciation varied from $82.86 per horse to an appreciation of $28.57 per horse. Buying and selling horses, as well as increases in value of young horses and decrease in value of old horses, are involved in this calculation. On seven farms there was an appreciation on horses. On six farms the depreciation was less than $10 per horse; on twelve farms it was from $10 to $20; and on thirteen farms it was over $20.

The amount of grain fed per horse in 1919 varied from 699 pounds to 6185 pounds on the different farms. Ten farms fed less than 1 ton, fifteen fed from 1 to 1.5 tons, and thirteen fed over 1.5 tons. Dry forage varied from 3125 to 13,500 pounds. On ten farms less than 2.5 tons were fed per horse; on thirteen farms from 2.5 to 3.5 tons were fed; and on fifteen farms over 3.5 tons were fed. Low grain feeding usually was accompanied by the feeding of more dry forage, more use of pasture, and less hours of work per day. In some cases a considerable part of the dry forage was used for bedding after the horses had picked it over.

In 1918 oats made up 75 per cent of the amount of grain fed, corn 8 per cent, and wheat bran, feed, and middlings 7 per cent. The kinds of grain fed are shown in table 24:

TABLE 24. KINDS OF GRAIN FED TO 144.5 HORSES, 32 FARMS, 1918

Kind of grain	Number of farms feeding	Pounds	Per cent of total	Value
Barley	6	10,559	2.22	$ 270.71
Buckwheat	1	528	0.11	11.00
Corn	17	35,740	7.51	950.73
Corn and oats	4	5,383	1.13	179.15
Oats	32	355,667	74.71	9,456.62
Hominy	7	16,727	3.51	462.14
Oilmeal	9	1,480	0.31	44.60
Wheat bran	13	6,576	1.38	139.81
Wheat feed	5	17,350	3.64	429.90
Wheat middlings	5	7,813	1.64	172.46
All else	—	18,293	3.84	525.65
Total	32	476,116	100.00	$12,642.77
Average per horse		3,295		$87.49

The roughage used (table 25) was mostly mixed timothy and clover hay.

TABLE 25. KINDS OF FEED FED TO 144.5 HORSES, 32 FARMS, 1918

Kind of feed	Number of farms using	Pounds	Value
Alfalfa	4	48,682	$ 381.07
Timothy hay	2	18,163	182.45
Clover hay	2	38,500	326.25
Mixed hay	32	968,593	8,889.01
Millet hay	1	667	5.00
Rye hay	1	9,000	48.00
Barley straw	3	7,060	23.62
Oat straw	13	52,600	187.03
Wheat straw	4	24,100	92.50
Corn stalks	4	38,567	151.50
Corn silage	2	7,500	26.50
Potatoes	3	3,210	24.00
Carrots	7	15,613	111.95
Cabbage	1	2,000	5.00
Skimmilk	1	2,400	12.00
Pasture	13		117.75
All else			62.31
Grain (from table 24)			12,642.77
Total feed			$23,288.71
Average per horse			$161.17

In the earlier years, the results agreed with the popular statement that the cost of keeping a horse for a year is about equal to the value of a horse. In later years, costs have risen but horses have not increased in value. The cost of keeping a horse for a year has been somewhere near the cost of raising a horse, but much above the selling price.

In 1919 the number of hours worked per horse varied from 506 to 1280. On eleven farms the average was less than 750 hours; on fifteen farms it was from 750 to 999 hours; and on twelve farms it was over 1000 hours. The distribution of labor is shown in table 29 (page 57). As a five-years average there were 21 acres of crops per horse. The cost per hour of horse labor varied from 13 to 37 cents. On eight farms this cost was less than 20 cents, on twenty-one farms it was from 20 to 30 cents, and on nine farms it was over 30 cents.

The chief credit aside from work is manure. Much of the manure is lost on roads or is produced on pasture and yards. Only the manure that is available for use is credited. That which is produced on pasture, if credited to horses, would have to be charged back to them in a higher pasture charge. About 10 tons per year is recovered per horse.

RELATION OF GRAIN FED TO OTHER FACTORS

The relation of pounds of grain fed per horse to other factors is shown in table 26. When farms were sorted by net energy of the feed, the results were practically the same as shown in this table except that the higher-net-energy groups had a little more dry forage and less grain than are shown in the high-grain groups.

TABLE 26. RELATION OF POUNDS OF GRAIN FED PER HORSE TO OTHER FACTORS, 38 FARMS, 1919

	Amount of grain fed		
	Under 2000 pounds	From 2000 to 3000 pounds	Over 3000 pounds
Number of farms	10	15	13
Average number of work horses	4.0	4.9	4.75
Average hours worked per year	741	879	1,030
Average value per horse	$142	$153	$150
Average weight per horse (pounds)	1,205	1,259	1,213
Pounds of grain per horse	1,368	2,522	4,097
Pounds of grain per hour of work	1.8	2.9	4.0
Pounds of dry forage per horse	7,802	6,505	6,278
Cost of feed and bedding per horse	$116.51	$138.96	$176.88
Hours of human labor per horse	106.1	111.6	147.1
Gross cost of keeping a horse	$196.68	$231.43	$276.20
Net cost of keeping a horse	$171.38	$210.61	$254.65
Cost per hour of horse labor	$0.2430	$0.2523	$0.2571

The horses that were fed the most grain worked about a half more than those fed the least grain. They used less roughage and required more care. The extra hours of work done nearly offset the greater cost, so that the cost per hour was about the same in the different groups.

RELATION OF HOURS WORKED TO OTHER FACTORS

When horses are worked more, the cost per hour is decreased, but it is not decreased as rapidly as the hours increase (table 27). On farms where the average hours worked per day was 2.2, the cost of horse labor was 28 cents per hour. On those where the average hours worked was 3.8, the cost per hour was 22 cents. This shows that a 73 per cent increase in hours decreased the cost per hour by 21 per cent.

TABLE 27. RELATION OF HOURS WORKED PER YEAR PER HORSE TO OTHER FACTORS, 38 FARMS, 1919

	Less than 750 hours	From 750 to 1000 hours	Over 1000 hours
Number of farms	11	15	12
Average number of work horses	4.4	5.2	4.1
Average hours worked per year	649	883	1,133
Hours worked per horse per day	2.2	2.9	3.8
Average value per horse	$140	$147	$161
Average weight per horse (pounds)	1,209	1,242	1,232
Pounds of grain per horse	1,840	2,886	3,436
Pounds of grain per hour of work	2.8	3.3	3.0
Pounds of dry forage per horse	6,442	7,000	6,779
Cost of feed and bedding per horse	$124.86	$150.21	$160.19
Depreciation per horse	$14.09	$17.47	$20.22
Hours of man labor per horse	93	116	156
Gross cost of keeping a horse	$200.99	$235.66	$273.58
Net cost of keeping a horse	$178.41	$217.42	$246.63
Cost per hour of horse labor*	$0.2843	$0.2504	$0.2228

*The cost per hour is not exactly what would be shown by division, since in closing the books the charge to men is included at an estimated rate. The rate used in this table is the rate for the remaining hours (page 23).

The reason why the decrease in cost per hour is not greater, is that every item of cost increases as the hours of work increase. Better horses are used, more grain and hay are fed, more time is spent taking care of the horses.

In table 28 is shown how, on the average, the costs increase when horses work more hours. But there are decided differences in the way in which different men have handled horses that do equal amounts of work. Each group as to hours worked per year, was subsorted as to whether the grain feeding was more or less than the average of the group. Usually the farmers who saved on grain, saved on labor and other costs. For each number of hours worked, those who used the least grain had the lowest cost per hour of horse labor. This is due not merely to the saving of grain, but also to other economies practiced. It seems probable that an hour of horse labor by the horses that were better fed and cared for would be more effective than an hour by the horses handled less carefully.

The men who fed the horses the least grain per hour of work had the lowest cost per horse hour but generally made the lowest average labor incomes. However, some very large labor incomes came in these groups. The cost of horse labor is not one of the major factors in determining the labor income. The differences in labor incomes are so great that it does not seem possible that the cost of horse labor or the efficiency of an hour of horse labor is the major explanation.

Probably the saving of grain was not wise economy; or it may be that careful farmers feed their horses more than it pays to feed, and more than make up the difference in other ways. Until more data are available, it would appear that 3, or possibly 4, pounds of grain for each hour of labor is likely to be a better allowance than the lower feeding which gave cheaper horse labor but which was accompanied also by lower average labor incomes. This does not mean 3 pounds per hour every day for the labor of that day, but a yearly allowance that averages 3 pounds per hour of labor. Of course, the data do not give any information on the most profitable feeding for horses that work more or less hours than the range included on these farms.

SEASONAL DISTRIBUTION OF HORSE LABOR

The distribution of horse labor on each enterprise for four years is shown in table 29.

TABLE 28. RELATION OF HOURS WORKED PER YEAR PER HORSE, AND GRAIN FED, TO OTHER FACTORS, 38 FARMS, 1919

	Hours per year less than 750		Hours per year from 750 to 999		Hours per year 1000 or more	
	Less than average grain	More than average grain	Less than average grain	More than average grain	Less than average grain	More than average grain
Number of farms	7	4	8	7	8	4
Average number of work horses	3.9	5.2	5.7	4.7	3.8	4.0
Average hours worked per year	639	666	883	883	1,093	1,212
Average value per horse	$143	$133	$135	$162	$170	$141
Average weight per horse (pounds)	1,225	1,182	1,236	1,249	1,280	1,134
Pounds of grain per horse	1,373	2,658	2,121	3,761	2,563	5,182
Pounds of grain per hour of work	2.1	4.0	2.4	4.3	2.3	4.3
Value of pasture per horse	$2.15	$2.58	$1.51	$0.50	$2.21	$0.32
Pounds of dry forage per horse	6,540	6,270	7,719	6,179	7,540	5,257
Cost of feed and bedding per horse	$110.22	$150.48	$129.79	$173.54	$140.91	$198.76
Depreciation per horse	$11.36	$18.88	$21.56	$12.80	$20.30	$20.05
Hours of man labor per horse	94	93	101	134	143	183
Gross cost of keeping a horse	$183.02	$232.44	$207.78	$267.53	$252.21	$316.32
Net cost of keeping a horse	$159.93	$210.76	$189.80	$248.99	$225.56	$288.76
Cost per hour of horse labor	$0.2590	$0.3284	$0.2189	$0.2864	$0.2113	$0.2459
Labor income	$1,163	$1,105	$2,188	$2,955	$2,174	$3,172

TABLE 29. DISTRIBUTION OF TOTAL HOURS OF HORSE LABOR FOR FOUR YEARS, BY TEN-DAYS PERIODS
(18 farms in 1914, 46 farms in 1915, 31 farms in 1916, 30 farms in 1917)

Month	Ten-days period	Building repairs	Building improvements	Fence repairs	New fence	Drainage repairs	New drainage	Brush and weeds cut	Picking stone	Clearing land	Wood and lumber	Other real estate work	Total hours on real estate work
January	First	35	284	6	—	—	—	—	—	—	88	69	482
	Second	3	260	—	—	—	—	—	—	2	64	104	433
	Third	12	408	16	4	—	—	1	—	2	142	290	875
February	First	28	279	—	—	—	—	—	—	6	279	141	733
	Second	38	214	4	3	—	—	—	—	3	244	159	665
	Third	12	113	—	4	—	5	—	—	—	399	154	687
March	First	37	24	57	—	—	4	14	—	10	533	135	814
	Second	53	302	6	—	—	67	—	5	12	323	48	816
	Third	60	191	2	—	2	25	6	6	18	314	69	693
April	First	48	134	14	22	4	40	60	100	56	187	118	783
	Second	54	292	116	88	—	174	53	37	38	32	288	1,172
	Third	62	347	147	11	3	38	16	95	152	32	235	1,138
May	First	65	163	286	75	6	98	22	211	158	81	144	1,309
	Second	55	331	426	32	—	160	28	284	229	35	178	1,758
	Third	74	178	210	126	8	77	54	216	132	59	249	1,383
June	First	159	433	158	137	18	122	15	268	194	72	215	1,791
	Second	50	441	144	58	53	102	73	209	160	47	89	1,426
	Third	71	438	47	12	7	26	49	108	3	22	92	875
July	First	41	390	119	1	26	10	50	22	9	8	68	744
	Second	73	253	84	34	22	—	8	15	8	—	180	677
	Third	27	249	81	10	14	15	60	19	—	8	34	517
August	First	74	222	119	4	4	30	126	46	63	11	128	827
	Second	80	271	79	34	6	36	82	49	23	6	74	740
	Third	171	732	104	16	53	136	60	82	208	5	244	1,811
September	First	142	822	60	12	86	272	66	116	152	12	486	2,226
	Second	36	639	34	—	46	157	34	164	67	41	207	1,425
	Third	74	504	50	28	7	190	9	72	53	5	237	1,229
October	First	70	185	48	4	17	149	18	128	1	25	23	668
	Second	132	320	51	32	—	122	2	63	38	7	23	790
	Third	203	228	25	4	3	164	15	95	70	27	63	897
November	First	244	227	8	—	6	243	—	8	76	37	176	1,025
	Second	181	154	20	2	15	160	2	10	64	18	297	923
	Third	135	126	22	16	71	242	—	71	150	135	112	1,080
December	First	122	148	18	12	12	114	—	66	103	96	144	835
	Second	65	99	6	3	1	10	—	—	43	27	59	313
	Third	55	225	2	—	—	—	—	—	—	26	116	424
	Total	2,841	10,626	2,569	784	490	2,988	923	2,565	2,303	3,447	5,448	34,984

TABLE 29 (*continued*)

		General equipment	Special equipment	All horses	Cattle	Hogs	Mature poultry	Young poultry and incubation	Farm poultry	Sheep	Bees	Total hours on livestock
Number of farms		122	12	125	125	86	12	12	101	18	4	—
Animal units		—	—	711.73	2,241.11	68.31	81.19	—	131.48	106.49	—	—
Month	Ten-days period											
January	First	44	—	201	1,427	54	89	—	87	26	—	1,884
	Second	54	3	149	1,368	74	58	—	57	62	—	1,768
	Third	80	—	135	1,445	35	38	6	73	16	—	1,748
February	First	108	—	152	1,414	56	60	9	68	7	—	1,766
	Second	63	—	275	1,402	26	85	2	50	18	—	1,858
	Third	23	4	109	1,072	39	42	3	58	31	—	1,354
March	First	118	—	243	1,463	54	79	6	78	17	—	1,940
	Second	51	—	195	1,389	34	73	10	83	8	—	1,792
	Third	108	10	248	1,380	66	83	6	109	—	—	1,892
April	First	103	12	343	1,246	73	89	23	101	28	—	1,903
	Second	125	26	342	1,203	48	56	25	80	29	—	1,783
	Third	84	130	221	1,316	104	45	24	130	2	—	1,842
May	First	56	137	237	1,158	92	34	48	91	14	—	1,674
	Second	70	44	311	1,088	96	62	40	99	8	—	1,704
	Third	133	10	280	1,042	10	62	20	93	3	3	1,513
June	First	75	17	333	873	48	65	8	76	7	—	1,410
	Second	100	16	224	875	21	42	26	43	10	—	1,241
	Third	129	—	228	865	16	33	12	31	2	—	1,187
July	First	65	—	211	817	20	61	9	46	6	—	1,170
	Second	97	—	157	886	35	32	9	60	10	—	1,189
	Third	79	4	168	909	24	48	12	81	—	—	1,242
August	First	80	7	221	826	30	24	12	69	—	—	1,182
	Second	68	—	182	851	16	35	4	52	10	1	1,151
	Third	119	—	151	979	56	27	22	134	16	—	1,385
September	First	62	7	116	891	23	26	14	64	—	—	1,134
	Second	138	51	148	956	18	28	16	35	—	—	1,201
	Third	98	64	115	976	28	28	16	56	—	—	1,219
October	First	164	6	99	1,056	42	56	11	42	—	—	1,306
	Second	74	—	165	1,030	52	50	16	68	10	—	1,391
	Third	48	2	103	1,102	60	153	11	69	2	—	1,500
November	First	42	—	163	1,077	43	38	—	108	6	—	1,435
	Second	52	—	140	1,124	67	43	12	83	9	—	1,478
	Third	81	—	179	1,162	80	32	—	132	29	—	1,614
December	First	66	—	194	1,230	77	48	—	34	19	—	1,602
	Second	64	—	196	1,506	99	72	—	77	27	—	1,977
	Third	46	—	208	1,504	82	74	—	75	39	—	1,982
Total		2,967	550	7,142	40,908	1,798	1,970	432	2,692	471	4	55,417

TABLE 29 (*continued*)

		Alfalfa	Apples	Barley	Beans	Buckwheat	Cabbage	Corn for grain	Corn for silage	Cucumbers	Garden	Hay
Number of farms		56	25	25	34	44	38	56	75	6	47	124
Acres		422.95	355.61	163.4	384.65	260.3	206.1	350.09	1,004.1	2.4	25.27	4,770.34
Month	Ten-days period											
January	First	54	144	6	11	60	147	30	1	—	—	75
	Second	18	14	—	25	7	127	36	—	—	—	336
	Third	52	17	1	—	1	53	38	3	—	—	87
February	First	8	73	—	10	—	9	2	—	—	—	334
	Second	7	21	6	—	32	30	8	—	—	—	661
	Third	10	54	3	18	—	3	5	6	—	—	1,108
March	First	4	136	4	—	—	2	13	11	—	—	235
	Second	118	36	11	52	—	68	7	32	—	4	219
	Third	25	239	5	10	3	115	46	32	—	5	476
April	First	70	531	383	12	1	18	173	187	8	19	322
	Second	397	1,077	736	371	4	177	733	736	2	45	497
	Third	186	1,911	778	1,028	33	407	837	1,771	—	150	393
May	First	222	1,394	903	1,354	240	1,161	1,377	2,022	4	157	398
	Second	359	1,216	464	1,138	311	575	2,463	3,397	12	147	302
	Third	129	1,495	167	1,175	354	680	2,039	6,919	8	84	182
June	First	504	964	8	1,900	693	1,074	1,073	5,003	20	62	413
	Second	1,257	856	1	1,912	1,085	945	1,140	2,977	23	96	391
	Third	2,115	399	1	2,101	892	2,011	1,351	3,152	15	75	1,596
July	First	876	308	3	1,121	1,661	1,336	930	2,184	6	65	5,815
	Second	358	163	140	833	536	1,133	707	1,985	16	57	10,273
	Third	897	302	398	946	129	544	403	1,182	23	29	11,607
August	First	1,310	302	711	495	8	300	140	699	4	8	7,649
	Second	886	220	327	209	19	268	134	411	7	10	4,840
	Third	558	194	220	137	46	120	223	488	—	71	1,738
September	First	262	265	231	182	120	70	297	1,090	—	14	1,261
	Second	434	438	97	439	333	115	548	2,154	—	6	889
	Third	592	882	39	683	556	131	991	3,356	—	6	600
October	First	220	1,379	41	600	466	388	628	5,733	—	1	261
	Second	210	1,843	38	332	201	575	336	2,482	—	4	173
	Third	65	2,048	88	197	331	423	393	1,291	—	11	217
November	First	41	858	120	570	195	1,464	593	595	—	34	118
	Second	—	377	55	243	167	1,448	661	324	—	22	160
	Third	—	252	43	108	35	594	690	236	—	4	33
December	First	116	309	19	276	37	190	467	276	—	24	159
	Second	102	43	1	30	10	69	86	60	—	—	112
	Third	46	43	—	—	64	2	85	4	—	—	219
Total		12,508	20,803	6,048	18,518	8,630	16,772	19,683	50,799	148	1,210	54,149

TABLE 29 (*continued*)

		Mangels	Oats	Onions	Peaches	Pears	Peas for market	Canning-factory peas	Potatoes	Rye	Sweet corn	Tobacco
Number of farms		16	102	5	15	12	8	9	109	21	14	4
Acres		15.1	1,452.2	4.6	99.9	38.11	74.95	41.6	623.83	185.6	114.05	24.7
Month	Ten-days period											
January	First	—	16	—	—	—	—	—	130	—	1	—
	Second	32	22	—	—	—	—	—	270	—	—	3
	Third	—	35	—	—	—	—	—	214	—	2	22
February	First	—	1	—	—	—	—	—	326	—	—	16
	Second	—	2	—	—	—	4	—	318	—	6	34
	Third	—	3	—	—	—	—	—	224	—	—	—
March	First	11	16	—	31	7	7	—	125	—	—	—
	Second	2	52	—	75	—	—	—	298	18	10	—
	Third	—	147	—	93	74	156	4	202	45	8	—
April	First	—	1,069	4	242	48	467	68	410	—	237	—
	Second	55	5,356	101	279	60	346	273	838	—	406	3
	Third	8	6,663	33	226	47	235	241	1,574	10	378	89
May	First	41	4,870	4	316	292	165	258	2,254	19	529	33
	Second	215	3,925	—	247	172	134	20	2,892	2	520	211
	Third	67	1,659	—	302	83	92	—	3,170	5	225	102
June	First	69	338	—	318	168	24	7	3,711	—	236	240
	Second	64	202	—	217	113	8	24	3,099	—	323	569
	Third	24	30	—	108	15	41	181	1,848	11	384	510
July	First	48	6	—	188	24	75	137	1,268	43	222	161
	Second	30	54	1	60	12	161	410	1,493	180	99	53
	Third	36	186	28	74	27	150	213	1,417	592	131	160
August	First	16	1,759	51	27	4	147	3	834	211	248	86
	Second	23	4,807	53	44	22	62	5	642	310	312	97
	Third	18	4,285	8	71	8	12	14	343	572	546	72
September	First	10	2,737	2	250	318	25	11	295	409	498	249
	Second	3	1,810	38	655	195	34	11	477	461	507	229
	Third	—	1,209	26	559	54	16	16	795	201	199	54
October	First	—	433	6	90	18	8	5	834	396	169	7
	Second	—	433	3	38	28	6	4	1,562	430	46	6
	Third	180	477	16	28	52	4	7	3,043	409	71	11
November	First	120	980	10	8	3	10	14	2,738	439	130	20
	Second	42	826	—	—	—	9	9	1,165	—	51	12
	Third	1	595	—	8	9	6	8	291	10	53	12
December	First	16	575	—	2	3	20	74	217	52	24	5
	Second	—	50	—	—	—	2	1	41	—	4	1
	Third	5	49	—	—	4	—	—	99	10	2	13
	Total	1,136	45,677	384	4,556	1,860	2,426	2,018	39,457	4,835	6,577	3,080

TABLE 29 (*concluded*)

		Market tomatoes	Wheat	Maple sugar	All other crops	Total hours for all crops	Manure hauling	Lime	All else	Grand totals
Number of farms		7	79	11	—	—	125	54	—	—
Acres		17.3	1,069.57	—	—	—	—	—	—	—
Month	Ten-days period									
January	First	—	82	—	43	800	1,902	98	1,708	6,918
	Second	—	62	—	32	984	1,702	66	1,717	6,727
	Third	—	30	—	83	638	2,110	116	2,478	8,045
February	First	—	—	60	31	870	1,826	82	2,096	7,481
	Second	—	49	—	26	1,204	2,160	153	1,942	8,045
	Third	—	—	48	79	1,561	1,590	158	1,900	7,277
March	First	—	89	156	51	898	2,541	110	2,236	8,657
	Second	1	32	120	55	1,210	2,003	30	2,108	8,010
	Third	—	65	421	281	2,452	2,906	132	2,435	10,628
April	First	—	107	449	261	5,086	2,116	212	2,463	12,678
	Second	21	46	403	1,575	14,537	2,228	340	1,842	22,053
	Third	96	45	40	2,092	19,271	2,361	402	1,791	27,019
May	First	13	74	—	2,738	20,838	2,214	374	2,004	28,606
	Second	88	34	—	3,838	22,682	1,382	306	1,912	29,858
	Third	116	83	—	2,808	21,944	1,291	30	1,514	27,818
June	First	100	37	—	2,492	19,454	1,284	74	1,884	25,989
	Second	52	19	—	1,425	16,798	947	55	1,865	22,448
	Third	76	123	14	2,229	19,302	347	20	1,728	23,588
July	First	36	—	2	1,377	17,892	482	15	1,561	21,929
	Second	30	618	4	1,087	20,493	362	1	1,884	24,703
	Third	12	5,085	—	1,459	26,030	344	—	1,529	29,745
August	First	—	3,226	—	768	19,006	834	—	1,763	23,699
	Second	11	3,173	—	1,684	18,576	1,101	10	1,759	23,405
	Third	6	4,935	—	1,728	16,413	2,111	166	2,195	24,200
September	First	16	5,693	—	1,285	15,590	1,324	62	1,980	22,385
	Second	31	5,848	—	1,798	17,550	1,021	277	2,111	23,774
	Third	32	4,795	—	1,106	16,898	601	146	1,395	21,650
October	First	36	1,746	2	1,048	14,515	682	146	1,228	18,715
	Second	—	831	—	2,043	11,624	638	40	1,190	15,747
	Third	5	393	—	3,303	13,063	1,305	85	1,408	18,308
November	First	1	170	14	3,024	12,269	1,682	24	1,435	17,912
	Second	—	24	—	1,793	7,388	1,381	72	1,485	12,779
	Third	—	53	20	1,455	4,516	2,256	134	1,233	10,914
December	First	—	67	2	1,374	4,304	2,054	10	1,924	10,795
	Second	—	51	—	182	845	1,652	—	1,897	6,748
	Third	—	100	—	80	825	2,192	—	1,711	7,180
	Total	779	37,785	1,755	46,733	408,326	54,932	3,946	65,311	626,433

DISTRIBUTION OF HORSE LABOR BY ENTERPRISES

The distribution of horse labor by enterprises is shown in table 30:

TABLE 30. DISTRIBUTION OF HORSE LABOR
(Four-years averages, 1914 to 1917, from table 29)

Enterprise	Hours of labor	Hours per acre or per animal unit	Per cent of total labor
Real estate	34,984	——	5.6
Equipment	3,517	——	0.6
Livestock:			
Horses	7,142	10.0	1.1
Cattle	40,908	18.3	6.5
Hogs	1,798	26.3	0.3
Poultry*	5,094	24.0	0.8
Sheep	471	4.4	0.1
Bees	4	——	——
Total livestock	55,417		
Crops:			
Alfalfa	12,508	29.6	2.0
Apples	20,803	58.5	3.3
Barley	6,048	37.0	1.0
Beans	18,518	48.1	3.0
Buckwheat	8,630	33.2	1.4
Cabbage	16,772	81.4	2.7
Corn for grain	19,683	56.2	3.1
Corn for silage	50,799	50.6	8.1
Cucumbers	148	61.7	——
Garden	1,210	47.9	0.2
Hay	54,149	11.4	8.6
Mangels	1,136	75.2	0.2
Oats	45,677	31.5	7.3
Onions	384	83.5	0.1
Peaches	4,556	45.6	0.7
Pears	1,860	48.8	0.3
Peas for market	2,426	32.4	0.4
Canning-factory peas	2,018	48.5	0.3
Potatoes	39,457	63.2	6.3
Rye	4,835	26.1	0.8
Sweet corn	6,577	57.7	1.0
Tobacco	3,080	124.7	0.5
Market tomatoes	779	45.0	0.1
Wheat	37,785	35.3	6.0
Maple sirup†	1,755	1.4	0.3
All other crops	46,733	——	7.5
Total crops	408,326		
Manure hauling	54,932	——	8.8
Lime	3,946	——	0.6
All else	65,311	——	10.4
Total	626,433		100.0

*Includes labor on chicks and incubation.

†Hours per gallon of maple sirup produced (sugar reduced to sirup by using 8 pounds of sugar to 1 gallon of sirup).

EQUIPMENT

Some special equipment is charged directly to the enterprise concerned, but most of the equipment is carried in an equipment account and the total cost is distributed to the various enterprises in proportion to the number of hours that horses worked for those enterprises. Tractor accounts are kept separate and charges are made according to the hours of tractor labor. Automobile and truck accounts are kept separate and charges are made on the basis of trips, loads, or mileage, as best meets the farm conditions.

The value of equipment (other than tractors and some special equipment) on different farms in 1919 varied from $466 to $2621, and averaged $1064. The value of special equipment for three years is given in table 3 (page 25). As a five-years average the inventory of regular equipment was $8.71 per acre of crops.

Before the war demoralized prices, equipment was inventoried at what it would sell for. This method results in a high depreciation charge for the first years. Depreciation is very rapid for the first years and decreases as the machine grows older. Repairs increase rapidly with age. The sum of repairs and depreciation make a decreasing amount. Machines are usually not discarded because of the high cost of repairs but because of the high cost of unreliability. A broken machine at a critical time may mean a large loss. Probably the sum of depreciation, repairs, and what may be called reliability insurance, is a constant quantity. The last named item is a very high figure for a farm that uses machinery up to its limit, but a low figure for farms that do not have full use for tools. In the latter case there may be time to wait for repairs and yet get the work done. For this reason small farms often use old machines and may buy second-hand tools. This gives them a low cost per hour, even with small use. Larger farms obtain low cost per hour by a large number of hours of use. They might obtain very low cost by using old tools, but usually this would be false economy.

After prices began to rise, equipment was inventoried by deducting as much depreciation as formerly would have been deducted; that is to say, no attention was given to contemporary prices except for tools purchased on contemporary markets. Therefore the rapid rise in prices of equipment is not fully reflected in costs.

Prices for January of 1915 and 1920 were obtained from implement dealers. To have purchased on January 1, 1920, the 710 machines listed in table 31, would have cost 77 per cent more than the same tools would have cost on January 1, 1915. At the average inventory prices used in the accounts at the beginning of the year 1920, the same tools would have been inventoried at only 18 per cent above the 1915 inventory. Costs new rose 77 per cent but inventories rose only 18 per cent.

The inventory of tools was not increased because of the rising prices except where new tools had been purchased. In 1915, the inventory value of 710 tools was 42 per cent of the cost. Owing to the increase in price of new tools, the inventory value of 701 tools in 1920 was only 28 per cent of what it would have cost to buy new tools at that time. These tools would probably have sold at auction at about 40 per cent of the cost of new tools.

TABLE 31. NUMBER OF FARMS HAVING CERTAIN TOOLS, AND AVERAGE VALUE OF THESE TOOLS
(46 farms in 1915, 39 farms in 1920)

Implement	1915				1920			
	Number of farms reporting	Number of machines	Average value at end of year	Approximate cost new on January 1, 1915	Number of farms reporting	Number of machines	Average value at end of year	Approximate cost new on January 1, 1920
Walking plow	44	97	$ 5.59	$ 13.00	38	80	$ 6.21	$ 23.17
Sulky plow	22	26	24.23	46.00	25	28	25.27	111.67
Disk harrow	14	15	20.13	37.50	19	23	13.20	66.50
Spring-tooth harrow	39	59	6.90	17.33	36	58	9.00	30.33
Spike-tooth harrow	18	22	6.41	16.25	21	27	7.13	21.50
Roller	35	38	10.49	32.00	33	35	11.77	52.00
Walking cultivator (one-horse)	39	83	3.43	8.17	34	69	3.73	11.92
Sulky cultivator (two-horse)	31	41	17.45	45.83	31	42	21.68	70.83
Grain drill	38	38	36.39	90.00	35	36	49.06	170.00
Grain binder	32	34	52.56	126.67	31	33	64.09	231.67
Corn binder	18	18	55.56	125.00	23	24	60.46	226.67
Mowing machine	46	58	20.55	45.00	37	49	27.88	84.67
Hay rake	45	52	15.30	30.50	38	52	20.57	48.33
Hay tedder	20	20	15.35	43.33	25	25	16.24	86.67
Hay loader	6	6	42.33	70.00	17	17	52.24	111.67
Heavy farm wagon	44	81	27.79	81.67	38	82	27.43	138.33
Manure spreader	22	22	59.18	118.33	20	21	75.33	200.00
Total	513	710	$419.64	$32,850.52	501	701	$491.29	$59,942.22
Total for all machines			$13,692.41				$16,695.55	
Per cent of cost new			41.7				27.9	

The average costs of equipment are given in table 32. From 1914 to 1917 the total annual cost for use of equipment amounted to from 28 to 30 per cent of the inventory value. After 1917, the costs of new tools

TABLE 32. AVERAGE COSTS OF EQUIPMENT PER FARM, 1914 TO 1918

	Average costs per farm				
	1914 (18 farms)	1915 (46 farms)	1916 (31 farms)	1917 (31 farms)	1918 (32 farms)
Inventory at beginning of year	$915.36	$792.95	$850.18	$874.99	$ 971.59
Equipment purchased	111.19	105.59	128.15	154.52	189.41
Equipment sold	1.37	6.64	5.76	6.24	20.96
Inventory at end of year	918.57	805.51	879.19	928.13	1,020.56
Equipment rented to others	3.20	4.11	1.85	1.74	5.26
Equipment rented from others	2.03	2.73	2.47	3.60	4.28
Costs:					
Depreciation*	$103.34	$80.45	$93.21	$95.15	$116.52
Repairs	36.72	37.68	37.23	48.08	50.49
Human labor†	32.47	26.33	33.56	42.20	58.66
Horse labor	4.06	3.49	3.96	4.75	5.28
Use of buildings	30.34	27.15	31.78	32.11	37.10
Insurance	1.11	1.61	1.32	1.35	1.32
Interest	45.85	39.96	43.23	45.08	59.76
Other costs	3.12	3.09	2.05	2.58	4.53
Total costs	$257.01	$219.76	$246.34	$271.30	$333.66
Per cent of average inventory represented by annual cost	28.0	27.5	28.5	30.1	33.5
Total hours of horse labor per farm	5,138	4,988	5,024	4,813	4,767
Cost per hour‡	$0.0494	$0.0439	$0.0494	$0.0569	$0.0712

*Some equipment was destroyed by fire. The loss above insurance is included in depreciation. Some equipment was transferred to other accounts.

†The hours of labor spent on equipment in the successive years were 130, 101, 111, 118, 148, respectively.

‡The cost per hour is not exactly what would be shown by division, since in closing the books the charge to men and horses is included at an estimated rate. The rate used in this table is the rate for the remaining hours.

and repairs for old ones began to increase, while the old tools were not increased in price, hence the annual costs represent a larger percentage of the inventory value.

The largest items of cost are depreciation, interest, repairs, housing, and farm labor spent in repairing and taking care of tools. The charge for housing equipment amounts to nearly as much as the repair bill.

The total cost of equipment was distributed to the different enterprises in proportion to the hours of horse labor spent on the enterprises. This amounted to an average of from 4 to 5 cents for each hour of horse labor, until the prices of machinery began to rise. In 1919 the cost varied from 3.4 to 17.7 cents per hour of horse labor, with an average of 8.4 cents. The lower figure was on a farm where equipment with low inventory value was used for a large number of hours. The higher cost was where equipment having a high inventory value was used for a small number of hours.

When farms were sorted by the value of equipment, those coming in the lower value groups had the lowest average cost per hour each year. When sorted by hours of use, the groups using equipment for the greatest number of hours had the lowest cost per hour.

The more hours of use and the higher inventories tend to be associated with the larger farms. The cost per hour of equipment labor on these farms is in no case a dominating factor in labor income.

A special study of tractor costs is given in Bulletin 405 of this station.[20]

REAL ESTATE COSTS

The market value of each farm was divided between operators' houses, tenant houses, barns, crop land, orchards, pastures, woods, and the like. When land was used for both pasture and woods, an estimate was made of the proportion of the total acreage and value that should be charged to each.

The cost, less depreciation, of improvements such as buildings, fences, tile drains, orchards, removal of stone, residual manure, land plowed for succeeding crops, grass seeding, and growing crops, very commonly exceed the value of the farm, and yet the land without these improvements has a market value. In inventorying real estate, the total of all the items that make up the "farm" is not allowed to exceed the market value of the farm. For these reasons the values assigned to the separate items appear to be low. Buildings will usually be insured for more than the amount for which they are inventoried.

Many factors have combined to bring about this condition of values. Farmers usually realize that the most necessary improvements, such as drainage, fertility, and adequate buildings, may pay if one is to continue farming, but that they usually will not add their cost to the selling price of the land. There is no "unearned increment" in land values of most New York farms, but there is an "unearned decrement."

Taxes on the farm were distributed to the different classes of real estate at estimated amounts. Land that is highly improved is commonly assessed at a much lower rate relative to its value than is land that is unimproved. Assessment is usually made at a figure somewhere between a flat-acre rate and the sale value of the farm. Land that is badly run down, with little residual manure or fertilizer, little seeding, poor fences, and poor buildings, is often assessed at its full sale value and sometimes at more than it would sell for on the market. Land that is very highly improved is usually assessed at less than its sale value. In effect this assesses buildings at a lower rate than land, and assesses woods and pasture land at a higher rate than crop land. However, in this work, the taxes have been pro-rated to the different real estate accounts on the basis of the inventories.

The largest single item of real estate cost is interest. This was charged at 5 per cent before 1918. In 1918 and later years, it was charged at 6 per cent. On the average, the farmers were in debt for about one-sixth of their total capital. This was mostly in the form of mortgages

[20] An economic study of farm tractors in New York. By W. I. Myers. 1921.

and amounted to about one-fourth of the value of the farm. Some were in debt for practically the entire farm, and some had practically no debts.

OPERATORS' HOUSES

The five-years average inventory value of the operators' houses was $1538. The repairing is largely done by the farmer, and is done so efficiently that the costs are very low. As a five-years average, repairs and depreciation amounted to 2.4 per cent on the inventory, insurance 0.3 per cent, and taxes 0.9 per cent. The total costs aside from interest averaged 3.6 per cent. The data are given in table 33.

TENANT HOUSES

The five-years average inventory of tenant houses was $572. The repairs and depreciation averaged 2.9 per cent, insurance 0.3 per cent, and taxes 0.9 per cent. The total costs aside from interest averaged 4.1 per cent. The data are given in table 34.

BARNS AND OTHER OUTBUILDINGS

The inventory per farm of barns and other outbuildings averaged $2992. Repairs and depreciation averaged 3.1 per cent, insurance 0.3 per cent, and taxes 0.9 per cent. Total costs aside from interest averaged 4.3 per cent. The data are given in table 35.

CROP LAND

There was an average of 104.2 acres of orchard and crop land per farm, inventoried at an average of $74.32 per acre. The primary costs of crop land are interest, taxes, and labor. The labor of upkeep was grouped under maintenance of drains, brush and weeds cut, picking the annual crop of stone, and other labor. When land was cleared of brush or stone, or if new drains were put in, they were counted as improvements. The average cost of taxes and upkeep of crop land was 1.7 per cent in addition to interest.

Crop land was charged to the various enterprises at cost. The charge was varied according to the inventory value of different classes of land. The data are given in tables 36 and 37.

PASTURE AND FENCES

There was an average of 37.8 acres of pasture per farm. All the fences on the farm were included in the pasture account. The value of pasture land plus the value of all fences averaged $25.48 per acre of pasture. Calculated in this way, fence repairs averaged 2.6 per cent, fence depreciation 2.0 per cent, and taxes 0.9 per cent, making a total cost of 5.5 per cent above the charge for interest. Much of the interest charge is for fences, and very little is left as allowance for use of land. The average annual cost of fence and pasture was $2.73 per acre of pasture. Depreciation and repairs of fences for the farms cost $1.17 per year for each acre of pasture. The amounts of each kind of fence and the costs

TABLE 33. COSTS PER HOUSE OF MAINTAINING OPERATORS' HOUSES, 1914 TO 1918

	1914 (17 farms, 17 houses)		1915 (45 farms, 50 houses)		1916 (30 farms, 33 houses)		1917 (31 farms, 35 houses)		1918 (28 farms, 34 houses)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Value at beginning of year		$1,551.76		$1,497.10		$1,544.09		$1,487.25		$1,514.76
Value of improvements		0		26.79		80.25		95.07		40.78
Sales and insurance received		0		0		0		0		11.76
Value at end of year		1,551.76		1,519.61		1,617.99		1,574.34		1,517.79
Repairs:										
Farm labor:										
Human labor	61	$15.37	19	$ 4.82	17	$ 5.27	23	$ 8.04	18	$ 7.02
Horse labor	8	1.23	2	0.31	4	0.70	2	0.37	5	1.17
Use of equipment		0.38		0.09		0.21		0.11		0.37
Other repair costs		25.66		11.19		13.36		20.84		21.91
Depreciation		0		4.28		6.35		7.98		25.99
Interest		79.38		76.00		79.94		77.51		91.21
Taxes		12.44		12.99		13.30		15.15		14.57
Insurance		4.27		4.93		3.46		4.27		3.47
Total costs		$138.73		$114.61		$122.59		$134.27		$165.71
Total cost in per cent of average investment		8.9		7.6		7.8		8.8		10.9

TABLE 34. COSTS PER HOUSE OF MAINTAINING TENANT HOUSES, 1914 TO 1918

	1914 (17 farms, 12 houses)		1915 (45 farms, 29 houses)		1916 (30 farms, 27 houses)		1917 (31 farms, 28 houses)		1918 (28 farms, 20 houses)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Values at beginning of year		$537.50		$563.79		$553.70		$586.25		$542.50
Purchases		0		0		0		42.86		21.60
Value of improvements		0		2.11		122.00		0		0
Sales		0		0		0		28.57		0
Value at end of year		537.50		563.79		663.33		604.11		564.10
Repairs:										
Farm labor:										
Human labor	22	$ 5.58	11	$ 2.93	11	$ 3.24	7	$ 2.57	10	$ 4.06
Horse labor	3	0.45	1	0.11	2	0.27	0.4	0.08	3	0.66
Use of equipment		0.14		0.03		0.08		0.02		0.21
Cash labor		1.10		2.31		4.60		1.42		3.47
Other repair costs		9.90		2.45		9.05		4.41		9.95
Depreciation		0		2.11		12.37		*		0
Interest		27.38		28.55		30.90		28.93		33.58
Taxes		4.29		4.88		5.14		5.65		5.36
Insurance		1.47		1.85		1.34		1.59		1.28
Total costs		$50.31		$45.22		$66.99		$44.67		$58.57
Total cost in per cent of average investment		9.4		8.0		11.0		7.5		10.6

*Appreciation due to favorable sales in 1917, $3.57.

TABLE 35. COSTS PER FARM OF MAINTAINING BARNS AND OTHER OUTBUILDINGS, 1914 TO 1918

	1914 (17 farms)		1915 (45 farms)		1916 (30 farms)		1917 (31 farms)		1918 (28 farms)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Value at beginning of year		$2,559.12		$2,520.07		$3,228.17		$3,195.48		$3,163.39
Purchases		0		.56		0		14.65		25.00
Value of improvements		236.52		313.55		105.74		37.80		68.05
Sales and insurance received		64.71		36.11		0		0		1.21
Value at end of year		2,690.00		2,763.47		3,312.77		3,242.35		3,242.34
Repairs:										
Farm labor:										
Human labor	109	$ 27.40	129	$ 33.53	83	$ 25.14	106	$ 37.77	80	$ 31.56
Horse labor	22	3.46	27	4.18	13	2.15	13	2.64	11	2.42
Use of equipment		1.08		1.18		0.64		0.76		0.76
Other repair costs		26.92		36.17		21.12		43.01		51.05
Depreciation		40.93		34.60		21.14		5.58		12.89
Interest		134.08		133.04		165.20		164.19		193.93
Taxes		21.01		22.73		27.49		32.10		30.97
Insurance		7.21		8.62		7.15		9.05		7.38
Total costs		$262.09		$274.05		$270.03		$295.10		$330.90
Total cost in per cent of average investment		10.0		10.4		8.3		9.2		10.3

TABLE 36. COSTS PER FARM OF MAINTAINING CROP LAND, 1914 TO 1918

	1914 (17 farms, 108.8 acres of crop land)		1915 (45 farms, 94.4 acres of crop land)		1916 (30 farms, 110.5 acres of crop land)		1917 (31 farms, 104.3 acres of crop land)		1918 (28 farms, 102.9 acres of crop land)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Value at beginning of year		$7,958.03		$6,321.11		$8,081.12		$7,631.63		$8,296.77
Purchases and transfers		37.50		178.78		102.07		83.42		156.89
Value of improvements (from table 37)		184.57		17.72		106.00		64.12		45.02
Sales and transfers		0		34.76		0		0		0
Value at end of year		8,164.59		6,470.58		8,258.54		7,756.10		8,488.50
Repairs:										
Drainage:										
Human labor	11	$ 2.88	4	$ 1.00	7	$ 2.20	19	$ 6.86	14	$ 5.60
Horse labor	4	0.71	1	0.09	4	0.69	7	1.44	7	1.55
Use of equipment		0.22		0.03		0.21		0.42		0.49
Other costs		0.45		0.10		0.14		0.88		2.22
Brush and weeds cut:										
Human labor	43	10.89	23	6.05	32	9.68	43	15.15	46	18.08
Horse labor	9	1.45	8	1.24	6	1.06	7	1.35	5	1.06
Use of equipment		0.45		0.35		0.31		0.39		0.33
Stone (annual):										
Human labor	23	5.89	13	3.50	10	3.16	22	7.67	28	10.88
Horse labor	30	4.74	18	2.80	14	2.39	26	5.12	35	7.91
Use of equipment		1.48		0.80		0.71		1.48		2.49
Other labor:										
Human labor	26	6.55		0	16	4.79	32	11.42	9	3.60
Horse labor	24	3.85		0	12	2.08	30	5.97	8	1.87
Use of equipment		1.20		0		0.62		1.72		0.59
Other costs		0		0		0.17		0		0.18
Depreciation		15.51		12.27		30.65		23.07		10.18
Interest		408.82		322.53		413.31		386.22		500.77
Taxes		64.07		55.11		68.78		75.51		79.97
Total costs		$529.16		$405.87		$540.95		$544.67		$647.77
Total cost in per cent of average investment		6.6		6.3		6.6		7.1		7.7

TABLE 37. IMPROVEMENTS MADE ON CROP LAND, PER FARM, 1914 TO 1918

	1914 (17 farms)		1915 (45 farms)		1916 (30 farms)		1917 (31 farms)		1918 (28 farms)	
	Hours	Value	Hours	Value	Hours	Value	Hours	Value	Hours	Value
Drainage:										
Human labor	95.4	$24.17	19.3	$5.01	70.8	$21.41	64 4	$22.93	39.0	$15.41
Horse labor	74.9	11.83	4.1	0.64	35.3	5.88	18.2	3.58	11.5	2.59
Use of equipment		3.35		0.18		1.74		1.04		0.82
Cash labor		61.77		0		26.83		3.11		0
Other costs		75.02		3.27		22.20		8.90		10.92
Clearing land:										
Human labor	19.2	4.81	19.6	5.11	50.2	15.18	37.4	13.31	18.1	7.18
Horse labor	14.9	2.35	15.1	2.34	18.1	3.02	24.9	4.90	12.0	2.72
Use of equipment		0.74		0.66		0.90		1.42		0.86
Cash labor		0.23		0.11		0.10		0		0
Other costs		0.24		0.06		2.85		1.13		0.44
New roads and other work:										
Human labor	0.2	0.06	0.6	0.17	10.7	3.25	7.6	2.72	3.9	1.55
Horse labor		0	0.8	0.13	12.2	2.04	4.1	0.83	2.6	0.59
Use of equipment		0		0.04		0.60		0.24		0.19
Cash labor		0		0		0		0		0.78
Other costs		0		0		0		0.01		0.97
Total		$184.57		$17.72		$106.00		$64.12		$45.02

of fencing are given in Memoir 34 of this station,[21] pages 459 to 493. The cost of maintenance from 1914 to 1917 averaged 5.7 cents per rod per year. Pasture and fences were charged to animals at cost, as determined by the above methods. The data are given in tables 38 and 39.

WOODLAND

There was an average of 14.6 acres of woodland per farm, with an average inventory value of $339, or $23 per acre. The primary cost was that of labor. The value of the wood and lumber was more than enough to pay the small cost of the woodlots. The fact that the wood is conveniently available for posts, fuel, and repairs, may make the woodlots more valuable than the small inventory would indicate. The data on costs of maintaining woodland are given in table 40.

GENERAL EXPENSES

Miscellaneous and general expenses were usually charged directly to the enterprise that caused the expenses. In 1918, the charge is larger than should occur under this heading. General expense in the successive years from 1914 to 1918 averaged, respectively, $36.19, $45.45, $27.37, $22.87, and $107.57 per farm. This was charged in proportion to the real estate charges. Probably a charge in proportion to man labor would be more accurate, but the charge should be kept so small as to make the method of distribution of small importance.

MANURE

The various animals were credited with the amount of manure recovered for use on crop land, and the manure account was charged with this amount. No account was taken of manure that was not recovered. Manure dropped on pasture was not considered. To allow for it would merely make an equal increase in the charge to the animals for use of pasture.

Manure was valued by the farmers on the basis of its commercial value in the region. In truck regions the value is usually very high. In sections where many cows are kept and where there is little crop land, the value is very low. The value of manure is dependent also on its distance from the field on which it is to be applied.

Some persons assume that manure is worth what the chemical elements in it would cost. But the value of manure, as of anything else, depends on what can be done with it. Its analysis may be the same in a city, on a truck farm, and at a barn two miles from a field, but its value is dependent on where it is and what can be done with it. It would be just as accurate to value hay on the basis of analysis as to so value manure. Hay analyzes the same in the city as in the country, but its value is not the same in the two localities.

Some manure is given to farmers free for the hauling. In 1918, cow and horse manure at the barn were valued at from $1 to $2 per ton on the different farms (table 41). The average at the barn for horse

[21] An economic study of farm layout. W. I. Myers. 1920.

TABLE 38. COSTS PER FARM OF MAINTAINING PASTURE AND FENCES, 1914 TO 1918

	1914 (17 farms, 33.8 acres per farm)		1915 (45 farms, 34 acres per farm)		1916 (30 farms, 40.6 acres per farm)		1917 (31 farms, 44.6 acres per farm)		1918 (28 farms, 36.2 acres per farm)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Value at beginning of year		$919.24		$873.89		$967.45		$1,107.79		$973.38
Purchases and transfers		0		0		1.67		35.81		0
Value of improvements (from table 39)		12.39		14.09		18.47		19.07		14.82
Sales and transfers		37.50		0		20.67		0		5.68
Value at end of year		881.74		873.89		948.45		1,127.06		967.70
Fence repairs:										
Human labor	69	$17.19	58	$15.15	54	$16.43	49	$17.48	45	$17.89
Horse labor	26	4.08	21	3.26	22	3.71	18	3.55	16	3.63
Use of equipment		1.28		0.92		1.10		1.02		1.14
Other costs		6.65		5.05		1.12		3.60		1.77
Depreciation		12.39		14.09		18.47		35.61		14.82
Interest		45.80		44.27		48.80		56.15		56.83
Taxes		7.18		7.56		8.12		10.98		9.07
Total costs		$94.57		$90.30		$97.75		$128.39		$105.15
Total cost in per cent of average investment		10.5		10.3		10.2		11.5		10.8

TABLE 39. IMPROVEMENTS MADE ON PASTURE AND FENCES, PER FARM, 1914 TO 1918

	1914 (17 farms)		1915 (45 farms)		1916 (30 farms)		1917 (31 farms)		1918 (28 farms)	
	Hours	Value	Hours	Value	Hours	Value	Hours	Value	Hours	Valu
New fences:										
Human labor	11.9	$2.98	14.8	$3.84	28.6	$8.67	28.2	$10.05	9.0	$3.58
Horse labor	4.9	0.77	4.1	0.63	5.9	0.99	12.1	2.39	2.4	0.55
Use of equipment		0.24		0.18		0.29		0.69		0.17
Cash labor		0		0		0		0		2.02
Other costs		4.19		7.35		7.40		4.19		5.04
Grass seed		0		0		0		0		1.10
Lime		0		0		0.30		0.09		0
Manure		4.21		2.09		0.77		1.66		2.36
Fertilizer		0		0		0.05		0		0
Total		$12.39		$14.09		$18.47		$19.07		$14.82

TABLE 40. COSTS PER FARM OF MAINTAINING WOODLAND, 1914 TO 1918

	1914 (17 farms, 14.3 acres per farm)		1915 (45 farms, 14.9 acres per farm)		1916 (30 farms, 14.4 acres per farm)		1917 (31 farms, 11.4 acres per farm)		1918 (28 farms, 18.1 acres per farm)	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Value at beginning of year		$354.24		$348.53		$323.20		$215.35		$459.29
Purchases and transfers		0		0		12.93		8.07		0
Sales and transfers		0		0		4.33		0		27.77
Value at end of the year		354.24		348.31		331.80		218.71		434.29
Costs of cutting wood and lumber:										
Farm labor:										
Human labor	76	$19.11	13	$ 3.49	27	$ 8.19	47	$16.80	45	$17.68
Horse labor	56	8.77	10	1.52	13	2.14	16	3.10	20	4.63
Use of equipment		2.74		0.43		0.64		0.90		1.46
Cash labor		0		0		0		0		0.70
Other costs		1.10		0		0.69		2.48		9.07
Depreciation		0		0.22		0		4.71		*
Interest		17.99		18.08		16.26		10.94		26.74
Taxes		2.82		3.09		2.71		2.14		4.27
Total costs		$52.53		$26.83		$30.63		$41.07		$64.55
Wood and lumber sold and used on farm		$24.82		$20.21		$54.37		$71.39		$54.23
Profit (+) or loss (−)		−$27.71		−$6.62		+$23.74		+$30.32		−$10.32

*Appreciation due to favorable sales of land, $2.77.

TABLE 41. COSTS OF MANURE, 1914 TO 1918

	1914 (18 farms)		1915 (46 farms)		1916 (31 farms)		1917 (31 farms)		1918 (32 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Purchased	(Tons) 222.5	$ 451.15	(Tons) 315.85	$ 446.11	(Tons) 41.65	$ 75.46	(Tons) 265.5	$ 246.47	(Tons) 524.88	$ 358.93
Given for hauling	—	—	76.0	—	30.0	—	5.0	—	48.0	—
First inventory	—	—	136.0	187.22	140.0	140.00	475.0	737.34	621.5	1,224.78
From horses	783.0	1,189.00	2,351.0	2,750.35	1,932.0	2,414.75	1,789.0	2,773.00	1,692.0	2,807.25
From cattle	1,826.5	2,758.76	4,711.5	5,068.50	4,507.0	4,931.20	4,590.5	6,512.32	5,732.25	9,027.13
From sheep	43.0	64.50	233.0	284.10	100.0	125.00	147.0	225.00	76.25	126.38
From hogs	60.16	92.25	206.5	277.85	124.0	167.00	91.5	152.12	185.0	322.25
From poultry	133.59	267.50	264.0	574.75	239.25	515.00	234.75	499.63	213.0	485.75
Other manure	—	—	28.0	28.00	20.0	29.00	37.0	59.00	10.0	20.00
Straw	25.25	119.75	69.0	311.50	93.25	449.75	79.75	403.25	107.45	680.75
Other refuse	25.5	38.75	14.5	16.75	53.5	87.50	3.0	9.50	14.0	10.00
Acid phosphate and rock phosphate	3.08	39.00	1.5	19.19	0.7	13.03	0.5	11.17	2.36	40.64
Total before hauling	3,122.58	$5,020.66	8,406.85	$9,964.32	7,281.35	$8,947.69	7,718.5	$11,628.80	9,226.69	$15,103.86
Average per ton		$1.61		$1.19		$1.23		$1.51		$1.64
Manure sold	—	—	3.0	$3.50	5.0	$5.00	7.0	$7.00	1.0	$1.00
Second inventory	—	—	—	—	25.0	$25.00	411.0	$615.74	520.0	$897.78
Total applied to crops	3,122.58	$5,020.66	8,403.85	$9,960.82	7,251.35	$8,917.69	7,300.5	$11,006.06	8,705.69	$14,205.08
Hauling manure:	(Hours)		(Hours)		(Hours)		(Hours)		(Hours)	
Human labor	3,587	$899.62	10,730	$2,788.73	9,181	$2,778.17	8,725	$3,108.72	10,466	$4,141.40
Horse labor	5,694	899.65	18,602	2,879.59	15,671	2,610.79	14,645	2,885.06	18,253	4,123.35
Use of equipment		281.28		816.63		774.15		833.30		1,299.61
Other costs		—		6.00		—		70.74		170.10
Total hauling costs	(Tons) 3,122.58	$2,080.55	(Tons) 8,403.85	$6,490.95	(Tons) 7,251.35	$6,163.11	(Tons) 7,300.5	$6,897.82	(Tons) 8,705.69	$9,734.46
Average cost of hauling per ton		$0.67		$0.77		$0.85		$0.94		$1.12
Total cost		$7,101.21		$16,451.77		$15,080.80		$17,903.88		$23,939.54
Average charge per ton of manure applied		$2.27		$1.96		$2.08		$2.45		$2.75

manure was $1.66, for cattle manure $1.57, and for all manure $1.64. The average cost of hauling was $1.12. The total cost applied was $2.75, so that crops were charged with this amount.

In the same year, hauling and spreading manure took an average of 1.2 man hours of labor per ton and an average of 2.1 horse hours.

The crops were charged in proportion to the benefits expected to be derived from the manuring practice. The charges to different crops are shown in table 42. Corn and most other tilled crops receive applications larger than the amounts charged to these crops. Some crops, such as oats, receive very little manure directly.

TABLE 42. CHARGES FOR MANURE, FIVE-YEARS AVERAGE, 1914 TO 1918

Crop	Per cent of total manure charged to crop	Average tons charged per acre	Average charge per acre
Alfalfa	2.9	1.2	$ 2.91
Barley	1.9	2.5	5.89
Beans	2.0	1.6	3.73
Buckwheat	0.4	0.6	1.38
Cabbage	3.2	3.0	7.26
Corn for grain	3.2	2.3	5.24
Corn for silage	13.8	3.6	8.55
Sweet corn	1.9	4.7*	10.17*
Hay	31.3	1.7	3.98
Oats	13.4	2.1	4.73
Canning-factory peas	1.1	2.0†	4.28†
Potatoes	6.7	3.2	7.63
Rye	0.9	1.7	4.16
Tobacco	1.1	8.6	18.51
Wheat	7.3	1.8	4.16
Orchard and fruit	3.6	1.1	2.54
Garden	1.2	7.5	17.33
Other crops	3.5	—	—
Pasture	0.6	—	—

*Four-years average, 1914-1917.
†Three-years average, 1914 to 1916.

The total manure applied to crops amounted to 2.1 tons per year for each acre of crops.

LIME

The lowest average cost of lime per ton at the railroad station was $2.61 in 1916 (table 43). In 1918 it was $3.81 per ton. As a five-years average, 3.3 hours of man labor and 5.5 hours of horse labor were required to haul and apply each ton. The labor and other costs aside from the purchase price amounted to $1.82 in 1916 and $5.04 in 1918.

TABLE 43. COST OF LIME, 1914 TO 1918

	1914 (6 farms)		1915 (20 farms)		1916 (16 farms)		1917 (17 farms)		1918 (17 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Purchased	(Tons) 87.945	$328.69	(Tons) 172.77	$524.68	(Tons) 335.11	$ 797.70	(Tons) 146.43	$462.55	(Tons) 136.24	$466.89
Sold	0	0	10.1	35.37	7.5	24.22	0	0	0.9	4.90
Net amount used, and cost at railroad*	87.945	$346.69	162.67	489.31	327.61	854.41	146.43	502.19	135.34	515.95
Human labor	(Hours) 304	76.24	(Hours) 548	142.43	(Hours) 864	261.45	(Hours) 437	155.70	(Hours) 705	278.97
Horse labor	516	81.53	802	124.15	1,507	251.07	774	152.48	1,096	247.59
Use of equipment		25.49		35.21		74.45		44.04		78.04
Automobile labor		0		0		0		0		1.25
Tractor labor		0		0		0		0		67.12
Use of buildings		4.46		0		7.00		4.00		5.56
Other costs		0		0		1.25		0		3.68
Total costs		$534.41		$791.10		$1,449.63		$858.41		$1,198.16
Cost per ton at railroad		$3.942		$3.008		$2.608		$3.430		$3.812
Other costs per ton		$2.135		$1.855		$1.817		$2.433		$5.041
Total cost per ton		$6.077		$4.863		$4.425		$5.862		$8.853

*Including freight.

The cost of lime was distributed to the different crops in proportion to the expected benefits to be derived from its use. Since many farmers did not use lime, the average for all acres is small. The actual rate of application on the area covered was usually from one-half ton to one ton. The charges are shown in table 44:

TABLE 44. CHARGES FOR LIME, FOUR-YEARS AVERAGE, 1915 TO 1918

Crop	Per cent of total lime charged to crop	Average tons charged per acre	Average charge per acre
Alfalfa	8.2	0.15	$1.04
Barley	2.1	0.1	0.44
Beans	0.8	0.02	0.14
Beets	0.3	0.12	0.80
Buckwheat	0.3	0.01	0.07
Cabbage	0.1	0.01	0.04
Corn for grain	1.4	0.03	0.17
Corn for silage	6.3	0.06	0.30
Hay	35.0	0.16	0.29
Oats	20.0	0.12	0.53
Canning-factory peas	1.5	0.25	1.11
Potatoes	1.2	0.04	0.10
Rye	—	—	0.03
Winter wheat	7.2	0.04	0.26
All else	15.6	—	—

DAIRY CATTLE

Results for farms keeping six or more cows and selling wholesale market milk were tabulated separately. On farms with fewer than six cows the dairy is so frequently an incidental enterprise, and so much of the milk is likely to be fed on the farm, that such farms are not considered to be typical of the dairy industry. As a four-years average from 1914 to 1917, the milk produced per cow in addition to milk fed to cattle was 2321 pounds for herds having less than six cows and 5939 pounds for herds having more than six cows.

The methods and costs are different when milk is retailed or when some product other than market milk is produced. Costs for dairy cows were kept separate from the costs for other classes of cattle.

The feed and other costs include costs for cows that are dry, and for cows and heifers that were in the herd for only a part of the year. This makes the results very different from records as reported by cow-testing associations. Such records are usually for animals that complete the year. Most of the heifers are not in the herd for a full year during their first lactation period, and most of the cows are not in the herd for the full year in the year when they do so poorly as to be discarded. Such averages, therefore, include the three best years for most cows and exclude the two fractional poor years.

The average costs are given in table 45. The grain fed averaged from 1754 to 2167 pounds per cow for the different years; the average amount of hay varied from 2905 to 4298 pounds per cow; and the aver-

TABLE 45. COSTS AND RETURNS PER COW ON FARMS HAVING SIX OR MORE COWS AND PRODUCING WHOLESALE MILK, 1914 TO 1918

	1914		1915		1916		1917		1918	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Number of farms	9		26		17		17		18	
Number of cows per farm	16.6		16.9		20.1		22.6		21.5	
Value per cow		$ 89.03		$ 87.30		$ 92.99		$ 99.15		$102.67
Costs:										
Grain*	2,024 lbs.	$28.07	1,762 lbs.	$24.47	2,167 lbs.	$33.04	1,828 lbs.	$42.21	1,754 lbs.	$45.75
Hay and other dry forage	2,905 lbs.	15.04	3,165 lbs.	16.85	3,384 lbs.	17.42	4,078 lbs.	27.24	4,298 lbs.	35.86
Silage and other succulent feed	7,892 lbs.	20.19	7,502 lbs.	20.16	5,796 lbs.	19.14	5,742 lbs.	24.17	5,673 lbs.	26.76
Pasture		6.75		6.09		3.74		4.49		8.46
Salt		0.05		0.08		0.11		0.20		0.24
Total feed		$70.10		$67.65		$73.45		$98.31		$117.07
Bedding	790 lbs.	1.95	747 lbs.	2.14	775 lbs.	2.14	613 lbs.	1.49	516 lbs.	1.73
Use of buildings		2.40		3.25		2.60		2.92		2.98
Bull service		5.07		3.11		3.67		3.91		6.09
Veterinary and medicine		0.36		0.28		0.36		0.30		0.18
Insurance		0.20		0.15		0.17		0.20		0.27
Interest on cow		4.46		4.23		4.54		4.64		6.12
Interest on special dairy equipment		0.03		0.06		0.14		0.18		0.32
Labor:										
Milk hauling:										
Human labor	8.4 hrs.	2.10	11.9 hrs.	3.10	12.2 hrs.	3.70	7.5 hrs.	2.66	11.0 hrs.	4.36
Horse labor	11.9 hrs.	1.88	17.0 hrs.	2.63	17.7 hrs.	2.95	12.1 hrs.	2.38	15.4 hrs.	3.47
Use of equipment		0.59		0.75		0.87		0.69		1.09
Other labor:										
Human labor	144.7 hrs.	36.29	148.8 hrs.	38.68	130.4 hrs.	39.45	121.3 hrs.	43.21	126.2 hrs.	49.94
Horse labor	12.6 hrs.	1.98	11.0 hrs.	1.70	7.1 hrs.	1.18	14.6 hrs.	2.87	7.7 hrs.	1.75
Use of equipment		0.62		0.48		0.35		0.83		0.55
Depreciation on cows (from table 46)		3.21		8.50		4.25		3.00		4.44
Depreciation on special dairy equipment		0.09		0.12		0.64		0.56		1.28
Use and expenses of dairy equipment		0.06		0.35				0.79		1.11
All other costs		3.76		3.24		2.85		3.50		5.40
Total costs		$135.15		$140.42		$143.31		$172.44		$208.15
Milk produced	6,856 lbs.		5,487 lbs.		6,758 lbs.		6,340 lbs.		6,010 lbs.	
Returns:										
Manure produced	6.2 tons	9.39	6.7 tons	$ 6.89	7.4 tons	$ 7.78	7.5 tons	$ 10.32	8.2 tons	$ 13.10
Value of calf at birth		6.73		8.85		8.11		8.92		7.68
Value of milk and its products		107.60		101.64		123.00		172.24		190.90
All other returns				0.06						
Total returns		$123.72		$117.44		$138.89		$191.48		$211.77
Loss		$ 11.43		$ 22.98		$ 4.42				
Gain								$19.04		$3.62
Cost per hundredweight of milk sold		$1.745		$2.118		$1.894		$2.398		$3.133
Price received per hundredweight of milk sold		$1.563		$1.631		$1.823		$2.718		$3.199

*Feed bags were deducted from cost of grain.

age amount of silage varied from 5673 to 7892 pounds per cow. The herds that did not feed silage fed the most hay, so that the proportion of the herds using silage affects the relative quantities of silage and hay.

In 1919, the average amount of silage fed per cow on farms that used silage was 6257 pounds. On these farms an average of 3662 pounds of hay was fed per cow.

The labor per cow for five years averaged 144 hours. As with all of the accounts included in this study, the results are for farms that are much better than the average. The labor per cow is less and the milk produced per cow is more than on the average farm. The five-years average milk production was 6290 pounds per cow. A discussion of labor requirements on dairy cattle is given on pages 49 and 50.

Details of the method of calculating depreciation are given in table 46. The death rate among cows was nearly 2 per cent. On the average, 23 per cent of the cows were disposed of per year. The animals slaughtered or sold for slaughter gave a credit of 56 per cent of the average inventory price. The depreciation per year averaged 5.2 per cent.

Details showing the methods of determining the cost of bull service are shown in table 47. The net cost of keeping the bull was divided by the number of cows to get the cost per cow.

The total grain fed for five years is given in table 48. Of the total feed, 81 per cent was home-mixed and 19 per cent consisted of proprietary feeds. More than half of the grain given was high-protein feed. The primary succulent feed (table 49) was corn, this constituting 91 per cent of the succulent feed. The dry forage is given in table 50, and details of the kinds of materials used for bedding are given in table 51.

TABLE 46. DEPRECIATION ON DAIRY COWS, 1914 TO 1918

	1914 (9 farms, 149.7 cows)		1915 (26 farms, 440.25 cows)		1916 (17 farms, 342.15 cows)		1917 (17 farms, 384.8 cows)		1918 (18 farms, 387.49 cows)	
	Number of head	Value	Number of head	Value	Number of head	Value	Number of head	Value	Number of head	Value
First inventory	150	$12,100.00	405	$35,811.00	335	$30,475.00	337	$32,451.00	381	$37,909.00
Purchases	1	65.00	57	4,475.45	42	4,030.87	69	8,458.48	42	4,915.99
Transfers from heifer account	24	4,045.00	90	8,430.00	54	3,975.00	58	6,475.00	63	7,560.00
Total charges		$16,210.00		$48,716.45		$38,480.87		$47,384.48		$50,384.99
Sold as breeders	11	$ 792.00	11	$ 1,085.00	17	$ 1,624.50	30	$ 4,392.00	26	$ 3,524.58
Slaughtered or sold for slaughter	10	300.64	80	5,047.99	74	3,603.18	48	2,829.87	65	4,036.41
Died	4	—	12		6		3		7	—
Cow hides sold	4	26.25	13	95.35	6	61.73	9	75.53	8	58.06
Second inventory	150	14,610.00	449	38,745.00	334	31,736.00	383	38,934.00	388	41,046.00
Total credits		$15,728.89		$44,973.34		$37,025.41		$46,231.40		$48,665.05
Depreciation		$481.11		$3,743.11		$1,455.46		$1,153.08		$1,719.94
Depreciation per cow		$3.21		$8.50		$4.25		$3.00		$4.44
Depreciation in per cent of average inventory		3.6		10.0		4.7		3.2		4.4

Five-years average death rate, 1.96 per cent
Five-years average disposed of, 23 per cent
Average per cent of average inventory represented by slaughter price, 55.7

TABLE 47. COST OF KEEPING A HERD BULL, 1914 TO 1918

	1914 (8 farms, 7.65 bulls)		1915 (21 farms, 19.3 bulls)		1916 (16 farms, 16.38 bulls)		1917 (16 farms, 15.87 bulls)		1918 (16 farms, 17.83 bulls)	
	Number of head	Value	Number of head	Value	Number of head	Value	Number of head	Value	Number of head	Value
First inventory	8	$ 705.00	26.5	$3,171.00	19	$2,925.00	20	$2,800.00	20.5	$2,750.00
Purchases and transfers	7	1,195.75	9.75	480.50	4	240.50	4.5	959.07	7	765.52
Sales and transfers	3	200.00	15	991.22	5	382.00	7	591.32	6.5	732.25
Died	0		0		0		0		1	
Second inventory	12	1,541.00	21.25	3,060.00	18	2,720.00	17.5	3,295.00	20	2,317.50
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Costs per bull:										
Grain	185 lbs.	$ 2.66	1,024 lbs.	$15.70	802 lbs.	$13.62	933 lbs.	$23.00	819 lbs.	$21.55
Hay and other dry forage	3,843 lbs.	23.81	4,299 lbs.	25.72	5,113 lbs.	26.93	5,172 lbs.	33.64	4,695 lbs.	42.15
Silage and other succulent feed	5,098 lbs.	13.15	4,632 lbs.	12.53	3,370 lbs.	11.57	2,899 lbs.	12.67	2,468 lbs.	12.47
Pasture		4.69		2.77		2.21		1.77		3.39
Other feed		2.74		2.04		0.71		2.53		0.44
Total cost of feed		$47.05		$58.76		$55.04		$73.61		$80.00
Bedding	732 lbs.	1.79	503 lbs.	1.60	342 lbs.	0.93	483 lbs.	1.52	477 lbs.	1.81
Use of buildings		2.44		3.61		2.50		3.23		2.50
Veterinary and medicine		0.65		0.17		0		0.01		0.22
Insurance		0.31		0.28		0.33		0.16		0.18
Interest		7.23		8.07		8.62		9.60		8.69
Labor:										
Human labor	83.3 hrs.	20.88	83.3 hrs.	21.64	76.6 hrs.	23.17	97.9 hrs.	34.89	77.7 hrs.	30.76
Horse labor	1.6 hrs.	0.25	3.3 hrs.	0.51	0.2 hr.	0.03	1.8 hrs.	0.35	1.7 hrs.	0.39
Use of equipment		0.08		0.14		0.01		0.10		0.12
Depreciation		20.88				3.88				26.12
All other costs		0.03		0.59		0.45		0.34		0.56
Total costs		$101.59		$95.37		$94.96		$123.81		$151.35
Returns:										
Manure produced	5.7 tons	$8.72	7.9 tons	$8.45	9.1 tons	$9.75	8.8 tons	$12.20	9.1 tons	$14.78
Service fees received		1.57		2.77		10.27		9.36		4.71
Appreciation				20.71				8.02		
Total returns		$10.29		$31.93		$20.02		$29.58		$19.49
Net cost		$91.30		$63.44		$74.94		$94.23		$131.86

TABLE 48. CONCENTRATES FED TO 1704.39 DAIRY COWS, 1914 TO 1918

	Total pounds	Per cent of total
Home-mixed:		
Barley and ground barley	20,393	0.64
Barley feed	24,503	0.76
Bean meal	1,735	0.05
Beet pulp	13,356	0.42
Buckwheat	392	0.01
Buckwheat feed	11,840	0.37
Buckwheat middlings	15,638	0.49
Brewers' dried grains	153,541	4.79
Brewers' wet grains (dry equivalent)	144,215	4.50
Chop feed	1,000	0.03
Coconut meal	4,292	0.13
Corn and cornmeal	96,371	3.01
Corn bran	44,859	1.40
Corn-feed meal	4,695	0.15
Corn-germ meal	300	0.01
Corn-and-cob meal	2,256	0.07
Corn on ear	1,384	0.04
Corn middlings	1,000	0.03
Cottonseed feed	1,600	0.05
Cottonseed meal	161,848	5.05
Distillers' dried grains	317,805	9.92
Gluten feed	562,615	17.56
Hominy	63,179	1.97
Malt sprouts	22,389	0.70
Molasses	1,350	0.04
Oats and ground oats	180,347	5.63
Oats and barley, and ground oats and barley	9,197	0.29
Oat screenings	100	
Linseed oilmeal	130,671	4.08
Other mixed feed	81,585	2.55
Peas and pea meal	7,180	0.22
Peanut meal	3,000	0.09
Peanut-oil meal	7,100	0.22
Red-dog	4,330	0.14
Rice feed	1,322	0.04
Rye	150	
Rye feed	250	0.01
Rye middlings	154	
Wheat and ground wheat	12,495	0.39
Wheat bran	267,829	8.36
Wheat feed	219,726	6.86
Wheat middlings	53,999	1.69
Total home-mixed	2,651,991	82.76
Total mixed feeds	551,178	17.21
Total concentrates	3,203,169	99.97

TABLE 49. SUCCULENT FEED FED TO 1704.39 DAIRY COWS, 1914 TO 1918

	Total pounds	Per cent of total
Silage:		
Alfalfa	8,000	0.07
Corn	9,684,800	89.06
Millet	132,000	1.21
Oat and pea	60,000	0.55
Pea vine	83,786	0.77
Soybean	14,000	0.13
Total silage	9,982,586	91.79
Other succulent feed:		
Green alfalfa	64,000	0.59
Apples	20,750	0.19
Beets	66,805	0.61
Cabbage	349,500	3.21
Carrots	4,230	0.04
Green clover hay	13,333	0.12
Green corn fodder	216,000	1.99
Green millet	46,000	0.42
Green oats	37,000	0.34
Soybeans	2,000	0.02
Potatoes	56,100	0.52
Turnips	16,710	0.15
Total succulent feed	10,875,014	100.00

TABLE 50. DRY FORAGE FED TO 1704.37 DAIRY COWS, 1914 TO 1918

	Total pounds	Per cent of total
Hay:		
Alfalfa	421,519	6.78
Clover	189,190	3.04
Timothy	42,000	0.68
Mixed	4,547,877	73.11
Buckwheat	3,000	0.05
Millet	12,000	0.19
Oat	139,659	2.25
Pea	28,000	0.45
Rape	2,000	0.03
Rye	16,000	0.26
Wheat	6,000	0.10
Total hay	5,407,245	86.94
Straw:		
Barley	3,000	0.05
Bean	41,200	0.66
Oat	64,020	1.03
Wheat	10,880	0.17
Total straw	119,100	1.91
Corn fodder	268,000	4.31
Cornstalks	426,420	6.85
Total dry forage	6,220,765	100.00

TABLE 51. BEDDING FOR 1704.39 DAIRY COWS, 1914 TO 1918

	Total pounds	Per cent of total
Straw:		
Barley	48,100	4.19
Buckwheat	30,050	2.62
Oat	431,381	37.57
Oat and pea	14,000	1.22
Rye	37,000	3.22
Wheat	136,415	11.88
Mixed	223,050	19.42
Total straw	919,996	80.12
Other bedding:		
Poor hay	19,000	1.65
Sawdust	203,160	17.69
Shavings	6,110	0.53
Total bedding	1,148,266	100.00

The relation of amount of grain fed per cow to other factors is shown in table 52. The farmers who fed the most grain per cow had the largest herds, and were in every way the most intensive in their methods. Some of them obtained higher prices because of having cleaner milk and producing a larger proportion of the milk in winter.

TABLE 52. RELATION OF POUNDS OF GRAIN FED TO COWS TO COST OF MILK PRODUCTION AND OTHER FACTORS, 27 FARMS, 1919

	Less than 1500 pounds of grain	From 1501 to 2000 pounds of grain	Over 2000 pounds of grain	Average
Number of farms	7	10	10	27
Average pounds of grain per cow	778.7	1,715	2,497	1,761.7
Number of cows	14.1	18.4	25.35	19.86
Pounds of hay per cow	3,321	4,012	4,070	3,854
Pounds of silage per cow	5,444	6,881	6,266	6,257
Hours of human labor per cow	166.1	180.8	183.2	177.9
Cost of feed and bedding per cow	$99.96	$134.18	$160.07	$134.90
Cost of human labor per cow	$72.57	$69.46	$70.95	$70.82
Cost of horse and equipment labor per cow	$4.08	$10.26	$6.60	$7.30
Total cost per cow (including depreciation, if any)	$204.25	$248.56	$282.24	$249.55
Cost of milk per 100 pounds sold	$3.43	$3.20	$3.46	$3.35
Pounds of milk per cow	4,832	6,872	7,179	6,457
Pounds of milk produced per pound of grain	6.2	4	2.9	3.7
Value of milk and milk products per cow	$172.77	$232.04	$272.99	$231.84
Price of milk per 100 pounds sold	$3.26	$3.38	$3.85	$3.55
Total returns per cow (including appreciation, if any)	$192.61	$264.02	$311.08	$262.93
Profit (+) or loss (−) per cow	−$11.64	+$15.46	+$28.84	+$13.38
Labor income	$1,354.08	$2,123.11	$2,337.44	$2,003.11

As in all such comparisons, the importance of a well-balanced progress in intensity is evident. A change in one factor may call for changes in all other respects to give a well-balanced development.

With the exception of the group that fed only 779 pounds of grain per cow, the groups averaged 3.5 pounds of milk per pound of grain.

All but three of the farms having six or more cows fed silage in 1919. This number is too small to be representative of farms not feeding silage. The twenty-four farms that fed silage indicate what may be considered typical results from the more successful dairymen following this practice. The results are given in table 53:

TABLE 53. RELATION OF SILAGE TO MILK PRODUCTION AND OTHER FACTORS, 27 FARMS, 1919

	Cows fed silage	Cows not fed silage
Number of farms	24	3
Average pounds of silage per cow	6,257	0
Number of cows	20.31	16.25
Pounds of grain per cow	1,655.8	2,609
Pounds of hay per cow	3,662	5,394
Hours of human labor per cow	180.0	160.9
Cost of feed and bedding per cow	$132.36	$155.22
Cost of human labor per cow	$71.76	$63.24
Cost of horse and equipment labor per cow	$7.25	$7.69
Total cost per cow (including depreciation, if any)	$246.29	$275.61
Cost of milk per 100 pounds sold	$3.43	$2.76
Pounds of milk per cow	6,187	8,616
Pounds of milk produced per pound of grain	3.7	3.3
Value of milk and milk products per cow	$223.71	$296.91
Price of milk per 100 pounds sold	$3.57	$3.45
Total returns per cow (including appreciation, if any)	$254.33	$331.78
Profits per cow	$8.04	$56.17
Labor income	$1,927.66	$2,606.73

The relation of milk production per cow to other factors is given in table 54. This sorting is nearly the same as that by amount of grain fed.

TABLE 54. RELATION OF MILK PRODUCTION PER COW TO COST OF MILK PRODUCTION AND OTHER FACTORS, 27 FARMS, 1919

	Less than 5500 pounds milk	From 5500 to 7000 pounds milk	Over 7000 pounds milk	Average
Number of farms	6	12	9	27
Pounds of milk per cow	4,520	6,187	8,108	6,457
Pounds of milk produced per pound of grain	4.6	3.5	3.5	3.7
Number of cows	18.1	21.95	18.28	19.86
Pounds of grain per cow	979.6	1,747	2,303	1,761.7
Pounds of hay per cow	3,027	3,750	4,545	3,854
Pounds of silage per cow	5,417	5,738	8,135	6,257
Hours of human labor per cow	159.5	184.3	181.6	177.9
Cost of feed and bedding per cow	$95.41	$139.66	$154.87	$134.90
Cost of human labor per cow	$62.70	$76.50	$68.65	$70.82
Cost of horse and equipment labor per cow	$4.57	$7.50	$8.86	$7.30
Total cost per cow (including depreciation, if any)	$183.36	$263.23	$275.42	$249.55
Cost of milk per 100 pounds sold	$3.20	$3.79	$2.88	$3.35
Value of milk and milk products per cow	$164.66	$231.62	$276.92	$231.84
Price of milk per 100 pounds sold	$3.28	$3.75	$3.43	$3.55
Total returns per cow (including appreciation, if any)	$184.92	$260.35	$318.39	$262.93
Profit (+) or loss (–) per cow	+$1.56	–$2.88	+$42.97	+$13.38
Labor income	$1,887.84	$1,471.74	$2,788.46	$2,003.11

As in all these sortings, the number of farms is so small that the averages are not in all cases conclusive. A single non-typical farm has too much effect on the average.

The winter grain feeding is evidently much more than one pound of grain for 3.5 pounds of milk produced on the farms that have the most milk per cow, for the grain fed is certainly less in summer than in winter.

POULTRY

FARM POULTRY

On farms where poultry was a minor enterprise, one account was kept including all ages and classes of fowls. Practically all such poultry were chickens, but there was a very small number of turkeys, ducks, and geese. One flock of 375 mature chickens was included, but the average size of flock for four years was 117 fowls. The numbers in the inventory (table 55) are mature fowls only, as the inventories are taken in winter.

Farm poultry gets much of its food by picking it up around the buildings and by stealing it from other classes of livestock. The total feed consumed averaged 57.5 pounds per mature fowl. Part of this was used in raising chickens.

The egg production averaged 77 eggs per fowl. The production per hen would be higher, as there is usually one rooster for about 20 hens.

TABLE 55. CHARGES AND CREDITS FOR AVERAGE FARM FLOCK OF POULTRY, 1915 TO 1918

	1915 (17 farms)		1916 (12 farms)		1917 (14 farms)		1918 (19 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Charges:								
Number of fowls, first inventory	132	$95.34	125	$99.69	154	$125.42	95	$103.07
Hatching eggs purchased	71	1.87	87	1.98	52	2.52	54	2.18
Day-old chicks purchased	43	5.11	3	0.49	25	3.75	16	2.58
Other poultry purchased	9.2	8.13	4.3	2.87	0.5	0.60	1.2	2.22
Grain	5,735 lbs.	$90.76	5,842 lbs.	$105.27	5,715 lbs.	$158.75	5,101 lbs.	$154.47
Mash	1,105 lbs.	19.99	1,139 lbs.	22.82	1,497 lbs.	40.37	689 lbs.	19.41
Succulent feed	353 lbs.	1.06			41 lbs.	0.11	50 lbs.	0.71
Skimmilk	2,112 lbs.	3.89	157 lbs.	0.48	2,253 lbs.	5.79	78 lbs.	0.45
Other feed costs		1.66		1.17		1.92		1.14
Total cost of feed		$117.36		$129.74		$206.94		$176.18
Hay and straw for litter	406 lbs.	1.17	104 lbs.	0.26	143 lbs.	0.40	329 lbs.	1.14
Use of buildings		8.51		9.77		8.97		7.91
Medicine and drugs		0.22		0.15		0.05		0.01
Insurance		0.01		0.07		0.09		0.07
Interest		4.82		5.00		5.83		6.42
Human labor	254.2 hrs.	66.06	243.4 hrs.	73.66	268.5 hrs.	95.67	203.9 hrs.	80.68
Horse labor	31.9 hrs.	4.94	25.8 hrs.	4.29	21.7 hrs.	4.28	8.4 hrs.	1.89
Use of equipment		1.40		1.27		1.24		0.60
Expense of special poultry equipment		1.57		1.85		6.07		5.37
All other costs		1.75		2.71		1.06		2.18
Total charges		$318.26		$333.80		$462.89		$392.50
Credits:								
Number of fowls, second inventory	122	$97.38	119	$100.35	102	$107.78	90	$111.07
Poultry sold	69.4	31.07	65.2*	40.22	64.6	45.15	38.6†	36.41
Poultry used on farm	24.1	13.25	17.8	12.33	14.9	12.82	15.9†	17.13
Eggs sold	8,535	178.20	6,528	157.06	8,251	268.80	5,184	192.89
Eggs incubated	93		47		6		36	
Eggs for personal use	1,710	35.59	1,739	43.83	1,684	51.67	2,043	71.13
Total eggs produced	10,338		8,314		9,941		7,281§	
Manure produced	3.2 tons	8.26	3.9 tons	9.67	3.8 tons	8.87	3.4 tons	8.17
Total credits		$363.75		$363.46		$495.09		$436.80
Gain		$45.49		$29.66		$32.20		$44.30
Surplus fowls produced per fowl	0.66		0.63		0.21		0.54	
Eggs produced per fowl	81		68		78		79	
Cost per dozen eggs produced		$0.195		$0.247		$0.348		$0.362
Price received per dozen eggs sold		$0.251		$0.289		$0.391		$0.447
Grain fed per fowl	53.9 lbs.		57.2 lbs.		56.3 lbs.		62.6 lbs.	
Grain fed per dozen eggs produced	7.9 lbs.		10.1 lbs.		8.7 lbs.		9.5 lbs.	

*1916, Fowls sold, 58.7, plus 19.5 lbs. poultry. Estimated as 65.2 fowls.
†1918, Fowls sold, 7, plus 94.8 lbs. poultry. Estimated as 38.6 fowls.
‡1918, Fowls, for personal use, 12.1, plus 11.3 lbs. poultry. Estimated as 15.9 fowls.
§Total egg production for 1918 includes 18 broken eggs.

The feed per dozen eggs averaged 9.1 pounds, but this feed, together with feed picked up around the farm, produced 51 surplus fowls for each hundred fowls kept.

The very high cost of grain resulted in a decrease in fowls each year. The data on feed are given in table 56:

TABLE 56. FEED FOR 7228 HEAD OF FARM POULTRY, INCLUDING FEED FOR YOUNG STOCK, 1915 TO 1918

	Total pounds	Per cent of total mash and grain
Mash:		
Alfalfa meal	100	0.02
Barley meal	200	0.05
Beef scrap	1,666	0.41
Bone meal	449	0.11
Brewers' dried grains	600	0.15
Buckwheat middlings	10	—
Corn bran	525	0.13
Corn feed	50	0.01
Cornmeal	4,958	1.21
Gluten	2,785	0.68
Hominy	800	0.19
Meat scrap	5,469	1.33
Ground oats	1,716	0.42
Oatmeal	140	0.03
Linseed oilmeal	190	0.05
Rye middlings	200	0.05
Tankage	500	0.12
Wheat bran	9,639	2.35
Wheat feed	1,405	0.34
Wheat middlings	9,969	2.43
Mixed mash	25,128	6.10
Total mash	66,499	16.18
Grain:		
Barley	23,685	5.76
Beans	300	0.07
Buckwheat	8,742	2.13
Corn and cracked corn	158,622	38.59
Chick feed	4,450	1.08
Oats	34,049	8.28
Rye	728	0.18
Speltz	40	0.01
Wheat	95,433	23.22
Other mixed grain	18,496	4.50
Total grain	344,545	83.82
Total mash and grain	411,044	100.00
		Per cent of total succulent feed
Succulent feed:		
Apples	250	3.32
Beets	1,620	21.54
Cabbage	5,170	68.75
Potatoes	480	6.38
Total succulent feed	7,520	100.00
Skimmilk	70,807	

TABLE 57. CHARGES AND CREDITS FOR 150.2 ANIMAL UNITS OF MATURE COMMERCIAL POULTRY, 1914 TO 1918

	1914 (1 farm)		1915 (3 farms)		1916 (6 farms)		1917 (6 farms)		1918 (7 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Charges:										
First inventory:										
Hens	1,130	$1,140.00	3,005	$2,805.00	2,982	$2,459.75	4,354	$5,227.75	3,264	$3,838.80
Roosters			240	458.00	107	121.00	95	179.50	95	193.50
Purchases and transfers:										
Hens	1,734	1,734.00	2,512	2,239.35	2,451	1,909.18	1,940	2,168.30	1,821	2,738.00
Roosters			243	251.51	99	86.90	102	164.30	64	131.11
Grain	76,148 lbs.	$1,187.45	131,091 lbs.	$1,967.08	152,274 lbs.	$2,599.82	147,995 lbs.	$4,199.45	118,637 lbs.	$3,620.00
Mash	35,100 lbs.	600.32	71,005 lbs.	1,320.59	58,727 lbs.	1,066.90	92,183 lbs.	2,489.96	90,616 lbs.	2,994.75
Succulent feed	22,870 lbs.	80.15	37,700 lbs.	121.00	14,147 lbs.	43.00	26,300 lbs.	114.75	41,137 lbs.	196.21
Milk	1,657 lbs.	4.95	51,520 lbs.	59.15	56,500 lbs.	162.60	13,610 lbs.	55.14	14,360 lbs.	51.00
Meat		0		0		0	3,982 lbs.	14.19	800 lbs.	4.00
Other feed costs		29.85		103.87		54.19		80.42		94.12
Total cost of feed		$1,902.72		$3,571.69		$3,926.51		$6,953.91		$6,960.08
Hay and straw for litter	28,720 lbs.	106.30	34,500 lbs.	131.05	19,700 lbs.	48.36	23,460 lbs.	91.99	32,310 lbs.	94.44
Use of buildings		126.64		328.90		259.43		378.20		313.47
Medicine and drugs		4.40		11.25		6.58		15.11		10.87
Insurance		9.58		3.85		2.50		2.15		6.82
Interest		77.70		190.98		150.75		241.23		260.52
Human labor	1,627 hrs.	408.05	5,422 hrs.	1,409.18	5,305 hrs.	1,605.29	5,636 hrs.	2,008.11	4,679 hrs.	1,851.48
Horse labor	482 hrs.	76.16	1,029 hrs.	159.29	853 hrs.	142.11	881 hrs.	173.56	856 hrs.	193.37
Use of equipment		23.81		45.17		42.14		50.13		60.95
Expense of special poultry equipment		43.79		77.13		52.67		71.91		125.20
All other costs		90.53		274.50		18.00		88.26		152.38
Total charges		$5,743.68		$11,956.85		$10,831.17		$17,814.41		$16,930.99
Credits:										
Second inventory:										
Hens	1,968	$1,968.00	4,192	$3,946.00	3,567	$3,351.85	3,604	$4,178.80	3,325	$4,551.50
Roosters			215	430.00	76	97.50	95	193.50	51	135.50
Sales and transfers of fowls	737	531.74	1,302	966.25	1,416	736.22	2,037	1,290.19	1,385*	1217.86
Eggs sold	92,128	2,621.39	240,974	6,245.99	225,625	5,860.22	259,600	8,905.93	254,556	10,543.38
Eggs used on farm	23,174	579.35	18,627	409.19	20,620	474.94	26,793	827.31	21,018	788.08
Eggs broken	—		600		1,005		245		1,307	
Total eggs produced	115,302		260,201		247,250		286,638		276,881	
Manure produced	100 tons	200.00	160 tons	335.00	153 tons	303.00	139 tons	283.00	112 tons	249.50
Total credits		$5,900.48		$12,332.43		$10,823.73		$15,678.73		$17,485.82
Loss						$7.44		$2,135.68		
Gain		$156.80		$375.58						$554.83
Eggs produced per hen	—		72		76		72		84	
Cost per dozen eggs produced		$0 317		$0.290		$0 308		$0.497		$0.467
Price received per dozen eggs sold		$0.341		$0.311		$0.312		$0.412		$0.497
Grain and mash fed per fowl	71.8 lbs.		52.8 lbs.		62.7 lbs.		59 lbs.		62.1 lbs.	
Grain and mash fed per dozen eggs produced	11.6 lbs.		9.3 lbs.		10.2 lbs.		10.1 lbs.		9.1 lbs.	

*Fowls sold and used on farm, 235, plus 3450.35 lbs. poultry. Estimated as 1385 fowls.

COMMERCIAL POULTRY

For commercial poultry flocks, separate accounts were kept with mature poultry, with the raising of chicks, and with incubation. Twenty-three accounts with mature chickens were kept in five years.

Some farmers who had more than one flock did not keep roosters in all the flocks. On the average there was one rooster for about 29 hens.

The average egg production per hen in different years varied from 72 to 84. This average is based on the average number of hens in the inventories. If based on the daily average number of hens, the production would be higher.

The data for mature poultry are given in table 57.

The grain and mash fed per fowl varied from 53 to 72 pounds in the different years. Many of the flocks obtained considerable feed about the buildings. The grain and mash fed per dozen eggs produced varied from 9 to 12 pounds in the different years.

The detailed list of feed used by mature commercial poultry is shown in table 58. Of the total grain and mash used, 64 per cent was whole grain and 36 per cent was mash. Corn and wheat were fed in nearly equal quantities and constituted more than three-fourths of the total whole grain fed.

TABLE 58. FEED FOR 150.2 ANIMAL UNITS OF MATURE COMMERCIAL POULTRY, 1914 TO 1918

	Total pounds	Per cent of total mash and grain
Mash:		
Alfalfa meal	1,150	0.12
Barley meal	1,721	0.18
Barley feed	300	0.03
Bone meal	1,060	0.11
Brewers' grains	319	0.03
Corn feed	100	0.01
Cornmeal	25,780	2.65
Distillers' grains	540	0.06
Fish scrap	100	0.01
Gluten	15,838	1.63
Hominy	14,853	1.53
Meat meal and meat scrap	53,269	5.48
Ground oats	5,484	0.56
Linseed oilmeal	12,590	1.29
Red-dog	6,140	0.63
Rye feed	100	0.01
Wheat bran	63,723	6.55
Wheat feed	8,403	0.86
Ground wheat	1,789	0.18
Shredded wheat	1,534	0.16
Wheat middlings	47,857	4.92
Mixed mash	84,981	8.72
Total mash	347,631	35.72

TABLE 58 (*concluded*)

	Total pounds	Per cent of total mash and grain
Grain:		
Barley	54,178	5.57
Beans	300	0.03
Buckwheat	1,884	0.19
Corn and cracked corn	241,068	24.77
Oats	70,355	7.23
Rye	448	0.05
Wheat	234,653	24.11
Other mixed grains	22,711	2.33
Total grain	625,597	64.28
Total mash and grain	973,228	100.00

	Total pounds	Per cent of total succulent feed
Succulent feed:		
Green alfalfa	2,000	1.41
Apples	2,000	1.41
Beets	119,515	84.07
Cabbage	15,579	10.96
Potatoes	1,860	1.31
Turnips	1,200	0.84
Total succulent feed	142,154	100.00
Milk:		
Buttermilk	46,177	
Skimmilk	84,470	
Whey	7,000	
Total milk	137,647	
Slaughtered farm animals:		
Cow meat	600	
Sheep and lambs	50	
Calves	100	
Horse meat	3,940	
Bones from butcher	92	
Total meat	4,782	

The costs of incubation for three years are shown in table 59. The costs per chick hatched varied from 8 to 16 cents in the different years, and the percentage hatched varied from 32 to 54 per cent.

Since day-old chicks are bought and sold, those not sold were transferred to the chicken account at farm sale value.

TABLE 59. COSTS OF INCUBATION, 1915 TO 1917

	1915 (2 farms)		1916 (2 farms)		1917 (4 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value
Charges:						
Inventory of incubators	5	$607.50	8	$180.00	11	$654.00
Eggs purchased and transferred	25,264	694.45	2,560	50.70	13,876	443.42
Chicks purchased	1,877	183.40	—	—	—	—
Hatching hired	—	217.18	—	—	—	10.50
Equipment purchased	—	15.86	—	—	—	13.48
Fuel for incubation	—	18.62	—	6.90	—	35.17
Use of buildings	—	25.36	—	8.20	—	35.44
Insurance	—	—	—	.10	—	1.08
Interest	—	35.09	—	5.83	—	31.27
Human labor (hours)	361	93.82	87	26.33	268	93.61
Horse labor (hours)	17	2.63	12	2.00	11	2.14
Use of equipment	—	0.75	—	0.59	—	0.62
Other costs	—	31.86	—	1.96	—	—
Total charges		$1,926.52		$282.61		$1,320.73
Credits:						
Inventory of incubators	5	$596.00	8	$178.00	11	$597.00
Chicks sold and transferred	15,600	1,760.81	1,242	119.80	4,407	555.19
Custom hatching	—	—	—	—	—	22.37
Infertile eggs sold	—	—	—	—	480	10.76
Total credits		$2,356.81		$297.80		$1,185.32
Loss						$135.41
Gain		$430.29		$15.19		
Percentage hatched		54.3		48.5		31.8
Cost per chick hatched		$0.084		$0.084		$0.157

Some of the men kept the incubation and chicken-raising accounts as one.

The costs of raising chicks are shown in table 60. Usually these accounts were closed about November 1 and the pullets were then transferred to the mature-chicken account. The costs of raising pullets above the returns from sales averaged from 56 to 97 cents in the different years. The total grain and mash used per chicken raised varied from 12 to 15 pounds in the different years.

TABLE 60. COSTS OF RAISING YOUNG POULTRY, 1915 TO 1917

	1915 (3 farms)		1916 (6 farms)		1917 (6 farms)	
	Quantity	Value	Quantity	Value	Quantity	Value
Charges:						
First inventory:						
Eggs for incubation	720	$ 12.00	1,000	$ 55.00	—	—
Special poultry equipment	—	1,017.75	—	504.30	—	$809.60
Total inventory		$1,029.75		$559.30		$809.60
Chicks purchased and transferred	6,858	696.70	1,976	407.62	4,423	536.02
Eggs purchased and transferred	576	10.08	3,344	208.25	2,475	100.29
Hatching hired	—	—	—	—	—	45.55
Equipment purchased	—	60.49	—	209.90	—	60.23
Grain	36,829 lbs.	$611.04	29,448 lbs.	$547.26	30,466 lbs.	$978.61
Mash	21,147 lbs.	383.45	11,376 lbs.	215.07	18,538 lbs.	479.48
Succulent feed	—	2.70*	—	—	—	0.98*
Milk	—	17.07	13,620 lbs.	35.70	1,630 lbs.	8.00
Other feed costs	—	46.71	—	4.69	—	6.66
Total cost of feed		$1,060.97		$802.72		$1,473.73
Hay and straw for litter	2,000 lbs.	7.70	2,000 lbs.	5.00	—	—
Fuel for brooding	—	47.80	—	38.85	—	38.84
Use of buildings	—	20.62	—	31.16	—	34.81
Medicine and drugs	—	3.75	—	0.25	—	1.45
Insurance	—	0.50	—	0.30	—	0.15
Interest	—	74.09	—	31.70	—	38.90
Human labor	2,168 hrs.	563.46	1,785 hrs.	540.14	1,446 hrs.	515.21
Horse labor	109 hrs.	16.87	207 hrs.	34.48	118 hrs.	23.25
Use of equipment	—	4.79	—	10.22	—	6.71
All other costs	—	56.22	—	0.77	—	10.09
Total charges		$3,653.79		$2,880.66		$3,694.83
Credits:						
Inventory of special poultry equipment	—	$1,006.25	—	$ 702.30	—	$ 746.00
Broilers sold and transferred	1,901	780.57	806	341.78	1,769	629.68
Day-old chicks sold	—	—	343	48.68	247	40.70
Cockerels sold and transferred	357	299.66	122	104.71	136	178.92
Pullets sold and transferred	2,757	2,280.60	1,838	1,405.96	2,120	2,358.30
Equipment sold	—	6.00	—	20.00	—	—
Eggs sold and transferred	—	—	36	1.50	168	7.32
Manure produced	11 tons	22.50	15 tons	31.00	22 tons	45.50
Total credits		$4,395.58		$2,655.93		$4,006.42
Loss				$224.73		
Gain		$741.79				$311.59
Grain and mash per chicken raised	11.6lbs.		14.8 lbs.		12.2 lbs.	
Net cost per pullet raised		$0.56		$0.89		$0.97

*Charge for seed for barley, oats, sweet corn, and swiss chard, planted in the hen yard.

TABLE 61. CONCENTRATES FED YOUNG POULTRY, 1915 TO 1917

	Total pounds	Per cent of total mash and grain
Mash:		
Bone meal	1,363	0.92
Buckwheat middlings	50	0.03
Cornmeal	5,548	3.75
Gluten	301	0.20
Homcoline	1,230	0.83
Hominy	1,860	1.26
Meat scrap	9,413	6.37
Ground oats	326	0.22
Oatmeal	310	0.21
Oat flake	137	0.09
Linseed oilmeal	366	0.25
Red-dog	985	0.67
Wheat bran	15,058	10.19
Wheat feed	1,400	0.95
Wheat middlings	6,986	4.73
Shredded wheat	2,700	1.83
Other mixed mash	3,028	2.05
Total mash	51,061	34.55
Grain:		
Barley	3,275	2.22
Chick feed	3,932	2.66
Corn and cracked corn	24,782	16.77
Oats	6,284	4.25
Rice	6	
Wheat and cracked wheat	50,929	34.46
Other mixed grain	7,535	5.10
Total grain	96,743	65.45
Total mash and grain	147,804	100.00

HOGS

Many of the farms had no hogs. As a total for five years, twenty of the accounts included only 1 brood sow, seventeen included 2, six included 3, three included 4, one included 6, and one included 7. The average for all farms having hogs was 0.9 brood sow per farm.

Much of the feed of hogs was waste products, some of which was not counted as of any value.

In 1914 and 1917, the weight of pork produced was determined with approximate accuracy. In 1914, the hogs averaged 187 pounds live weight at the time of slaughter, and in 1917 they averaged 191 pounds.

The grain fed per 100 pounds of live hog produced averaged 484 pounds in 1914 and 413 pounds in 1917. This is in addition to succulent feed, milk, and dry forage.

The data on hogs are given in tables 62 to 67:

TABLE 62. CHARGES AND CREDITS FOR HOGS, 1914 TO 1918

	1914 (10 farms, 10.71 animal units)		1915 (34 farms, 25.28 animal units)		1916 (19 farms, 16.02 animal units)		1917 (17 farms, 11.94 animal units)		1918 (23 farms, 26.58 animal units)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Charges:										
First inventory:										
Boars	1	$ 17.00	4	$ 70.00	3	$ 50.00	1	$ 35.00	6	$ 250.00
Sows	11	298.00	25	624.00	15	370.00	14	410.00	32	1,465.00
Other hogs	58	535.00	192	1,647 50	128	1,090.00	61	621.00	70	973.00
Total inventory	70	$850.00	221	$2,341.50	146	$1,510.00	76	$1,066.00	108	$2,688.00
Hogs purchased	45	136.50	153.5	584.93	39	177.40	52	345.40	105	1,206.11
Grain	69,711 lbs.	$846.24	217,448 lbs.	$3,002.65	112,281 lbs.	$1,747.77	100,818 lbs.	$2,353.46	201,288 lbs.	$4,920.17
Milk	25,195 lbs.	52.60	165,024 lbs.	232.04	108,880 lbs.	337.95	74,177 lbs.	246.69	127,954 lbs.	818.58
Dry Forage	—	—	—	—	—	—	2,700 lbs.	18.50	12,500 lbs.	52.50
Succulent feed	13,560 lbs.	36.55	28,010 lbs.	62.85	12,920 lbs.	46.50	13,060 lbs.	62.38	50,025 lbs.	155.92
Pasture		20.68		22.99		17.22		21.12		45.35
Other feed costs										48.03
Total cost of feed		$956.07		$3,320.53		$2,149.44		$2,702.15		$6,040.55
Bedding	13,120 lbs.	32.75	26,700 lbs.	69.55	8,150 lbs.	22.38	23,050 lbs.	69.78	21,020 lbs.	67.05
Service fees paid		1.00		16.50		8.00		19.00		31.00
Use of buildings		99.91		261.06		133.07		115.05		162.71
Veterinary and medicine		7.50		10.50		4.00		3.00		2.05
Insurance		0.36		1.25		1.10		1.17		2.58
Interest		34.33		113.05		60.80		82.74		199.93
Human labor	2,098 hrs.	526.18	5,885 hrs.	1,529.51	3,058 hrs.	925.35	2,945 hrs.	1,049.30	5,119 hrs.	2,025.59
Horse labor	254 hrs.	40.13	711 hrs.	110.06	400 hrs.	66.64	348 hrs.	68.56	594 hrs.	134.18
Use of equipment		12.55		31.21		19.76		19.80		42.29
All other costs		12.30		27.57		25.12		71.57		133.41
Total charges		$2,709.58		$8,417.22		$5,103.06		$5,613.52		$12,735.45
Credits:										
Second inventory:										
Boars	1	$ 20.00	4	$ 75.00	—	—	3	$ 125.00	5	$ 215.00
Sows	7	175.00	22	605.00	10	$285.00	24	1,045.00	27	1,415.00
Other hogs	51	452.00	152	1,457.00	55	663.00	83	1,026.00	141	2,216.75
Total inventory	59	$ 647.00	178	$2,137.00	65	$ 948.00	110	$2,196.00	173	$3,846.75
Manure produced	56.2 tons	84.25	171.5 tons	230.60	119 tons	159.50	91 tons	151.50	182 tons	317.25
Service fees received		0		5.00		0		40.00		126.25
Young pigs sold*	33	113.50	—	—	—	—	154	877.25	—	—
Pork and hogs sold		1,410.10		3,939.71		3,429.19		2,182.97		5,999.73
Pork used on farm		264.20		930.79		860.73		1,054.70		1,893.13
Total credits		$2,519.05		$7,243.10		$5,397.42		$6,502.42		$12,183.11
Loss		$190.53		$1,174.12		—		—		$552.34
Gain		—		—		$294.36		$888.90		—

*Pigs were included with hogs and pork in 1915, 1916, and 1918.

TABLE 63. CONCENTRATES FED TO 90.53 ANIMAL UNITS OF HOGS, 1914 TO 1918

	Total pounds	Per cent of total
Home-mixed:		
Barley and ground barley	71,757	10.23
Barley middlings	1,100	0.16
Beans	41,047	5.85
Brewers' dried grains	845	0.12
Buckwheat	1,200	0.17
Buckwheat feed	1,002	0.14
Corn and cornmeal	227,843	32.48
Corn bran	1,500	0.21
Corn-feed meal	300	0.04
Cottonseed meal	400	0.06
Distillers' dried grains	240	0.03
Gluten	4,707	0.67
Hominy	33,479	4.77
Malt sprouts	600	0.09
Meat scrap	650	0.09
Molasses	87	0.01
Oats	37,724	5.38
Oilmeal	5,662	0.81
Peanut meal	900	0.13
Peas	600	0.09
Pumpkin seed	1	—
Red-dog	5,300	0.76
Rice feed	3,249	0.46
Rye and ground rye	22,109	3.15
Rye feed	2,150	0.31
Rye middlings	983	0.14
Tankage	7,793	1.11
Wheat and ground wheat	17,396	2.48
Wheat bran	23,105	3.29
Wheat feed	5,368	0.77
Wheat middlings	147,125	20.97
Mill sweepings and salvaged feed	3,280	0.47
Other mixed feed	23,984	3.42
Shredded wheat	200	0.03
Total home-mixed	693,686	98.89
Other mixed feed	7,860	1.11
Total concentrates	701,546	100.00

TABLE 64. SUCCULENT FEED FED TO 90.53 ANIMAL UNITS OF HOGS, 1914 TO 1918

	Total pounds	Per cent of total
Silage:		
Corn	7,500	6.38
Pea vine	4,000	3.40
Other succulent feed:		
Apples	33,385	28.40
Beets	32,250	27.43
Cabbage	12,500	10.63
Carrots	100	0.09
Potatoes	16,640	14.15
Pumpkins	8,000	6.80
Rape	2,000	1.70
Roots	600	0.51
Squash	600	0.51
Total succulent feed	117,575	100.00

TABLE 65. MILK FED TO 90.53 ANIMAL UNITS OF HOGS, 1914 TO 1918

	Total pounds	Per cent of total
Whole milk	138	0.03
Buttermilk	15,159	3.02
Skimmilk	425,373	84.87
Whey	60,560	12.08
Total milk	501,230	100.00

TABLE 66. DRY FORAGE FED TO 90.53 ANIMAL UNITS OF HOGS, 1914 TO 1918

	Total pounds	Per cent of total
Alfalfa	1,500	9.87
Mixed hay	1,700	11.18
Cornstalks	12,000	78.95
Total dry forage	15,200	100.00

TABLE 67. BEDDING FOR 90.53 ANIMAL UNITS OF HOGS, 1914 TO 1918

	Total pounds	Per cent of total
Straw:		
Barley	3,653	3.97
Buckwheat	1,000	1.09
Oat	18,467	20.06
Rye	1,400	1.52
Wheat	38,110	41.41
Mixed	25,190	27.37
Total straw	87,820	95.42
Other bedding:		
Beanpods	2,000	2.17
Shavings	2,220	2.41
Total bedding	92,040	100.00

SHEEP

Results for sheep for three years are shown in table 68. The number of accounts is too small to be conclusive. In one year there was one account that included 79 ewes, and four accounts with from 43 to 49 ewes are included. The others had smaller numbers.

TABLE 68. CHARGES AND CREDITS FOR SHEEP, 1915, 1916, and 1918

	1915 (7 farms, 49.51 animal units)		1916 (2 farms, 8.32 animal units)		1918 (4 farms, 17.4 animal units)	
	Quantity	Value	Quantity	Value	Quantity	Value
Charges:						
First inventory:						
Ewes	214	$1,589.00	65	$612.00	118	$1,550.00
Bucks	7	73.00	2	23.00	3	55.00
Other sheep	75	375.00	6	25.00	—	—
Total inventory	296	$2,037.00	73	$660.00	121	$1,605.00
Sheep purchased	179	844.37	108	947.49	1.5	41.25
Grain	13,158 lbs.	$198.75	7,966 lbs.	$138.48	6,511 lbs.	$173.09
Dry forage	131,900 lbs.	605.55	29,150 lbs.	141.45	72,300 lbs.	573.00
Succulent feed	107,040 lbs.	283.60	25,000 lbs.	83.98	36,476 lbs.	99.87
Pasture		279.81		23.56		237.32
Other feed costs		4.03		1.70		2.98
Total feed		$1,371.74		$389.17		$1,086.26
Bedding	45,600 lbs.	124.60	4,250 lbs.	10.62	6,750 lbs.	26.33
Use of buildings		105.93		13.53		39.27
Veterinary and medicine		2.75		0.25		8.35
Shearing		37.45		—		11.25
Wool twine		2.91		—		2.55
Insurance		0.55		1.45		1.12
Interest		119.66		29.26		99.27
Human labor	1,078 hrs.	280.17	276 hrs.	83.52	623 hrs.	246.52
Horse labor	72 hrs.	11.15	77 hrs.	12.83	98 hrs.	22.14
Use of equipment		3.16		3.80		6.98
All other costs		0.77		—		9.95
Total charges		$4,942.21		$2,151.92		$3,206.24
Credits:						
Second inventory:						
Ewes	254	$1,992.00	97	$970.00	120	$1,633.00
Bucks	8	112.00	2	70.00	3.5	71.00
Other sheep	88	645.50	—	—	—	—
Total inventory	350	$2,749.50	99	$1,040.00	123.5	$1,704.00
Sheep and lambs sold and used on farm	282	1,576.37	96	716.65	62	822.75
Wool sold and inventoried	2,238 lbs.	657.47	839 lbs.	266.90	865 lbs.	622.38
Manure produced	233 tons	284.10	76 tons	95.00	76.25 tons	126.38
Total credits		$5,267.44		$2,118.55		$3,275.51
Loss		—		$33.37		—
Gain		$325.23				$69.27

The data on feed and bedding for sheep are given in tables 69 and 70:

TABLE 69. CONCENTRATES, ROUGHAGE, AND SUCCULENT FEED FED TO 75.23 ANIMAL UNITS OF SHEEP, 1915, 1916, 1918

	Total pounds	Per cent of total concentrates
Concentrates:		
Barley	4,304	15.57
Beans	380	1.38
Corn and cornmeal	4,788	17.33
Cottonseed meal	540	1.95
Distillers' dried grains	1,077	3.90
Hominy	1,330	4.81
Oats and ground oats	11,402	41.26
Oilmeal	424	1.53
Wheat bran	2,800	10.13
Wheat middlings	275	1.00
Mixed feed	315	1.14
Total concentrates	27,635	100.00
		Per cent of total roughage
Roughage:		
Alfalfa hay	37,033	15.87
Mixed hay	113,900	48.80
Bean pods and bean fodder	70,417	30.18
Corn fodder and cornstalks	3,000	1.29
Oat straw	3,000	1.29
Wheat straw	6,000	2.57
Total roughage	233,350	100.00
		Per cent of total succulent feed
Succulent feed:		
Corn silage	133,000	78.93
Pea-vine silage	10,000	5.93
Beets	1,500	0.89
Cabbage	23,476	13.93
Potatoes	540	0.32
Total succulent feed	168,516	100.00

TABLE 70. BEDDING FOR 75.23 ANIMAL UNITS OF SHEEP, 1915, 1916, 1918

	Total pounds	Per cent of total
Barley straw	1,250	2.21
Oat straw	7,600	13.43
Rye straw	400	0.71
Wheat straw	21,600	38.16
Mixed straw	25,750	45.49
Total bedding	56,600	100.00

COST OF PRODUCING CROPS

Labor requirements on crops are given in tables 14, 18, 19, 20, 29, and 30. The area grown has an important influence on the economy of production. The relation of area grown to other factors is shown in tables 71 and 72. The yields are larger and the labor is less with the larger areas. To some extent the areas are results rather than causes. If the land grows a large yield with a small amount of labor, there is a tendency to grow a large area.

TABLE 71. RELATION OF AREA OF SILAGE CORN GROWN, TO COSTS AND OTHER FACTORS, 1919

	Less than 10 acres	10 acres or more
Number of farms	16	12
Acres per farm	6.9	16.4
Hours of human labor per acre	48.5	39.8
Hours of horse labor per acre	52.2	48.9
Cost of manure and fertilizer per acre	$16.25	$15.21
Total cost per acre	$71.70	$59.35
Yield per acre (tons)	7.5	8.3
Cost per ton	$9.54	$7.19

TABLE 72. RELATION OF AREA OF POTATOES GROWN TO COSTS AND OTHER FACTORS, 1919

	Less than 4 acres	4 acres or more
Number of farms	13	8
Acres per farm	1.8	7.9
Value per acre	$131.62	$173.37
Cost per acre	$99.40	$118.04
Yield per acre (bushels)	69.7	107.7
Cost per bushel	$1.43	$1.10
Profit per acre	$32.23	$55.33

The comparative costs of growing a unit of net energy (therm) in mangels, silage, and hay, respectively, are shown in table 73. The cost

TABLE 73. COST OF PRODUCING A UNIT OF NET ENERGY IN MANGELS, SILAGE, AND HAY*, 1917

	Mangels	Silage	Hay
Number of farms	6	18	31
Cost per acre	$104	$45.19	$19.31
Weight of crop (pounds)	11,010	9,600	3,440
Weight of dry matter (pounds)	1,035	2,525	3,019
Net energy (therms)	625	1,526	1,413
Cost per unit of net energy	$0.17	$0.03	$0.014

*Net energy values as given by Armsby were used in making these calculations.

of net energy in silage is double the cost in hay, and the cost in mangels is nearly six times the cost in silage. The yield of silage corn was low that year, but in a normal year the same principals are shown.

Mangels are an excellent feed, but they are so expensive to raise that very few are raised for dairy feeds except when advanced registry testing is being done. Silage is so valuable a feed that even at the high cost it is desirable for feeding to cows that give milk in winter. This explains the situation shown in the Broome County survey[22]—that the profits from dairies were increased by feeding silage to cows in winter dairies, but were decreased if silage was fed to cows that were dry in winter.

The costs of producing various crops are shown in tables 74 to 88. Averages are for all farms. For example, some farms did not use twine with corn for grain, hence the twine is less per acre than the amount actually used. Alfalfa seed is per acre of alfalfa harvested not the amount of seed sown per acre. If the alfalfa remains down for four years, the seed per acre will be one-fourth of the rate of seeding.

A detailed analysis of the costs of producing potatoes is given in Memoir 22 of this station.[23] A detailed analysis of costs of producing canning-factory crops is contained in Bulletin 412.[24]

[22] An economic study of dairying on 149 farms in Broome County, New York. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bul. 409. 1922.

[23] An analysis of the costs of growing potatoes. By D. S. Fox.

[24] An economic study of the production of canning crops in New York. By L. J. Norton. 1923.

TABLE 74. COSTS PER ACRE OF PRODUCING ALFALFA

	1914		1915		1916		1917		1918		Average	
Year	1914		1915		1916		1917		1918		Average	
Number of farms	6		14		13		17		9		12	
Total acres	52.5		93.45		110.2		115.4		87.2		91.75	
Acres per farm	8.8		6.7		8.5		6.8		9.7		8.1	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	
Costs:												
Growing:												
Cost of starting	2.0 lbs.	$0.38	9.1 lbs.	$1.59	0.6 lb.	$0.16	3.8 lbs.	$0.81	6.7 lbs.	$3.59	4.4 lbs.	
Seed					18.1 lbs.	0.12				1.61	3.6 lbs.	
Fertilizer			0.1 ton	0.30	0.1 ton	0.49	0.1 ton	0.33	0.3 ton	3.05	0.1 ton	
Lime												
Manure:												
Value before hauling	0.1 hr.	$0.19	1.3 hrs.	$1.18	2.2 hrs.	$2.10	1.8 hrs.	$2.29	2.2 hrs.	$3.02	1.5 hrs.	
Human labor	0.2 hr.	0.04	2.2 hrs.	0.33	3.8 hrs.	0.66	3.0 hrs.	0.64	3.9 hrs.	0.88	2.6 hrs.	
Horse labor		0.04		0.34		0.62		0.60		0.87		
Equipment		0.01		0.10		0.18		0.17		0.28		
Total manure	246 lbs.	0.28	1,990 lbs.	1.95	3,434 lbs.	3.56	3,016 lbs.	3.70	3,670 lbs.	5.05	2,471 lbs.	
Use of buildings:												
Interest		$1.82		$1.60		$1.26		$1.23		$1.73		
Taxes		0.28		0.27		0.21		0.24		0.28		
Insurance		0.10		0.10		0.06		0.07		0.06		
All other		1.18		1.52		0.52		0.69		0.87		
Total cost for use of buildings		3.38		3.49		2.05		2.23		2.94		
Use of land:												
Interest		$3.80		$3.81		$4.12		$3.71		$4.43		
Taxes		0.59		0.65		0.69		0.72		0.71		
All other		0.92		0.63		0.78		1.05		1.10		
Total cost for use of land		5.31		5.09		5.59		5.48		6.24		
Fire insurance		$0.54		$0.10		$0.04		$0.06		$0.05		
Interest				$0.43		0.71		0.84		1.10		
Silo filling								0.02				
Meals for silo fillers								0.01				
Human labor	23.3 hrs.	5.86	24.2 hrs.	6.26	25.2 hrs.	7.61	19.6 hrs.	6.98	20.0 hrs.	7.89	22.5 hrs.	
Horse labor	25.2 hrs.	3.98	27.6 hrs.	4.28	24.1 hrs.	4.02	19.7 hrs.	3.87	20.2 hrs.	4.55	23.4 hrs.	
Equipment		1.24		1.23		1.19		1.12		1.44		
All other growing costs		0.49						3.45				
Total growing costs		$21.46		$24.72		$25.54		$28.90		$37.51		

TABLE 74 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	6		14		13		17		9		12
Total acres	52.5		93.45		110.2		115.4		87.2		91.75
Acres per farm	8.8		6.7		8.5		6.8		9.7		8.1
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	5.3 hrs.	$1.32	2.7 hrs.	$0.70	2.3 hrs.	$0.69	1.9 hrs.	$0.69	2.1 hrs.	$0.84	2.9 hrs.
Horse labor	2.9 hrs.	0.45	1.0 hr.	0.16	1.0 hr.	0.17	0.8 hr.	0.16	1.0 hr.	0.23	1.3 hrs.
Equipment		0.14		0.05		0.05		0.05		0.07	
Pressing or baling		1.91	0.7 ton	0.91	0.6 ton	0.88	0.5 ton	0.95	0.7 ton	1.74	
Meals for pressers		0.17	0.5	0.13	0.4	0.10	0.3	0.08	0.4	0.17	
Meals for pressers' horses		0.14	0.5	0.06	0.4	0.05	0.3	0.06	0.4	0.08	
All other marketing costs						.01					
Total marketing costs		$4.13		$2.01		$1.94		$1.99		$3.13	
Total costs		$25.59		$26.73		$27.48		$30.89		$40.64	
Yield per acre	2.8 tons		2.8 tons		2.7 tons		2.2 tons		2.3 tons		2.6 tons
Value of hay per acre		41.75		41.89		35.65		43.17		51.94	
Value of pasture and miscellaneous credits per acre		0.19		0.27		0.09		0.12		0.75	
Total value of crop per acre		41.94		42.16		35.74		43.29		52.69	
Cost per ton		9.07		9.45		10.14		13.99		17.34	
Value per ton		14.91		14.96		13.20		19.62		22.58	
Profit per acre		16.35		15.43		8.26		12.40		12.05	
Profit per ton		5.84		5.51		3.06		5.63		5.24	
Cost of marketing a ton		3.20		2.24		3.94		3.71		4.50	
Returns per hour of human labor		0.82		0.83		0.60		0.93		0.94	
Extra man hours for pressing*	Omitted		Omitted		1.3		1.0		1.4		1.2

*Extra man hours for pressing is the time spent by hay pressers which is not charged in the account because furnished as a part of the terms of sale.

TABLE 75. COSTS PER ACRE OF PRODUCING BARLEY

Year	1914		1915		1916		1917		1918		Average
Number of farms	2		10		5		7		11		7
Total acres	10.7		62		42.4		46.5		113.3		55.0
Acres per farm	5.4		6.2		8.5		6.6		10.3		7.4
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	78.5 lbs.	$1.49	103.4 lbs.	$1.96	94.3 lbs.	$1.39	91.4 lbs.	$2.41	101.7 lbs.	$4.30	93.9 lbs.
Fertilizer	157.0 lbs.	$1.32	163.9 lbs.	1.37	143.1 lbs.	1.34	199.0 lbs.	1.84	195.8 lbs.	2.53	171.8 lbs.
Lime					0.1 ton	0.58	0.2 ton	1.03	0.01 ton	0.13	0.1 ton
Manure:											
Value before hauling		$3.99		$2.51		$2.82		$5.32		$3.79	
Human labor	2.7 hrs.	0.71	2.8 hrs.	0.71	3.0 hrs.	0.88	4.2 hrs.	1.49	2.8 hrs.	1.10	3.1 hrs.
Horse labor	4.5 hrs.	0.71	4.7 hrs.	0.73	5.0 hrs.	0.82	7.0 hrs.	1.39	4.8 hrs.	1.09	5.2 hrs.
Equipment		0.22		0.21		0.24		0.40		0.34	
Total manure	4,950 lbs.	5.63	4,247 lbs.	4.16	4,575 lbs.	4.76	7,011 lbs.	8.60	4,590 lbs.	6.32	5,075 lbs.
Green manure				$0.05							
Twine	2.0 lbs.	$0.20	1.6 lbs.	0.15	2.1 lbs.	$0.23	1.7 lbs.	$0.32	2.9 lbs.	$0.72	2.1 lbs.
Use of buildings:											
Interest		$0.86		$0.48		$0.21		$0.38		$0.46	
Taxes		0.13		0.08		0.03		0.07		0.07	
Insurance		0.05		0.03		0.01		0.02		0.02	
All other		0.55		0.45		0.09		0.21		0.23	
Total cost for use of buildings		1.59		1.04		0.34		0.68		0.78	
Use of land:											
Interest		$4.82		$2.85		$4.24		$3.29		$5.20	
Taxes		0.76		0.49		0.71		0.64		0.82	
All other		1.17		0.47		0.80		0.93		1.28	
Total cost for use of land		6.75		3.81		5.75		4.86		7.30	
Fire insurance				$0.03		$0.02		$0.04		$0.02	
Interest		$0.65		0.63		0.66		1.01		0.96	
Threshing	874.8 lbs.	0.73	1,697.8 lbs.	1.04	813.9 lbs.	0.54	1,273.5 lbs.	0.97	1,516.2 lbs.	1.60	1,235.2 lbs.
Coal for threshing	40.7 lbs.	0.09	56.0 lbs.	0.12	31.8 lbs.	0.08	42.8 lbs.	0.16	34.9 lbs.	0.13	41.2 lbs.
Meals for threshers			0.5	0.11	0.3	0.06	0.3	0.08	0.2	0.08	0.3
Meals for threshers' horses			0.2	0.02	0.1	0.01	0.1	0.01	0.1	0.02	0.1
Human labor	19.6 hrs.	4.94	23.3 hrs.	6.05	22.5 hrs.	6.79	24.9 hrs.	8.64	19.3 hrs.	7.63	21.9 hrs.
Horse labor	34.4 hrs.	5.36	33.2 hrs.	5.15	38.4 hrs.	6.38	41.2 hrs.	7.82	23.1 hrs.	5.22	34.1 hrs.
Equipment		1.68		1.47		1.89		2.27		1.64	
Tractor			0.5 hr.	0.49	0.1 hr.	0.29			1.0 hr.	1.69	0.3 hr.
Total growing costs		$30.43		$27.65		$31.11		$40.74		$41.07	

TABLE 75 (*concluded*)

	1914		1915		1916		1917		1918		Average
Year											
Number of farms	2		10		5		7		11		7
Total acres	10.7		62		42.4		46.5		113.3		55.0
Acres per farm	5.4		6.2		8.5		6.6		10.3		7.4
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	0.7 hr.	$0.20	0.4 hr.	$0.10	0.5 hr.	$0.16	0.02 hr.	$0.01	0.2 hr.	$0.06	0.4 hr.
Horse labor	0.1 hr.	0.01	0.5 hr.	0.08	0.1 hr.	0.02					0.1 hr.
Equipment				0.02		0.01					
Total marketing costs		$0.21		$0.20		$0.19		$0.01		$0.06	
Total costs		$30.64		$27.85		$31.30		$40.75		$41.13	
Yield of grain per acre	18.2 bu.		35.3 bu.		17.0 bu.		26.5 bu.		31.6 bu.		25.7 bu.
Value of grain per acre		15.66		22.80		16.68		39.18		30.64	
Yield of straw per acre	888 lbs.		1,700 lbs.		896 lbs.		1,269 lbs.		1,296 lbs.		1,210 lbs.
Value of straw per acre		2.34		5.08		1.74		3.75		4.68	
Total value of crop per acre		18.00		27.88		18.42		42.93		35.32	
Cost per bushel		1.55		0.64		1.74		1.40		1.15	
Value per bushel		0.86		0.65		0.98		1.48		0.97	
Profit (+) or loss (–) per acre		–12.64		+0.03		–12.88		+2.18		–5.81	
Profit (+) or loss (–) per bushel		–0.69		+0.01		–0.76		+0.08		–0.18	
Cost of marketing a bushel		0.07		0.02		0.03		0.01		0.08	
Returns per hour of human labor		–0.37		0.26		–0.26		0.43		0.10	
Extra man hours for threshing*	Omitted		1.3		0.4		0.8		0.5		0.8

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

TABLE 76. COSTS PER ACRE OF PRODUCING FIELD BEANS

	1914		1915		1916		1917		1918		Average
Year											
Number of farms	4		9		9		10		11		9
Total acres	40.6		120.3		92.35		120.3		49.35		84.58
Acres per farm	10.2		13.4		10.3		12.0		4.5		10.1
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	39.9 lbs.	$1.36	57.7 lbs.	$2.93	51.7 lbs.	$3.77	48.5 lbs.	$6.36	78.9 lbs.	$9.98	55.3 lbs.
Fertilizer	140.4 lbs.	1.10	176.9 lbs.	1.59	151.7 lbs.	1.56	163.1 lbs.	1.72	136.4 lbs.	1.89	153.7 lbs.
Lime			0.02 ton	0.09					0.06 ton	0.48	0.02 ton
Manure:											
Value before hauling		$0.80		$2.65		$2.20		$2.80		$3.33	
Human labor	0.6 hr.	0.15	1.8 hrs.	0.46	2.3 hrs.	0.69	2.2 hrs.	0.79	2.4 hrs.	0.96	1.9 hrs.
Horse labor	0.9 hr.	0.15	3.0 hrs.	0.47	3.9 hrs.	0.65	3.7 hrs.	0.73	4.2 hrs.	0.96	3.1 hrs.
Equipment		0.05		0.13		0.19		0.21		0.30	
Total manure	1,009 lbs.	1.15	4,075 lbs.	3.71	3,590 lbs.	3.73	3,691 lbs.	4.53	4,032 lbs.	5.55	3,279 lbs.
Use of buildings:											
Interest		$0.62		$0.31		$0.33		$0.18		$0.22	
Taxes		0.10		0.05		0.06		0.03		0.04	
Insurance		0.03		0.02		0.01		0.01		0.01	
All other		0.40		0.30		0.14		0.10		0.12	
Total cost for use of buildings		1.15		0.68		0.54		0.32		0.39	
Use of land:											
Interest		$4.24		$3.96		$5.54		$3.62		$4.57	
Taxes		0.66		0.68		0.92		0.70		0.73	
All other		1.03		0.65		1.04		1.02		1.16	
Total cost for use of land		5.93		5.29		7.50		5.34		6.46	
Fire insurance				$0.01		$0.01					
Interest		$0.39		0.66		0.60		$0.88		$0.96	
Threshing	847.8 lbs.	0.76	893.8 lbs.	0.99	239.2 lbs.	0.54	365.2 lbs.	0.91	391.5 lbs.	1.17	547.5 lbs.
Coal for threshing	50.4 lbs.	0.12	47.6 lbs.	0.10	44.9 lbs.	0.09	42.1 lbs.	0.16	21.3 lbs.	0.09	41.3 lbs.
Meals for threshers			0.3	0.06	0.2	0.05	0.6	0.19	0.4	0.13	0.3
Meals for threshers' horses			0.1	0.01	0.1	0.02	0.2	0.04	0.2	0.04	0.1
Human labor	31.6 hrs.	7.91	38.9 hrs.	10.05	34.4 hrs.	10.35	33.7 hrs.	11.96	40.4 hrs.	16.03	35.8 hrs.
Horse labor	47.0 hrs.	7.43	46.1 hrs.	7.14	49.5 hrs.	8.23	46.0 hrs.	8.95	50.3 hrs.	11.37	47.8 hrs.
Equipment		2.32		2.03		2.44		2.59		3.58	
Tractor							1 hr.	0.65	0.6 hr.	0.92	0.3 hr.
All other growing costs										0.07	
Total growing costs		$29.62		$35.34		$39.43		$44.60		$59.11	

TABLE 76 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	4		9		9		10		11		9
Total acres	40.6		120.3		92.35		120.3		49.35		84.58
Acres per farm	10.2		13.4		10.3		12.0		4.5		10.1
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	1.4 hrs.	$0.35	1.3 hrs.	$0.34	0.9 hr.	$0.26	1 hr.	$0.28	0.9 hr.	$0.37	1.1 hrs.
Horse labor	1.9 hrs.	0.31	1.9 hrs.	0.29	0.3 hr.	0.06	1 hr.	0.21	0.6 hr.	0.13	1.1 hrs.
Equipment		0.10		0.08		0.02		0.06		0.04	
Motor-truck						0.02					
All other marketing costs				0.06				0.02		0.13	
Total marketing costs		$0.76		$0.77		$0.36		$0.57		$0.67	
Total costs		$30.38		$36.11		$39.79		$45.17		$59.78	
Yield of beans per acre	14.3 bu.		15.3 bu.		4.4 bu.		7.0 bu.		8.1 bu.		9.8 bu.
Value of beans per acre		30.49		46.15		24.94		28.05		31.29	
Yield of fodder per acre	909 lbs.		858 lbs.		671 lbs.		524 lbs.		944 lbs.		781 lbs.
Value of fodder per acre		2.82		3.01		1.88		2.30		4.14	
Total value of crop per acre		33.31		49.16		26.82		30.35		35.43	
Cost per bushel		1.93		2.16		8.62		6.12		6.87	
Value per bushel		2.13		3.02		5.67		4.01		3.86	
Profit (+) or loss (−) per acre		+2.93		+13.05		−12.97		−14.82		−24.35	
Profit (+) or loss (−) per bushel		+0.20		+0.86		−2.95		−2.11		−3.01	
Cost of marketing a bushel		0.06		0.06		0.13		0.13		0.10	
Returns per hour of human labor		0.34		0.58		−0.07		−0.07		−0.19	
Extra man hours for threshing*	Omitted		Omitted		0.7		1.2		0.5		0.8

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

TABLE 77. COSTS PER ACRE OF PRODUCING BUCKWHEAT

Year	1914		1915		1916		1917		1918		Average
Number of farms	6		12		10		10		12		10
Total acres	36.0		105.9		64.5		34.9		58.8		60.0
Acres per farm	6.0		8.8		6.4		3.5		4.9		5.9
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	61.4 lbs.	$1.12	47.5 lbs.	$0.91	44.7 lbs.	$0.88	49.9 lbs.	$2.04	51.1 lbs.	$2.19	50.9 lbs.
Fertilizer	47.2 lbs.	0.52	88.3 lbs.	0.73	88.4 lbs.	0.85	160.5 lbs.	1.20	158.0 lbs.	2.22	108.5 lbs.
Lime							0.02 ton	0.10	0.02 ton	0.18	0.01 ton
Manure:											
Value before hauling		$0.14		$0.32		$0.42		$1.29		$2.01	
Human labor	0.1 hr.	0.03	0.3 hr.	0.09	0.4 hr.	0.13	1.0 hr.	0.36	1.5 hrs.	0.58	0.7 hr.
Horse labor	0.2 hr.	0.03	0.6 hr.	0.09	0.8 hr.	0.12	1.7 hrs.	0.34	2.6 hrs	0.58	1.2 hrs.
Equipment		0.01		0.03		0.04		0.10		0.18	
Total manure	183 lbs.	0.21	536 lbs.	0.53	682 lbs.	0.71	1,708 lbs.	2.09	2,432 lbs.	3.35	1,108 lbs.
Twine	1.2 lbs.	$0.12	1.2 lbs.	$0.11	1.6 lbs.	$0.16	1.6 lbs.	$0.20	1.1 lbs.	$0.28	1.3 lbs.
Use of buildings:											
Interest		$0.09		$0.19		$0.13		$0.17		$0.28	
Taxes		0.01		0.03		0.02		0.03		0.04	
Insurance		0.01		0.01		0.01		0.01		0.01	
All other		0.06		0.18		0.06		0.10		0.14	
Total cost for use of buildings		0.17		0.41		0.22		0.31		0.47	
Use of land:											
Interest		$1.87		$2.22		$2.49		$2.68		$3.11	
Taxes		0.29		0.38		0.42		0.52		0.49	
All other		0.46		0.36		0.47		0.75		0.77	
Total cost for use of land		2.62		2.96		3.38		3.95		4.37	
Fire insurance						$0.01		$0.01		$0.01	
Interest		$0.24		$0.28		0.36		0.49		0.62	
Threshing	897.1 lbs.	0.68	815.1 lbs.	0.63	408.0 lbs.	0.34	714.3 lbs.	0.77	434.6 lbs.	0.73	653.8 lbs.
Coal for threshing	23.6 lbs.	0.05	34.1 lbs.	0.07	20.7 lbs.	0.05	30.7 lbs.	0.12	21.0 lbs.	0.08	26.0 lbs.
Other fuel for threshing				0.01		0.04		0.04		0.02	
Meals for threshers			0.4	0.08	0.1	0.02	0.4	0.13	0.2	0.05	0.2
Meals for threshers' horses			0.2	0.02	0.1	0.01	0.3	0.05	0.1	0.01	0.1
Binding								0.13			
Human labor	23.3 hrs.	5.84	19.5 hrs.	5.06	19.5 hrs.	5.89	19.1 hrs.	6.80	20.7 hrs.	8.20	20.4 hrs.
Horse labor	40.1 hrs.	6.35	28.9 hrs.	4.48	32.7 hrs.	5.44	30.7 hrs.	6.05	33.7 hrs.	7.66	33.2 hrs.
Equipment		1.98		1.28		1.61		1.75		2.41	
Tractor			1.0 hr.	1.06	0.5 hr.	1.00			0.03 hr.	0.06	0.04 hr.
All other growing costs								0.04		0.08	
Total growing costs		$19.90		$18.62		$20.97		$26.27		$32.99	

TABLE 77 (*concluded*)

	1914		1915		1916		1917		1918		Average
Year											
Number of farms	6		12		10		10		12		10
Total acres	36.0		105.9		64.5		34.9		58.8		60.0
Acres per farm	6.0		8.8		6.4		3.5		4.9		5.9
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	0.7 hr.	$0.17	1.0 hr.	$0.25	0.9 hr.	$0.26	0.2 hr.	$0.08	0.3 hr.	$0.11	0.6 hr.
Horse labor	1.4 hrs.	0.21	1.6 hrs.	0.25	0.5 hr.	0.08	0.5 hr.	0.09			0.8 hr.
Equipment		0.07		0.07		0.02		0.03			
Total marketing costs		$0.45		$0.57		$0.36		$0.20		$0.11	
Total costs		$20.35		$19.19		$21.33		$26.47		$33.10	
Yield of grain per acre	18.7 bu.		17.1 bu.		9.0 bu.		16.9 bu.		12.0 bu.		14.7 bu.
Value of grain per acre		13.71		13.53		11.46		31.08		14.58	
Yield of straw per acre	722 lbs.		637 lbs.		707 lbs.		659 lbs.		621 lbs.		669 lbs.
Value of straw per acre		1.16		1.41		1.52		1.71		1.29	
Total value of crop per acre		14.87		14.94		12.98		32.79		15.87	
Cost per bushel		1.03		1.04		2.20		1.47		2.65	
Value per bushel		0.73		0.79		1.27		1.84		1.22	
Profit (+) or loss (–) per acre		–5.48		–4.25		–8.35		+6.32		–17.23	
Profit (+) or loss (–) per bushel		–0.30		–0.25		–0.93		+0.37		–1.43	
Cost of marketing a bushel		0.04		0.05		0.07		0.07		0.04	
Returns per hour of human labor		0.02		0.05		–0.11		0.68		–0.42	
Extra man hours for threshing*	Omitted		1.2		0.5		1.1		0.6		0.9

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

TABLE 78. COSTS PER ACRE OF PRODUCING CABBAGE

	1914		1915		1916		1917		1918		Average
Year											
Number of farms	6		10		8		7		8		8
Total acres	30.9		78.85		40.9		50.2		29.7		46.1
Acres per farm	5.2		7.9		5.1		7.2		3.7		5.8
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	0.4 lb.	$1.14		$0.81	0.5 lb.	$1.13	0.4 lb.	$1.02	0.5 lb.	$3.34	
Plants	2,265	2.27	165	0.28	86	0.09	2,580	2.15	1,568	2.68	1,333
Fertilizer	426.7 lbs.	5.40	300.2 lbs.	3.32	365.2 lbs.	4.79	344 lbs.	4.12	460 lbs.	6.20	379.2 lbs.
Lime					0.03 ton	0.14					0.01 ton
Manure:											
Value before hauling		$3.57		$2.75		$2.99		$3.86		$9.21	
Human labor	2.4 hrs.	0.64	3.0 hrs.	0.77	3.2 hrs.	0.93	3.1 hrs.	1.09	6.7 hrs.	2.67	3.7 hrs.
Horse labor	4.0 hrs.	0.64	5.1 hrs.	0.80	5.4 hrs.	0.88	5.1 hrs.	1.01	11.7 hrs.	2.66	6.3 hrs.
Equipment		0.20		0.23		0.26		0.29		0.84	
Total manure	4,444 lbs.	5.05	4,647 lbs.	4.55	4,866 lbs.	5.06	5,100 lbs.	6.25	11,178 lbs.	15.38	6,047 lbs.
Green manure								$0.14			
Spray materials		$0.02				$0.13				$0.12	
Use of buildings:											
Interest		$0.02		$0.33		$0.18		$0.50		$0.06	
Taxes				0.06		0.03		0.10		0.01	
Insurance				0.02		0.01		0.03			
All other		0.02		0.32		0.08		0.28		0.03	
Total cost for use of buildings		0.04		0.73		0.30		0.91		0.10	
Use of land:											
Interest		$4.26		$3.99		$4.74		$4.34		$3.90	
Taxes		0.67		0.68		0.79		0.85		0.62	
All other		1.04		0.66		0.89		1.23		0.96	
Total cost for use of land		5.97		5.33		6.42		6.42		5.48	
Fire insurance				$0.01				$0.07			
Interest		$0.67		0.76		$0.76		1.22		$1.69	
Automobile								0.27	0.2 hr.	0.16	
Human labor	77.6 hrs.	19.47	65.4 hrs.	17.00	74.7 hrs.	22.32	76.6 hrs.	27.21	87.9 hrs.	34.85	76.4 hrs.
Horse labor	62.0 hrs.	9.80	60.2 hrs.	9.32	56.0 hrs.	9.32	63.4 hrs.	12.40	74.6 hrs.	16.76	63.2 hrs.
Equipment		3.06		2.64		2.76		3.58		5.27	
Tractor									0.5 hr.	0.60	0.1 hr.
All other growing costs				0.32		0.01		0.15		1.32	
Total growing costs		$52.89		$45.07		$53.23		$65.91		$93.95	

TABLE 78 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	6		10		8		7		8		8
Total acres	30.9		78.85		40.9		50.2		29.7		46.1
Acres per farm	5.2		7.9		5.1		7.2		3.7		5.8
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	15.2 hrs.	$3.81	10.4 hrs.	$2.71	17.4 hrs.	$5.25	22.5 hrs.	$8.03	17.8 hrs.	$7.05	16.7 hrs.
Horse labor	30.0 hrs.	4.74	14.5 hrs.	2.25	24.8 hrs.	4.14	19.2 hrs.	3.78	25.3 hrs.	5.72	22.8 hrs.
Equipment		1.48		0.64		1.23		1.09		1.80	
Automobile							1.8 miles	0.12			0.4 mile
Motor-truck								0.02			
All other marketing costs		0.15		0.03		0.14		0.03		0.10	
Total marketing costs		$10.18		$5.63		$10.76		$13.07		$14.67	
Total costs		$63.07		$50.70		$63.99		$78.98		$108.62	
Yield per acre	6.5 tons		7.9 tons		3.9 tons		6.4 tons		6.8 tons		6.3 tons
Value of cabbage per acre		46.32		26.07		155.72		111.35		84.00	
Value of roughage and miscellaneous credits per acre		1.29		0.36		1.85		3.75		8.22	
Total value of crop per acre		47.61		26.43		157.57		115.10		92.22	
Cost per ton		9.50		6.37		15.93		11.69		14.76	
Value per ton		7.13		3.30		39.93		17.30		12.35	
Profit (+) or loss (–) per acre		–15.46		–24.27		+93.58		+36.12		–16.40	
Profit (+) or loss (–) per ton		–2.37		–3.07		+24.00		+5.61		–2.41	
Cost of marketing a ton		1.83		1.46		2.78		2.70		2.95	
Returns per hour of human labor		0.08		–0.06		1.32		0.72		0.24	

TABLE 79. COSTS PER ACRE OF PRODUCING CORN FOR GRAIN

Year	1914		1915		1916		1917		1918		Average
Number of farms	6		25		10		13		11		13
Total acres	49.4		136.6		71.75		83.3		58		79.8
Acres per farm	8.2		5.5		7.2		6.4		5.3		6.5
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	20.4 lbs.	$0.41	16.6 lbs.	$0.43	19.6 lbs.	$0.49	18.1 lbs.	$0.67	25.2 lbs.	$1.48	20.0 lbs.
Fertilizer	48.7 lbs.	0.63	59.0 lbs.	0.59	127.3 lbs.	1.13	115.6 lbs.	1.08	134.0 lbs.	1.78	96.9 lbs.
Lime			0.03 ton	0.15	0.03 ton	0.12	0.01 ton	0.08	0.04 ton	0.31	0.02 ton
Manure:											
Value before hauling		$3.47		$2.40		$3.71		$3.70		$3.06	
Human labor	2.4 hrs.	0.62	2.6 hrs.	0.67	3.9 hrs.	1.15	2.9 hrs.	1.04	2.2 hrs.	0.89	2.8 hrs.
Horse labor	3.9 hrs.	0.62	4.4 hrs.	0.69	6.6 hrs.	1.08	4.9 hrs.	0.96	3.9 hrs.	0.89	4.7 hrs.
Equipment		0.19		0.20		0.32		0.28		0.28	
Total manure	4,312 lbs.	4.90	4,043 lbs.	3.96	6,021 lbs.	6.26	4,874 lbs.	5.98	3,724 lbs.	5.12	4,595 lbs.
Green manure								$0.05			
Twine	2.9 lbs.	$0.30	1.5 lbs.	$0.15	3.0 lbs.	$0.36	1.9 lbs.	$0.37	2.1 lbs.	$0.50	2.3 lbs.
Use of buildings:											
Interest		$0.49		$1.00		$0.93		$0.92		$1.06	
Taxes		0.08		0.17		0.15		0.18		0.17	
Insurance		0.03		0.07		0.04		0.05		0.04	
All other		0.32		0.95		0.39		0.52		0.54	
Total cost for use of buildings		0.92		2.19		1.51		1.67		1.81	
Use of land:											
Interest		$3.47		$3.52		$4.69		$3.49		$4.65	
Taxes		0.54		0.60		0.78		0.68		0.73	
All other		0.85		0.58		0.88		0.99		1.19	
Total cost for use of land		4.86		4.70		6.35		5.16		6.57	
Fire insurance		$0.01		$0.02		$0.03		$0.03		$0.03	
Interest		1.05		0.96		1.08		1.33		1.87	
Silo filling				0.14		0.10		0.21		0.33	
Meals for silo fillers			0.04	0.01							
Meals for silo fillers' horses			0.09	0.01							
Husking			5.0 bu.	0.28			5.2 bu.	0.45			2.0 bu.
Human labor	69.9 hrs.	17.58	63.5 hrs.	16.50	53.3 hrs.	15.85	59.5 hrs.	21.05	83.0 hrs.	32.65	65.8 hrs.
Horse labor	54.0 hrs.	8.53	55.5 hrs.	8.60	54.6 hrs.	9.01	57.5 hrs.	11.09	63.1 hrs.	13.88	56.9 hrs.
Equipment		2.67		2.46		2.67		3.21		4.31	
Tractor			0.04 hr.	0.04					1.1 hrs.	1.88	0.2 hr.
All other growing costs				0.07						0.13	
Total growing costs		$41.86		$41.26		$44.96		$52.43		$72.65	

TABLE 79 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	6		25		10		13		11		13
Total acres	49.4		136.6		71.75		83.3		58		79.8
Acres per farm	8.2		5.5		7.2		6.4		5.3		6.5
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	0.1 hr.	$0.01					0.5 hr.	$0.16			0.1 hr.
Horse labor	0.1 hr.	0.02									
Equipment		0.01									
Total marketing costs		$0.04						$0.16			
Total costs		$41.90		$41.26		$44.96		$52.59		$72.65	
Yield of shelled corn per acre	37.0 bu.		26.8 bu.		21.1 bu.		23.1 bu.		31.2 bu.		27.8 bu.
Value of grain per acre		24.49		20.12		21.21		34.78		44.91	
Yield of stalks per acre	3,522 lbs.		3,206 lbs.		1,997 lbs.		1,831 lbs.		1,595 lbs.		2,430 lbs.
Value of stalks per acre		9.31		9.43		5.82		7.71		5.80	
Value of miscellaneous credits per acre						1.85		3.61		2.27	
Total value of crop per acre		33.80		29.55		28.88		46.10		52.98	
Cost per bushel		0.88		1.19		1.77		1.79		2.07	
Value per bushel		0.66		0.75		1.01		1.51		1.44	
Loss per acre		8.10		11.71		16.08		6.49		19.67	
Loss per bushel		0.22		0.44		0.76		0.28		0.63	
Returns per hour of human labor		0.14		0.08		0.004		0.25		0.16	

TABLE 80. COSTS PER ACRE OF PRODUCING CORN FOR SILAGE

Year	1914		1915		1916		1917		1918		Average
Number of farms	11		26		18		18		20		19
Total acres	148.1		315.8		264.3		263.3		257.9		249.9
Acres per farm	13.5		12.1		14.7		14.6		12.9		13.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	21.5 lbs.	$0.74	20.9 lbs.	$0.67	22.0 lbs.	$0.82	21.1 lbs.	$0.98	27.2 lbs.	$2.27	22.5 lbs.
Fertilizer	92.0 lbs.	1.07	152.5 lbs.	1.36	160.9 lbs.	1.49	177.6 lbs.	1.96	162.2 lbs.	2.50	149.0 lbs.
Lime			0.02 ton	0.10	0.2 ton	0.81	0.01 ton	0.08	0 02 ton	0.19	0.05 ton
Manure:											
Value before hauling		$4.38		$3.62		$4.51		$5.01		$8.91	
Human labor	3.0 hrs.	0.78	4.0 hrs.	1.02	4.8 hrs.	1.40	4.0 hrs.	1.40	6.5 hrs.	2.58	4.5 hrs.
Horse labor	4.9 hrs.	0.78	6.7 hrs.	1.05	8.1 hrs.	1.32	6.6 hrs.	1.30	11.3 hrs.	2.57	7.5 hrs.
Equipment		0.24		0.30		0.39		0.38		0.81	
Total manure	5,432 lbs.	6.18	6,111 lbs.	5.99	7,328 lbs.	7.62	6,593 lbs.	8.09	10,805 lbs.	14.87	7,254 lbs.
Green manure				$0.03				$0.12			
Twine	3.2 lbs.	$0.32	2.1 lbs.	$0.20	2.3 lbs.	$0.23	2.9 lbs.	0.50	2.6 lbs.	$0.66	2.6 lbs.
Use of buildings:											
Interest		$0.91		$1.10		$0.95		$1.04		$1.16	
Taxes		0.14		0.19		0.16		0.21		0.19	
Insurance		0.05		0.07		0.04		0.06		0.04	
All other		0.58		1.05		0.39		0.59		0.58	
Total cost for use of buildings		1.68		2.41		1.54		1.90		1.97	
Use of land:											
Interest		$2.48		$2.61		$3.05		$2.72		$4.59	
Taxes		0.39		0.45		0.51		0.53		0.73	
All other		0.60		0.43		0.58		0.77		1.14	
Total cost for use of land		3.47		3.49		4.14		4.02		6.46	
Fire insurance		$0.09		$0.03		$0.05		$0.02		$0.03	
Interest		0.93		0.98		0.94		1.15		1.62	
Silo filling		1.44		1.59		1.10		1.44		2.11	
Coal for silo filling	76.1 lbs.	0.17		0.16	66.6 lbs.	0.14	59.2 lbs.	0.21	56.3 lbs.	0.22	
Other fuel for silo filling		0.04		0.08		0.06		0.11		0.20	
Meals for silo fillers*		0.01	0.5	0.11	0.3	0.06	0.7	0.26	0.4	0.18	
Meals for silo fillers' horses			0.1	0.01	0.2	0.03	0.3	0.06	0.2	0.03	0.2
Human labor	41.0 hrs.	10.26	45.1 hrs.	11.75	29.2 hrs.	8.78	32.9 hrs.	11.60	38.7 hrs.	15.26	37.4 hrs.
Horse labor	54.7 hrs.	8.64	53.4 hrs.	8.29	46.8 hrs.	7.77	48.8 hrs.	9.45	53.1 hrs.	11.92	51.4 hrs.
Equipment		2.70		2.36		2.30		2.74		3.75	
Tractor			0.3 hr.	0.27	0.1 hr.	0.16	0.5 hr.	0.48	0.2 hr.	0.41	0.2 hr.
Other growing costs						0.01		0.02		0.03	
Total costs		$37.74		$39.88		$38.05		$45.19		$64.68	

*Cost includes lodging.

TABLE 80 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	11		26		18		18		20		19
Total acres	148.1		315.8		264.3		263.3		257.9		249.9
Acres per farm	13.5		12.1		14.7		14.6		12.9		13.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Yield per acre	7.3 tons		7.1 tons		4.9 tons		4.8 tons		6.2 tons		6.1 tons
Cost per ton		$5.16		$5.58		$7.77		$9.38		$10.31	

TABLE 81. COSTS PER ACRE OF PRODUCING HAY

Year	1914		1915		1916		1917		1918		Average
Number of farms	17		45		31		31		31		31
Total acres	700.7		1577.39		1330.3		1128.85		1255.2		1198.5
Acres per farm	41.2		35.1		42.9		36.1		40.5		39.2
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	8.5 lbs.	$0.97	8.4 lbs.	$1.09	6.8 lbs.	$1.00	7.4 lbs.	$1.21	7.8 lbs.	$1.49	7.8 lbs.
Fertilizer	24.1 lbs.	0.20	9.8 lbs.	0.15	2.4 lbs.	0.04	0.7 lbs.	0.02	0.7 lb.	0.04	7.5 lbs.
Lime	0.01 ton	0.07	0.04 ton	0.18	0.1 ton	0.41	0.05 ton	0.26	0.04 ton	0.31	0.05 ton
Manure:											
Value before hauling		$1.65		$1.73		$2.25		$2.97		$3.66	
Human labor	1.1 hrs.	0.29	1.9 hrs.	0.49	2.4 hrs.	0.70	2.4 hrs.	0.84	2.7 hrs.	1.06	2.1 hrs.
Horse labor	1.8 hrs.	0.29	3.2 hrs.	0.50	4.0 hrs.	0.66	3.9 hrs.	0.78	4.7 hrs.	1.06	3.5 hrs.
Equipment		0.09		0.14		0.20		0.22		0.33	
Total manure	2,038 lbs.	2.32	2,921 lbs.	2.86	3,666 lbs.	3.81	3,938 lbs.	4.81	4,438 lbs.	6.11	3,400 lbs.
Use of buildings:											
Interest		$0.70		$0.79		$0.95		$1.00		$1.15	
Taxes		0.11		0.13		0.16		0.19		0.18	
Insurance		0.04		0.05		0.04		0.05		0.04	
All other		0.45		0.75		0.39		0.56		0.57	
Total cost for use of buildings		1.30		1.72		1.54		1.80		1.94	
Use of land:											
Interest		$3.05		$2.87		$3.49		$2.98		$4.11	
Taxes		0.48		0.49		0.58		0.58		0.65	
All other		0.74		0.47		0.66		0.84		1.02	
Total cost for use of land		4.27		3.83		4.73		4.40		5.78	
Fire insurance		$0.03		$0.03		$0.03		$0.03		$0.03	
Interest		0.23		0.28		0.34		0.37		0.43	
Threshing	0.03 bu.	0.01				0.01					
Human labor	8.0 hrs.	2.02	9.7 hrs.	2.52	10.5 hrs.	3.18	9.2 hrs.	3.27	9.3 hrs.	3.68	9.3 hrs.
Horse labor	8.1 hrs.	1.28	10.2 hrs.	1.59	10.7 hrs.	1.79	9.8 hrs.	1.92	9.9 hrs.	2.24	9.7 hrs.
Equipment		0.40		0.45		0.53		0.56		0.71	
All other growing costs		0.02		0.01		0.01		0.01		0.01	
Total growing costs		$13.12		$14.71		$17.42		$18.66		$22.77	

TABLE 81 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	17		45		31		31		31		31
Total acres	700.7		1577.39		1330.3		1128.85		1255.2		1198.5
Acres per farm	41.2		35.1		42.9		36.1		40.5		39.2
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	0.9 hr.	$0.23	1.1 hrs.	$0.29	1.0 hr.	$0.29	0.7 hr.	$0.27	0.7 hr.	$0.28	0.9 hr.
Horse labor	0.7 hr.	0.11	1.0 hr.	0.15	0.8 hr.	0.14	0.4 hr.	0.08	0.6 hr.	0.13	0.7 hr.
Equipment		0.03		0.04		0.04		0.02		0.04	
Pressing		0.22	400 lbs.	0.22	437.2 lbs.	0.34	342.5 lbs.	0.22	153.0 lbs.	0.19	
Meals for pressers		0.02	0.2	0.03	0.2	0.04	0.1	0.04	0.1	0.04	
Meals for pressers' horses		0.01	0.1	0.02	0.1	0.02	0.1	0.02	0.1	0.02	
All other marketing costs		0.01		0.02		0.01					
Total marketing costs		$0.63		$0.77		$0.88		$0.65		$0.70	
Total costs		$13.75		$15.48		$18.30		$19.31		$23.47	
Yield per acre	1.15 tons		1.31 tons		1.89 tons		1.72 tons		1.56 tons		1.53 tons
Value of hay per acre		15.30		17.45		19.45		27.11		30.10	
Value of pasture and miscellaneous credits per acre		0.23		0.24		0.24		0.29		0.85	
Total value of crop per acre		15.53		17.69		19.69		27.40		30.95	
Cost per ton		11.76		11.63		9.56		11.06		14.50	
Value per ton		13.30		13.32		10.29		15.76		19.29	
Profit per acre		1.78		2.21		1.39		8.09		7.48	
Profit per ton		1.54		1.69		0.73		4.70		4.79	
Cost of marketing a ton		3.17		3.61		5.24		2.67		1.66	
Returns per hour of human labor		0.45		0.46		0.42		1.17		1.14	
Extra man hours for pressing*	Omitted		0.6		0.6		0.4		0.4		0.5

*Extra man hours for pressing is the time spent by hay pressers which is not charged in the account because furnished as a part of the terms of sale.

TABLE 82. COSTS PER ACRE OF PRODUCING MANGELS FOR STOCK FEED

Year	1915		1917		1918		Average
Number of farms	7		6		5		6
Total acres	7.15		5.35		3.4		5.30
Acres per farm	1.02		0.89		0.68		0.86
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:							
Growing:							
Seed		$3.50	5.1 lbs.	$2.30	3.9 lbs.	$3.94	
Fertilizer	146.9 lbs.	1.33	243.2 lbs.	3.10	360.3 lbs.	4.04	250.1 lbs.
Lime	0.05 ton	0.22	0.2 ton	1.13	0.12 ton	1.06	0.12 ton
Manure:							
Value before hauling		$4.37		$5.11		$11.92	
Human labor	4.8 hrs.	1.22	4.0 hrs.	1.43	8.7 hrs.	3.46	5.8 hrs.
Horse labor	8.1 hrs.	1.26	6.7 hrs.	1.33	15.2 hrs.	3.44	10.0 hrs.
Equipment		0.36		0.38		1.09	
Total manure	7,357 lbs.	7.21	6,729 lbs.	8.25	14,471 lbs.	19.91	9,519 lbs.
Green manure				$1.15			
Use of buildings:							
Interest		$1.23		$1.81		$1.44	
Taxes		0.21		0.35		0.24	
Insurance		0.08		0.10		0.06	
All other		1.12		1.03		0.84	
Total cost for use of buildings		2.64		3.29		2.58	
Use of land:							
Interest		$3.37		$4.46		$4.50	
Taxes		0.58		0.87		0.72	
All other		0.55		1.26		1.12	
Total cost for use of land		4.50		6.59		6.34	
Interest		$0.31		$1.95		$1.39	
Human labor	141.5 hrs.	36.78	152.5 hrs.	54.02	113.8 hrs.	44.96	135.9 hrs.
Horse labor	64.5 hrs.	9.98	86.5 hrs.	17.05	53.2 hrs.	11.89	68.07 hrs.
Equipment		2.83		4.92		3.72	
Total costs		$69.30		$103.75		$99.83	
Yield per acre	312 bu.		220.2 bu.		302.1 bu.		278.1 bu.
Total value of crop per acre		61.80		51.31		69.94	
Cost per bushel (50 pounds = 1 bushel)		0.22		0.47		0.33	
Value per bushel		0.20		0.23		0.23	
Loss per acre		7.50		52.44		29.89	
Loss per bushel		0.02		0.24		0.10	
Returns per hour of human labor		0.21		0.01		0.13	

TABLE 83. COSTS PER ACRE OF PRODUCING OATS

	1914		1915		1916		1917		1918		Average
Year	1914		1915		1916		1917		1918		Average
Number of farms	13		41		23		24		28		26
Total acres	195.6		564.8		327.4		364.9		418.1		374.2
Acres per farm	15.0		13.8		14.2		15.2		14.9		14.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	74.1 lbs.	$1.15	81.7 lbs.	$1.66	83.1 lbs.	$1.53	76.9 lbs.	$2.15	77.9 lbs.	$2.51	78.7 lbs.
Treating seed				0.01		0.02		0.01		0.01	
Fertilizer	148.7 lbs.	1.52	138.5 lbs.	1.17	121.9 lbs.	1.24	203.2 lbs.	2.02	169.8 lbs.	2.06	156.4 lbs.
Lime	0.1 ton	0.66	0.1 ton	0.28	0.2 ton	0.79	0.1 ton	0.49	0.1 ton	0.55	0.1 ton
Manure:											
Value before hauling		$3.10		$2.25		$2.93		$3.15		$3.29	
Human labor	2.1 hrs.	0.56	2.5 hrs.	0.63	3.1 hrs.	0.91	2.5 hrs.	0.89	2.4 hrs.	0.95	2.5 hrs.
Horse labor	3.5 hrs.	0.56	4.2 hrs.	0.65	5.2 hrs.	0.86	4.2 hrs.	0.82	4.2 hrs.	0.95	4.3 hrs.
Equipment		0.17		0.19		0.25		0.24		0.30	
Total manure	3,858 lbs.	4.39	3,802 lbs.	3.72	4,756 lbs.	4.95	4,157 lbs.	5.10	3,992 lbs.	5.49	4,113 lbs.
Green manure				$0.01							
Twine	2.1 lbs.	$0.21	2.2 lbs.	0.21	2.1 lbs.	$0.21	2.4 lbs.	$0.39	2.6 lbs.	$0.65	2.3 lbs.
Use of buildings:											
Interest		$0.46		$0.61		$0.47		$0.53		$0.76	
Taxes		0.07		0.11		0.08		0.10		0.12	
Insurance		0.02		0.04		0.02		0.03		0.03	
All other		0.30		0.59		0.20		0.30		0.38	
Total cost for use of buildings		0.85		1.35		0.77		0.96		1.29	
Use of land:											
Interest		$3.47		$3.04		$3.49		$3.20		$4.44	
Taxes		0.54		0.52		0.58		0.62		0.71	
All other		0.85		0.50		0.66		0.90		1.11	
Total cost for use of land		4.86		4.06		4.73		4.72		6.26	
Fire insurance		$0.02		$0.04		$0.03		$0.03		$0.04	
Interest		0.57		0.64		0.65		0.80		0.98	
Threshing	876.8 lbs.	0.71	1,401.8 lbs.	1.12	752.1 lbs.	0.69	1,122.0 lbs.	1.22	1,476.7 lbs.	2.09	1,125.9 lbs.
Coal for threshing	26.4 lbs.	0.06		0.09	29.8 lbs.	0.06	44.6 lbs.	0.16	39.3 lbs.	0.15	
Other fuel for threshing		0.02		0.02		0.04		0.04		0.05	
Meals for threshers		0.03	0.4	0.08	0.3	0.06	0.5	0.17	0.5	0.17	
Meals for threshers' horses			0.2	0.02	0.2	0.02	0.2	0.05	0.2	0.04	0.2
Human labor	19.2 hrs.	4.79	25.7 hrs.	6.67	19.0 hrs.	5.63	21.1 hrs.	7.36	23.8 hrs.	9.32	21.8 hrs.
Horse labor	28.3 hrs.	4.47	33.0 hrs.	5.13	30.1 hrs.	4.95	30.7 hrs.	5.83	31.4 hrs.	6.88	30.7 hrs.
Equipment		1.39		1.48		1.46		1.69		2.13	
Tractor			0.01 hr.	0.01					0.2 hr.	0.28	0.04 hr.
All other growing costs				0.01		0.04				0.01	
Total growing costs		$25.70		$27.78		$27.87		$33.19		$40.96	

TABLE 83 (*concluded*)

	1914		1915		1916		1917		1918		Average
Year	1914		1915		1916		1917		1918		Average
Number of farms	13		41		23		24		28		26
Total acres	195.6		564.8		327.4		364.9		418.1		374.2
Acres per farm	15.0		13.8		14.2		15.2		14.9		14.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	0.1 hr.	$0.01	0.4 hr.	$0.09	0.1 hr.	$0.04			0.7 hr.	$0.28	0.3 hr.
Horse labor	0.1 hr.	0.01	0.2 hr.	0.02	0.05 hr.	0.01			0.5 hr.	0.11	0.2 hr.
Equipment				0.01						0.03	
Pressing	24.5+ lbs.	0.02		0.13					14.3 lbs.	0.05	
All other marketing costs										0.01	
Total marketing costs		$0.04		$0.25		$0.05				$0.48	
Total costs		$25.74		$28.03		$27.92		$33.19		$41.44	
Yield of grain per acre	27.4 bu.		43.9 bu.		24.3 bu.		35.3 bu.		47.9 bu.		35.8 bu.
Value of grain per acre		14.26		20.93		14.83		29.49		35.30	
Value of miscellaneous credits per acre		0.03									
Yield of straw per acre	920 lbs.		1,560 lbs.		1,000 lbs.		1,260 lbs.		1,540 lbs.		1,256 lbs.
Value of straw per acre		2.79		4.92		2.86		4.75		6.16	
Value of oats fed green per acre				0.21				0.01			
Total value of crop per acre		17.08		26.06		17.69		34.25		41.46	
Cost per bushel		0.84		0.53		1.03		0.81		0.74	
Value per bushel		0.52		0.48		0.61		0.84		0.74	
Profit (+) or loss (–) per acre		-8.66		-1.97		-10.23		+1.06		+0.02	
Profit (+) or loss (–) per bushel		-0.32		-0.05		-0.42		+0.03			
Returns per hour of human labor		-0.20		0.18		-0.24		0.40		0.39	
Extra man hours for threshing*	Omitted		1.7		0.9		1.3		1.2		1.3

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

TABLE 84. COSTS PER ACRE OF PRODUCING PEACHES

	1916		1917	
Year				
Number of farms	4		4	
Total acres	27.5		28.7	
Acres per farm	6.88		7.18	
	Quantity	Value	Quantity	Value
Costs:				
Growing:				
Trees	4.0	$0.35	0.6	$0.07
Manure:				
Value before hauling		$0.45		$1.68
Human labor	0.5 hr.	0.14	1.3 hrs.	0.47
Horse labor	0.8 hr.	0.13	2.2 hrs.	0.44
Equipment		0.04		0.13
Total manure	727 lbs.	0.76	2,216 lbs.	2.72
Spray materials	11.1 gal.	$1.00		$1.47
Use of buildings:				
Interest		$0.33		$0.05
Taxes		0.06		0.01
Insurance		0.01		
All other		0.14		0.02
Total cost for use of buildings		0.54		0.08
Use of land:				
Interest		$11.01		$8.35
Taxes		1.83		1.63
All other		2.07		2.36
Total cost for use of land		14.91		12.34
Interest		$0.15		$0.27
Meals for pickers			0.5	0.18
Human labor	75.4 hrs.	22.79	91.5 hrs.	32.61
Horse labor	32.6 hrs.	5.43	28.3 hrs.	5.57
Equipment		1.61		1.60
All other growing costs		0.12		16.24
Total growing costs		$47.66		$73.15
Marketing:				
Human labor	3.1 hrs.	$0.92	9.1 hrs.	$3.25
Horse labor	5.0 hrs.	0.83	15.5 hrs.	3.05
Equipment		0.25		0.88
Automobile			0.7 hr.	0.06
Motor-truck				0.31
Barrels, baskets, and containers		7.32		5.30
All other marketing costs		0.17		0.09
Total marketing costs		$9.49		$12.94
Total costs		$57.15		$ 86.09
Yield per acre	69.5 bu.		164.7 bu.	
Value of crop per acre		58.61		156.78
Cost per bushel		0.82		0.52
Value per bushel		0.84		0.95
Profit per acre		1.46		70.69
Profit per bushel		0.02		0.43
Cost of marketing a bushel		0.14		0.08
Returns per hour of human labor		0.32		1.06

TABLE 85. COSTS PER ACRE OF PRODUCING PEARS

	1914		1916		1917	
Year						
Number of farms	1		3		4	
Total acres	1		15.82		17.82	
Acres per farm	1		5.27		4.46	
	Quantity	Value	Quantity	Value	Quantity	Value
Costs:						
Growing:						
Trees			6.6	$1.00		
Manure:						
Value before hauling				$2.96		$2.26
Human labor			3.1 hrs.	0.92	1.8 hrs.	0.63
Horse labor			5.3 hrs.	0.86	3.0 hrs.	0.59
Equipment				0.26		0.17
Total manure			4,804 lbs.	5.00	2,974 lbs.	3.65
Green manure		$2.75				
Spray materials		5.89		$6.53		$8.34
Use of land:						
Interest		$3.17		$8.66		$8.18
Taxes		0.50		1.44		1.60
All other		0.77		1.63		2.31
Total cost for use of land		4.44		11.73		12.09
Interest		$5.42				$0.27
Meals for pickers					3.1	1.10
Human labor	179.0 hrs.	44.89	86.5 hrs.	$26.15	89.9 hrs.	32.04
Horse labor	93.0 hrs.	14.69	43.5 hrs.	7.25	36.9 hrs.	7.27
Equipment		4.59		2.15		2.10
Automobile						0.69
All other growing costs				0.58		0.25
Total growing costs		$82.67		$60.39		$67.80
Marketing:						
Human labor	18.0 hrs.	$4.51	0.7 hr.	$0.21	8.0 hrs.	$2.85
Horse labor	35.0 hrs.	5.53	1.1 hrs.	0.18	14.1 hrs.	2.77
Equipment		1.73		0.05		0.80
Automobile						0.36
Barrels, baskets, and containers	130	23.30		1.81		
All other marketing costs				0.53		1.42
Total marketing costs		$35.07		$2.78		$8.20
Total costs		$117.74		$63.17		$76.00
Yield per acre	255 bu.		83.3 bu.		91.5 bu.	
Value of crop per acre		99.66		75.83		91.86
Cost per bushel		0.46		0.76		0.83
Value per bushel		0.39		0.91		1.00
Profit (+) or loss (–) per acre		–18.08		+12.66		+15.86
Profit (+) or loss (–) per bushel		–0.07		+0.15		+0.17
Cost of marketing a bushel		0.14		0.17		0.09
Returns per hour of human labor		0.16		0.45		0.52

TABLE 86. COSTS PER ACRE OF PRODUCING POTATOES

Year	1914		1915		1916		1917		1918		Average
Number of farms	13		37		24		27		29		26
Total acres	91.4		239.48		135.85		132.15		79.65		135.71
Acres per farm	7.0		6.5		5.7		4.9		2.7		5.4
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	837.0 lbs.	$9.29	901.1 lbs.	$4.68	824.8 lbs.	$12.75	742.4 lbs.	$30.72	918.4 lbs.	$15.11	844.7 lbs.
Treating seed				0.01		0.01		0.14		0.15	
Fertilizer	532.8 lbs.	7.41	288.6 lbs.	3.04	312.7 lbs.	3.83	444.5 lbs.	5.32	556.5 lbs.	6.29	427.0 lbs.
Lime			0.1 ton	0.05	0.002 ton	0.01	0.02 ton	0.12	0.02 ton	0.20	0.03 ton
Manure:											
Value before hauling		$3.76		$3.16		$3.96		$5.15		$7.53	
Human labor	2.6 hrs.	0.67	3.5 hrs.	0.89	4.2 hrs.	1.23	4.1 hrs.	1.45	5.5 hrs.	2.19	4.0 hrs.
Horse labor	4.2 hrs.	0.67	5.9 hrs.	0.92	7.1 hrs.	1.16	6.8 hrs.	1.34	9.6 hrs.	2.18	6.7 hrs.
Equipment		0.21		0.26		0.34		0.39		0.69	
Total manure	4,671 lbs.	5.31	5,336 lbs.	5.23	6,436 lbs.	6.69	6,794 lbs.	8.33	9,153 lbs.	12.59	6,478 lbs.
Green manure				$0.15		$0.12		$0.02		$0.28	
Spray materials		$1.09		0.73	11.9 lbs.	1.03	19.1 lbs.	2.15		2.73	
Use of buildings:											
Interest		$0.47		$0.54		$0.51		$0.87		$0.77	
Taxes		0.07		0.09		0.09		0.17		0.12	
Insurance		0.02		0.04		0.02		0.05		0.03	
All other		0.31		0.39		0.21		0.50		0.46	
Total cost for use of buildings		0.87		1.06		0.83		1.59		1.38	
Use of land:											
Interest		$4.51		$3.34		$4.96		$3.67		$5.41	
Taxes		0.71		0.57		0.83		0.72		0.86	
All other		1.10		0.55		0.93		1.04		1.34	
Total cost for use of land		6.32		4.46		6.72		5.43		7.61	
Fire insurance		$0.05		$0.03		$0.07		$0.06		$0.07	
Interest		1.32		1.10		1.23		2.13		2.10	
Human labor	80.9 hrs.	20.31	69.9 hrs.	18.02	72.1 hrs.	21.82	79.7 hrs.	28.25	102.6 hrs.	40.54	81.0 hrs.
Horse labor	76.9 hrs.	12.15	68.9 hrs.	10.68	64.3 hrs.	10.71	71.1 hrs.	13.75	83.8 hrs.	18.88	73.0 hrs.
Equipment		3.80		3.03		3.17		3.97		5.94	
Tractor									0.5 hr.	0.91	0.1 hr.
Use of truck										0.50	
All other growing costs		0.20		0.14		0.01		0.07		0.30	
Total growing costs		$68.12		$52.41		$69.00		$102.05		$115.58	

TABLE 86 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	13		37		24		27		29		26
Total acres	91.4		239.48		135.85		132.15		79.65		135.71
Acres per farm	7.0		6.5		5.7		4.9		2.7		5.4
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	17.4 hrs.	$4.35	6.5 hrs.	$1.66	5.9 hrs.	$1.78	8.9 hrs.	$3.18	11.7 hrs.	$4.62	10.1 hrs.
Horse labor	10.8 hrs.	1.71	4.2 hrs.	0.65	4.7 hrs.	0.78	3.1 hrs.	0.60	7.4 hrs.	1.67	6.0 hrs.
Equipment		0.54		0.18		0.23		0.17		0.53	
Automobile								0.02		0.19	
Motor-truck				0.03		0.16		0.21		0.12	
Barrels, baskets, and containers				0.01		0.01					
All other marketing costs		0.10		0.02		0.08		0.07		0.07	
Total marketing costs		$6.70		$2.55		$3.04		$4.25		$7.20	
Total costs		$74.82		$54.96		$72.04		$106.30		$122.78	
Yield per acre	162.0 bu.		77.2 bu.		88.0 bu.		91.7 bu.		137.7 bu.		111.3 bu.
Value of potatoes per acre		49.42		64.30		152.95		90.78		139.08	
Value of miscellaneous credits per acre				0.07							
Total value of crop per acre		49.42		64.37		152.95		90.78		139.08	
Cost per bushel		0.46		0.71		0.82		1.16		0.89	
Value per bushel		0.31		0.83		1.74		0.99		1.01	
Profit (+) or loss (–) per acre		–25.40		+9.41		+80.91		–15.52		+16.30	
Profit (+) or loss(–) per bushel		–0.15		+0.12		+0.92		–0.17		+0.12	
Cost of marketing a bushel		0.07		0.09		0.06		0.13		0.10	
Returns per hour of human labor		–0.01		0.38		1.34		0.18		0.54	

TABLE 87. COSTS PER ACRE OF PRODUCING RYE

	1915		1916		1917		1918		Average
Year	1915		1916		1917		1918		Average
Number of farms	8		3		2		4		4
Total acres	48.75		25		19.3		9.46		25.6
Acres per farm	6.1		8.3		9.6		2.4		6.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:									
Growing:									
Seed	84.4 lbs.	$1.21	107.0 lbs.	$1.84	84.1 lbs.	$2.30	76.0 lbs.	$2.70	87.9 lbs.
Fertilizer					267.7 lbs.	2.41	105.7 lbs.	0.90	93.4 lbs.
Lime							0.01 ton	0.13	
Manure:									
Value before hauling		$1.43		$2.31		$0.56		$8.00	
Human labor	1.4 hrs.	0.37	2.4 hrs.	0.72	0.4 hr.	0.15	5.8 hrs.	2.33	2.5 hrs.
Horse labor	2.4 hrs.	0.38	4.1 hrs.	0.68	0.7 hr.	0.14	10.2 hrs.	2.32	4.4 hrs.
Equipment		0.11		0.20		0.04		0.73	
Total manure	2,270 lbs.	2.29	3,760 lbs.	3.91	725 lbs.	0.89	9,725 lbs.	13.38	4,120 lbs.
Twine	1.6 lbs.	$0.14	3.0 lbs.	$0.33	3.9 lbs.	$0.68	1.5 lbs.	$0.38	2.5 lbs.
Use of buildings:									
Interest		$0.17		$0.56		$0.55		$1.15	
Taxes		0.03		0.09		0.11		0.18	
Insurance		0.01		0.02		0.03		0.04	
All other		0.17		0.23		0.31		0.57	
Total cost for use of buildings		0.38		0.90		1.00		1.94	
Use of land:									
Interest		$2.95		$5.97		$4.41		$4.26	
Taxes		0.50		1.00		0.86		0.68	
All other		0.48		1.13		1.24		1.05	
Total cost for use of land		3.93		8.10		6.51		5.99	
Fire insurance		$0.02		$0.01		$0.05		$0.04	
Interest		0.80		0.92		1.51		1.54	
Threshing		0.83	929.1 lbs.	0.86	1195.4 lbs.	1.04	605.6 lbs.	1.31	
Coal for threshing	61.9 lbs.	0.14	48.8 lbs.	0.11	65.6 lbs.	0.25	21.1 lbs.	0.07	49.4 lbs.
Meals for threshers	0.4	0.08	0.5	0.10	0.9	0.32	0.3	0.11	0 5
Meals for threshers' horses	0.2	0.02	0.2	0.03	0.2	0.03	0.2	0.04	0.2
Cutting				0.32					
Human labor	17.9 hrs.	4.57	19.5 hrs.	5.55	31.6 hrs.	10.44	19.9 hrs.	7.51	22.2 hrs.
Horse labor	25.5 hrs.	4.00	31.8 hrs.	5.02	46.2 hrs.	8.06	22.0 hrs.	4.49	31.4 hrs.
Equipment		1.21		1.44		2.37		1.33	
All other growing costs								0.07	
Total growing costs		$19.62		$29.44		$37.86		$41.93	

TABLE 87 (*concluded*)

	1915		1916		1917		1918		Average
Year	1915		1916		1917		1918		Average
Number of farms	8		3		2		4		4
Total acres	48.75		25		19.3		9.46		25.6
Acres per farm	6.1		8.3		9.6		2.4		6.6
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:									
Human labor	1.5 hrs.	$0.39	1.4 hrs.	$0.41	0.3 hr.	$0.11	0.5 hr.	$0.21	0.9 hr.
Horse labor	0.6 hr.	0.09	0.6 hr.	0.11	0.5 hr.	0.10			0.4 hr.
Equipment		0.03		0.03		0.03			
Pressing	384.9 lbs.	0.29							
Meals for pressers	0.04	0.01							
Truck							0.5 hr.	0.61	0.1 hr.
Total marketing costs		$0.81		$0.55		$0.24		$0.82	
Total costs		$20.43		$29.99		$38.10		$42.75	
Yield of grain per acre	18.1 bu.		16.6 bu.		21.3 bu.		16.7 bu.		18.2 bu.
Value of grain per acre		15.71		18.80		33.91		30.41	
Yield of straw per acre	12.00 lbs.		13.60 lbs.		13.40 lbs.		18.00 lbs.		14.25 lbs.
Value of straw per acre		3.86		4.04		3.09		10.94	
Value of pasture per acre						0.26			
Total value of crop per acre		19.57		22.84		37.26		41.35	
Cost per bushel		0.92		1.56		1.63		1.90	
Value per bushel		0.87		1.13		1.59		1.82	
Loss per acre		0.86		7.15		0.84		1.40	
Loss per bushel		0.05		0.43		0.04		0.08	
Cost of marketing a bushel		0.06		0.08		0.06		0.12	
Returns per hour of human labor		0.21		−0.06		0.30		0.31	
Extra man hours for threshing*	0.1		1.1		2.5		1.2		1.2

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

TABLE 88. COSTS PER ACRE OF PRODUCING WHEAT

Year	1914		1915		1916		1917		1918		Average
Number of farms	10		30		20		18		16		19
Total acres	124.2		426.57		232		273.5		248.9		261.0
Acres per farm	12.4		14.2		11.6		15.2		15.6		13.8
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Costs:											
Growing:											
Seed	111.7 lbs.	$1.78	114.3 lbs.	$2.20	125.7 lbs.	$2.44	127.4 lbs.	$3.43	125.8 lbs.	$4.53	121.0 lbs.
Fertilizer	159.9 lbs.	1.56	142.3 lbs.	1.42	222.0 lbs.	2.50	212.5 lbs.	2.33	215.3 lbs.	2.64	190.4 lbs.
Lime	0.01 ton	0.05	0.02 ton	0.13	0.01 ton	0.04	0.1 ton	0.49	0.04 ton	0.37	0.04 ton
Manure:											
Value before hauling		$2.86		$1.59		$2.24		$2.63		$3.65	
Human labor	2.0 hrs.	0.51	1.7 hrs.	0.44	2.4 hrs.	0.70	2.1 hrs.	0.74	2.7 hrs.	1.06	2.2 hrs.
Horse labor	3.2 hrs.	0.51	2.9 hrs.	0.46	4.0 hrs.	0.65	3.5 hrs.	0.69	4.6 hrs.	1.05	3.6 hrs.
Equipment		0.16		0.13		0.19		0.20		0.33	
Total manure	3,556 lbs.	4.04	2,666 lbs.	2.62	3,638 lbs.	3.78	3,479 lbs.	4.26	4,423 lbs.	6.09	3,552 lbs.
Green manure				$0.01				$0.05			
Twine	2.2 lbs.	$0.22	2.8 lbs.	0.27	2.8 lbs.	$0.30	2.7 lbs.	0.47	2.6 lbs.	$0.64	2.6 lbs.
Use of buildings:											
Interest		$0.62		$0.44		$0.57		$0.47		$0.57	
Taxes		0.09		0.08		0.10		0.09		0.09	
Insurance		0.03		0.03		0.03		0.03		0.02	
All other		0.39		0.43		0.24		0.27		0.29	
Total cost for use of buildings		1.13		0.98		0.94		0.86		0.97	
Use of land:											
Interest		$3.92		$3.79		$4.65		$4.08		$5.23	
Taxes		0.61		0.65		0.77		0.80		0.83	
All other		0.95		0.62		0.88		1.15		1.30	
Total cost for use of land		5.48		5.06		6.30		6.03		7.36	
Fire insurance		$0.01		$0.02		$0.03		$0.05		$0.03	
Interest		0.88		0.96		1.00		1.28		1.67	
Threshing	1,308.8 lbs.	0.85	1,736.5 lbs.	1.14	1,416.9 lbs.	0.92	1,383 lbs.	1.23	1,185 lbs.	1.24	1,406 lbs.
Coal for threshing	46.5 lbs.	0.10	49.2 lbs.	0.11	43.8 lbs.	0.12	40.3 lbs.	0.16	27.1 lbs.	0.10	41.4 lbs.
Other fuel for threshing		0.02				0.01		0.02		0.02	
Meals for threshers			0.5	0.09	0.4	0.08	0.4	0.13	0.2	0.08	0.3
Meals for threshers' horses			0.2	0.02	0.2	0.02	0.2	0.04	0.1	0.02	0.1
Human labor	20.3 hrs.	5.08	23.2 hrs.	5.92	20.5 hrs.	5.82	23.1 hrs.	7.60	23.7 hrs.	8.84	22.2 hrs.
Horse labor	32.9 hrs.	5.19	33.8 hrs.	5.31	30.5 hrs.	4.84	37.2 hrs.	6.44	38.9 hrs.	7.86	34.7 hrs.
Equipment		1.63		1.61		1.39		1.90		2.31	
Automobile								0.14			
Tractor					0.3 hr.	0.30			0.3 hr.	0.34	0.1 hr.
All other growing costs								0.18		0.01	
Total growing costs		$28.02		$27.87		$30.83		$37.09		$45.12	

TABLE 88 (*concluded*)

Year	1914		1915		1916		1917		1918		Average
Number of farms	10		30		20		18		16		19
Total acres	124.2		426.57		232		273.5		248.9		261.0
Acres per farm	12.4		14.2		11.6		15.2		15.6		13.8
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Marketing:											
Human labor	1.4 hrs.	$0.36	1.1 hrs.	$0.30	1.3 hrs.	$0.38	1.4 hrs.	$0.47	1.3 hrs.	$0.50	1.3 hrs.
Horse labor	1.8 hrs.	0.28	1.3 hrs.	0.20	1.0 hr.	0.17	1.5 hrs.	0.30	1.3 hrs.	0.29	1.4 hrs.
Equipment		0.09		0.06		0.05		0.09		0.09	
Pressing			497.4 lbs.	0.08							99.5 lbs.
Meals for pressers			0.05	0.01							
All other marketing costs						0.01				0.02	
Motor-truck										0.02	
Total marketing costs		$0.73		$0.65		$0.61		$0.86		$0.92	
Total costs		$28.75		$28.52		$31.44		$37.95		$46.04	
Yield of grain per acre	21.9 bu.		28.9 bu.		23.7 bu.		23.3 bu.		20.0 bu.		23.6 bu.
Value of grain per acre		25.89		29.07		38.25		47.40		42.74	
Value of miscellaneous credits per acre						0.02		0.11			
Yield of straw per acre	1,500 lbs.		1,760 lbs.		1,620 lbs.		1,380 lbs.		1,100 lbs.		1,472 lbs.
Value of straw per acre		3.96		5.25		4.28		4.61		4.40	
Total value of crop per acre		29.85		34.32		42.55		52.12		47.14	
Cost per bushel		1.13		0.81		1.15		1.43		2.08	
Value per bushel		1.18		1.01		1.61		2.03		2.14	
Profit per acre		1.10		5.80		11.11		14.17		1.10	
Profit per bushel		0.05		0.20		0.46		0.60		0.06	
Cost of marketing a bushel		0.05		0.04		0.04		0.05		0.06	
Returns per hour of human labor		0.30		0.49		0.79		0.91		0.42	
Extra man hours for threshing*	Omitted		1.8		1.2		1.0		0.5		1.1

*Extra man hours for threshing is the time spent by threshers the charge for which is included in the cash paid for threshing.

Some crops, such as oats, are not highly profitable but fit into the year's work in such a way that they are grown even tho not highly profitable. The recommendation is sometimes made that the rental charge and the rate per hour for labor should be reduced, so that oats will show a profit and reduce the profit on hay or other crops. This is based on the belief that if any part of the business is desirable, it should be so charged as to show a profit. If such a method were carried to its logical conclusion, all enterprises on a well-balanced farm would be so charged as to make them all equally profitable since all are needed. The writers believe that an analysis of a business is easier to make when the various crops are all treated as nearly alike as possible. For example, by the methods of accounting here used, the seven-years average returns for the oat crop paid all other costs and left an average of 1 cent per hour for human labor. Wheat left 57 cents, hay 88 cents. So far as type of farming is concerned, this would indicate that on these farms the oat crop should be looked upon as a supplemental crop. It is not often desirable to expand the oat acreage beyond the area that can be grown without interfering with other crops. On some farms, oats supplement the hay crop by filling the step between a cultivated crop and hay. It would not be desirable to make a combination of enterprises giving such low returns as oats, nor would it be desirable to have too large a proportion of the farm devoted to oats; but there is no reason for eliminating the crop unless it can be replaced by something better, nor is there any reason for expanding the area of a highly profitable crop unless it will result in greater profits for the farm as a whole. Accounts provide information that is an aid in business analysis; they do not provide automatic rules.

The returns per hour for labor are not profits. The return per hour is the amount at which labor can be charged and have the account come out even. In making this calculation only the direct labor is included (page 45).

AVERAGES FOR SEVEN YEARS

Some of the most important averages for each year from 1914 to 1920, inclusive, and for the seven years, are given in table 89. These years include some pre-war years, years of rising prices, and the first year of falling prices.

TABLE 89. SUMMARY OF AVERAGES, 1914 TO 1920

	1914	1915	1916	1917	1918	1919*	1920	Average for seven years
Real estate:								
Number of farms	17	45	30	31	28	35	33	—
Acres per farm	165.8	151.2	175.7	168.0	164.6	165.2	166.7	165.3
Value per farm †	$13,873.24	$12,226.90	$15,012.56	$14,513.14	$15,249.23	$15,185.99	$17,148.28	$14,744.19
Value of operators' houses	$1,551.76	$1,508.36	$1,581.04	$1,530.80	$1,516.28	$1,783.34	$2,004.54	$1,639.45
Value of barns and other outbuildings	$2,624.56	$2,641.77	$3,270.47	$3,218.92	$3,202.86	$3,095.97	$3,289.03	$3,049.08
Charge for interest, per cent of value	5	5	5	5	6	6	6	5.43
Other costs for barns and other outbuildings, per cent of value	5	5.4	3.3	4.2	4.3	5.1	5.6	4.7
Crop acres per farm	108.8	94.4	110.5	104.3	102.9	101.7	104.3	103.8
Value of crop land per acre	$74.09	$67.75	$73.94	$73.77	$81.56	$80.05	$90.15	$77.33
Charge for interest, per cent of value	5	5	5	5	6	6	6	5.43
Other costs for crop land, per cent of value	1.6	1.3	1.6	2.1	1.7	2.2	2.4	1.8
Human labor:								
Number of farms	18	46	31	31	32	38	33	—
Man equivalent	3.0	2.6	2.8	2.8	2.9	2.7	2.7	2.8
Total hours of labor	8,956	8,424	8,501	8,285	8,870	8,339	8,143	8,503
Hours per person per year‡	2,975	3,164	3,066	2,948	3,089	3,086	3,058	3,055
Cost per hour worked	$0.2508	$0.2599	$0.3026	$0.3563	$0.3957	$0.4144	$0.4366	$0.3452
Horse labor:								
Number of farms	18	46	31	31	32	37	33	—
Per cent of farms using tractors	0	2.2	6.5	3.2	21.9	29.7	36.4	14.3
Horses per farm	5.1	4.9	5.3	5.1	4.5	4.5	4.3	4.8
Total hours worked by horses	5,138	4,988	5,024	4,813	4,767	4,085	3,935	4,679
Hours per horse per year	1,040	1,016	933	922	1,041	895	901	964
Pounds of grain fed per horse	3,357	3,074	3,210	2,736	3,295	2,810	2,395	2,982
Pounds of dry forage fed per horse	7,376	6,094	7,289	7,755	7,499	6,858	6,078	6,993
Hours of human labor to take care of a horse	144	143	116	116	124	117	111	124
Cost of feed and bedding per horse	$104.16	$96.81	$101.49	$123.09	$166.90	$146.36	$125.19	$123.43
Total cost of keeping a horse	$171.67	$168.54	$170.04	$202.61	$255.45	$236.72	$215.34	$202.91
Cost per hour of horse labor	$0.1580	$0.1548	$0.1666	$0.1970	$0.2259	$0.2436	$0.2188	$0.1950
Equipment (exclusive of tractors, automobiles, trucks, and some special equipment):								
Number of farms	18	46	31	31	32	37	33	—
Average value per farm	$916.96	$799.23	$864.68	$901.56	$996.08	$1,068.82	$1,137.49	$954.97
Value per acre of crops	$8.71	$8.64	$8.33	$9.02	$10.19	$10.93	$11.48	$9.61
Annual cost per acre of crops	$2.39	$2.36	$2.38	$2.73	$3.40	$3.48	$3.73	$2.92
Cost of equipment per hour of horse labor	$0.0494	$0.0439	$0.0494	$0.0569	$0.0712	$0.0854	$0.0948	$0.0644
Annual cost in per cent of value	28.0	27.5	28.5	30.1	33.5	31.8	32.5	30.3

*In this table the figures for 1919 are not in all cases the same as those given in the preceding pages, as they include one less farm.
†Value per farm includes operator's house, barns, land, and all other real estate.
‡Total hours divided by total workers, not by man equivalent.

TABLE 89 (*continued*)

	1914	1915	1916	1917	1918	1919*	1920	Average for seven years
Cows:								
Number of farms	9	26	17	17	18	22	17	—
Number of cows per farm	16.6	16.9	20.1	22.6	21.5	19.8	17.1	19.2
Pounds of grain fed per cow	2,024	1,762	2,167	1,828	1,754	2,058	1,835	1,918
Pounds of hay fed per cow	2,905	3,165	3,384	4,078	4,298	4,107	3,180	3,588
Pounds of silage fed per cow	7,892	7,502	5,796	5,742	5,673	5,444	7,669	6,531
Cost of feed and bedding per cow	$72.05	$69.79	$75.59	$99.80	$118.80	$134.40	$136.22	$100.95
Hours of human labor per cow	153.1	160.7	142.6	128.8	137.2	156.8	150.4	147.1
Cost of human labor per cow	$38.39	$41.78	$43.15	$45.87	$54.30	$62.62	$61.66	$49.68
Cost of horse and equipment labor per cow	$5.07	$5.56	$5.35	$6.77	$6.86	$7.90	$7.68	$6.46
Total cost per cow (including depreciation, if any)	$135.15	$140.42	$143.31	$172.44	$208.15	$228.23	$256.15	$183.41
Cost of milk per 100 pounds sold	$1.745	$2.118	$1.894	$2.398	$3.133	$3.031	$3.672	$2.5701
Pounds of milk per cow	6,856	5,487	6,758	6,340	6,010	6,487	6,169	6,301
Value of milk and milk products per cow	$107.60	$101.64	$123.00	$172.24	$190.99	$225.82	$213.62	$162.13
Price of milk per 100 pounds sold	$1.563	$1.631	$1.823	$2.718	$3.199	$3.442	$3.280	$2.522
Total returns per cow (including appreciation, if any)	$123.72	$117.44	$138.89	$191.48	$211.77	$251.93	$234.64	$181.41
Profit (+) or loss (–) per cow	–$11.43	–$22.98	–$4.42	+$19.04	+$3.62	+$23.69	–$21.51	–$2.00
Returns per hour of human labor†	$0.18	$0.12	$0.27	$0.50	$0.42	$0.55	$0.27	$0.33
Hay:								
Number of farms	17	45	31	31	31	35	32	—
Acres grown per farm	41.2	35.1	42.9	36.1	40.5	42.8	37.9	39.5
Yield in tons per acre	1.15	1.31	1.89	1.72	1.56	1.70	1.42	1.54
Hours of human labor per acre	8.9	11.4	12.1	10.3	10.4	11.5	9.6	10.6
Hours of horse labor per acre	8.8	11.2	11.5	10.2	10.5	11.1	9.6	10.4
Cost of lime and other fertilizers per acre	$0.27	$0.33	$0.45	$0.28	$0.35	$0.68	$0.89	$0.46
Cost of manure per acre	$2.32	$2.86	$3.81	$4.81	$6.11	$5.33	$5.43	$4.38
Cost per acre	$13.75	$15.48	$18.30	$19.31	$23.47	$24.41	$26.52	$20.18
Cost per ton	$11.76	$11.63	$9.56	$11.06	$14.50	$13.94	$18.63	$13.01
Value per ton	$13.30	$13.32	$10.29	$15.76	$19.29	$22.90	$20.43	$16.47
Profit per acre	$1.78	$2.21	$1.39	$8.09	$7.48	$15.20	$2.55	$5.53
Profit per ton	$1.54	$1.69	$0.73	$4.70	$4.79	$8.96	$1.80	$3.46
Returns per hour of human labor	$0.45	$0.46	$0.42	$1.17	$1.14	$1.81	$0.73	$0.88
Oats:								
Number of farms	13	41	23	24	28	30	29	—
Acres grown per farm	15.0	13.8	14.2	15.2	14.9	12.1	12.5	14.0
Yield in bushels per acre	27.4	43.9	24.3	35.3	47.9	25.9	42.2	35.3
Hours of human labor per acre	19.3	27.8	20.0	22.4	25.7	20.6	21.1	22.4
Hours of horse labor per acre	28.4	33.2	30.2	30.7	31.9	29.2	25.3	29.8
Cost of lime and other fertilizers per acre	$2.18	$1.45	$2.03	$2.51	$2.61	$2.88	$2.67	$2.33
Cost of manure per acre	$4.39	$3.73	$4.95	$5.10	$5.49	$8.04	$5.74	$5.35
Cost per acre	$25.74	$28.03	$27.92	$33.19	$41.44	$41.35	$42.36	$34.29
Cost per bushel	$0.84	$0.53	$1.03	$0.81	$0.74	$1.45	$0.88	$0.90
Value per bushel	$0.52	$0.48	$0.61	$0.84	$0.74	$0.90	$0.57	$0.67
Profit (+) or loss (–) per acre	–$8.66	–$1.97	–$10.23	+$1.06	+$0.02	–$14.20	–$12.92	–$6.70
Profit (+) or loss (–) per bushel	–$0.32	–$0.05	–$0.42	+$0.03	0	–$0.55	–$0.31	–$0.23
Returns per hour of human labor	–$0.20	$0.18	–$0.24	$0.40	$0.39	–$0.29	–$0.20	$0.01

*See footnote on page 133.

†Returns per hour of human labor is not profit, but is the amount that could be allowed for labor and have the account come out without profit or loss.

TABLE 89 (*continued*)

	1914	1915	1916	1917	1918	1919*	1920	Average for seven years
Barley:								
Number of farms	2	10	5	7	11	5	5	—
Acres grown per farm	5.4	6.2	8.5	6.6	10.3	12.9	7.2	8.2
Yield in bushels per acre	18.2	35.3	17.0	26.5	31.6	22.8	23.8	25.0
Hours of human labor per acre	20.3	25.0	23.4	25.7	20.0	19.2	19.3	21.8
Hours of horse labor per acre	34.5	33.7	38.5	41.2	23.1	31.6	26.6	32.7
Cost of lime and other fertilizers per acre	$1.32	$1.37	$1.92	$2.87	$2.66	$2.46	$5.06	$2.52
Cost of manure per acre	$5.63	$4.21	$4.76	$8.60	$6.32	$8.64	$3.96	$6.02
Cost per acre	$30.64	$27.85	$31.30	$40.75	$41.13	$44.89	$38.76	$36.47
Cost per bushel	$1.55	$0.64	$1.74	$1.40	$1.15	$1.78	$1.51	$1.40
Value per bushel	$0.86	$0.65	$0.98	$1.48	$0.97	$1.43	$0.90	$1.04
Profit (+) or loss (–) per acre	–$12.64	+$0.03	–$12.88	+$2.18	–$5.81	–$7.99	–$14.47	–$7.37
Profit (+) or loss (–) per bushel	–$0.69	+$0.01	–$0.76	+$0.08	–$0.18	–$0.35	–$0.61	–$0.36
Returns per hour of human labor	–$0.37	$0.26	–$0.26	$0.43	$0.10	–$0.03	–$0.34	–$0.03
Corn for grain:								
Number of farms	6	25	10	13	11	8	15	—
Acres grown per farm	8.2	5.5	7.2	6.4	5.3	8.7	4.7	6.6
Yield in bushels per acre	37.0	26.8	21.1	23.1	31.2	42.0	31.4	30.4
Hours of human labor per acre	70.0	63.5	53.3	60.0	83.0	76.2	59.5	66.5
Hours of horse labor per acre	54.1	55.5	54.6	57.5	63.1	53.9	61.1	57.1
Cost of lime and other fertilizers per acre	$0.63	$0.74	$1.25	$1.16	$2.09	$1.99	$1.59	$1.35
Cost of manure per acre	$4.90	$3.96	$6.26	$6.03	$5.12	$10.63	$8.04	$6.42
Cost per acre	$41.90	$41.26	$44.96	$52.59	$72.65	$81.74	$67.28	$57.48
Cost per bushel	$0.88	$1.19	$1.77	$1.79	$2.07	$1.74	$1.88	$1.62
Value per bushel	$0.66	$0.75	$1.01	$1.51	$1.44	$1.46	$1.06	$1.13
Loss (–) per acre	–$8.10	–$11.71	–$16.08	–$6.49	–$19.67	–$12.01	–$25.75	–$14.26
Loss (–) per bushel	–$0.22	–$0.44	–$0.76	–$0.28	–$0.63	–$0.28	–$0.82	–$0.49
Returns per hour of human labor	$0.14	$0.08	–$0.004	$0.25	$0.16	$0.29	$0.03	$0.14
Corn for silage:								
Number of farms	11	26	$18	18	20	26	25	—
Acres grown per farm	13.5	12.1	14.7	14.6	12.9	11.0	12.9	13.1
Yield in tons per acre	7.3	7.1	4.9	4.8	6.2	8.1	6.8	6.5
Hours of human labor per acre	41.0	45.1	29.2	32.9	38.7	42.8	34.7	37.8
Hours of horse labor per acre	54.7	53.4	46.8	48.8	53.1	48.9	43.0	49.8
Cost of lime and other fertilizers per acre	$1.07	$1.46	$2.30	$2.04	$2.69	$3.46	$3.43	$2.35
Cost of manure per acre	$6.18	$6.02	$7.62	$8.21	$14.87	$13.51	$9.58	$9.43
Cost per acre	$37.74	$39.88	$38.05	$45.19	$64.68	$68.22	$62.54	$50.90
Cost per ton	$5.16	$5.58	$7.77	$9.38	$10.31	$8.04	$8.89	$7.88

*See footnote on page 133.

TABLE 89 (*continued*)

	1914	1915	1916	1917	1918	1919*	1920	Average for seven years
Potatoes:								
Number of farms	13	37	24	27	29	30	24	—
Acres grown per farm	7.0	6.5	5.7	4.9	2.7	3.0	2.4	4.6
Yield in bushels per acre	162.0	77.2	88.0	91.7	137.7	99.5	208.8	123.6
Hours of human labor per acre	98.3	76.4	78.0	88.6	114.3	96.8	117.0	95.6
Hours of horse labor per acre	87.7	73.1	69.0	74.2	91.2	71.9	83.7	78.7
Cost of lime and other fertilizers per acre	$7.41	$3.09	$3.84	$5.44	$6.49	$7.04	$9.43	$6.11
Cost of manure per acre	$5.31	$5.38	$6.81	$8.35	$12.87	$13.49	$11.24	$9.06
Cost per acre	$74.82	$54.96	$72.04	$106.30	$122.78	$113.93	$168.43	$101.89
Cost per bushel	$0.46	$0.71	$0.82	$1.16	$0.89	$1.14	$0.81	$0.85
Value per bushel	$0.31	$0.83	$1.74	$0.99	$1.01	$1.67	$0.81	$1.05
Profit (+) or loss (–) per acre	–$25.40	+$9.41	+$80.91	–$15.52	+$16.30	+$52.65	+$1.17	+$17.07
Profit (+) or loss (–) per bushel	–$0.15	+$0.12	+$0.92	–$0.17	+$0.12	+$0.53	+$0.01	+$0.20
Returns per hour of human labor	–$0.01	$0.38	$1.34	$0.18	$0.54	$0.95	$0.45	$0.55
Cabbage:								
Number of farms	6	10	8	7	8	7	12	—
Acres grown per farm	5.2	7.9	5.1	7.2	3.7	2.7	3.4	5.0
Yield in tons per acre	6.5	7.9	3.9	6.4	6.8	7.2	12.5	7.3
Hours of human labor per acre	92.8	75.8	92.1	99.1	105.7	109.6	121.8	99.6
Hours of horse labor per acre	92.0	74.7	80.8	82.6	99.9	101.5	87.0	88.4
Cost of lime and other fertilizers per acre	$5.40	$3.32	$4.93	$4.12	$6.20	$5.17	$8.05	$5.31
Cost of manure per acre	$5.05	$4.55	$5.06	$6.39	$15.38	$13.07	$13.14	$8.95
Cost per acre	$63.07	$50.70	$63.99	$78.98	$108.62	$114.08	$118.14	$85.37
Cost per ton	$9.50	$6.37	$15.93	$11.69	$14.76	$14.85	$9.39	$11.78
Value per ton	$7.13	$3.30	$39.93	$17.30	$12.35	$27.43	$5.77	$16.17
Profit (+) or loss (–) per acre	–$15.46	–$24.27	+$93.58	+$36.12	–$16.40	+$90.90	–$45.13	+$17.05
Profit (+) or loss (–) per ton	–$2.37	–$3.07	+$24.00	+$5.61	–$2.41	+$12.58	–$3.62	+$4.39
Returns per hour of human labor	$0.08	–$0.06	$1.32	$0.72	$0.24	$1.24	$0.05	$0.51
Alfalfa:								
Number of farms	6	14	13	17	9	8	9	—
Acres grown per farm	8.8	6.7	8.5	6.8	9.7	12.9	10.8	9.2
Yield in tons per acre	2.8	2.8	2.7	2.2	2.3	2.8	2.1	2.5
Hours of human labor per acre	28.6	26.9	28.8	22.5	23.5	31.6	23.0	26.4
Hours of horse labor per acre	28.1	28.6	25.1	20.5	21.2	26.6	22.9	24.7
Cost of lime and other fertilizers per acre	0	$0.30	$0.61	$0.33	$3.05	$1.88	$1.85	$1.15
Cost of manure per acre	$0.28	$1.95	$3.56	$3.70	$5.05	$4.16	$2.06	$2.97
Cost per acre	$25.59	$26.73	$27.48	$30.89	$40.64	$37.24	$36.08	$32.09
Cost per ton	$9.07	$9.45	$10.14	$13.99	$17.34	$13.34	$17.22	$12.94
Value per ton	$14.91	$14.96	$13.20	$19.62	$22.58	$25.91	$23.97	$19.31
Profit per acre	$16.35	$15.43	$8.26	$12.40	$12.05	$34.84	$14.11	$16.21
Profit per ton	$5.84	$5.51	$3.06	$5.63	$5.24	$12.57	$6.75	$6.37
Returns per hour of human labor	$0.82	$0.83	$0.60	$0.93	$0.94	$1.59	$1.10	$0.97

*See footnote on page 133.

TABLE 89 (*concluded*)

	1914	1915	1916	1917	1918	1919*	1920	Average for seven years
Wheat:								
Number of farms	10	30	20	18	16	24	19	—
Acres grown per farm	12.4	14.2	11.6	15.2	15.6	14.9	14.9	14.1
Yield in bushels per acre	21.9	28.9	23.7	23.3	20.0	19.0	26.2	23.3
Hours of human labor per acre	21.7	26.1	23.0	25.5	25.5	24.9	23.3	24.3
Hours of horse labor per acre	34.7	35.1	31.5	38.7	40.2	34.5	28.0	34.7
Cost of lime and other fertilizers per acre	$1.61	$1.55	$2.54	$2.82	$3.01	$3.18	$3.17	$2.55
Cost of manure per acre	$4.04	$2.63	$3.78	$4.31	$6.09	$5.91	$5.46	$4.60
Cost per acre	$28.75	$28.52	$31.44	$37.95	$46.04	$49.41	$51.26	$39.05
Cost per bushel	$1.13	$0.81	$1.15	$1.43	$2.08	$2.30	$1.74	$1.52
Value per bushel	$1.18	$1.01	$1.61	$2.03	$2.14	$2.16	$2.05	$1.74
Profit (+) or loss (–) per acre	+$1.10	+$5.80	+$11.11	+$14.17	+$1.10	–$2.66	+$8.01	+$5.52
Profit (+) or loss (–) per bushel	+$0.05	+$0.20	+$0.46	+$0.60	+$0.06	–$0.14	+$0.31	+$0.22
Returns per hour of human labor	$0.30	$0.49	$0.79	$0.91	$0.42	$0.30	$0.80	$0.57
Beans:								
Number of farms	4	9	9	10	11	3	4	—
Acres grown per farm	10.2	13.4	10.3	12.9	4.5	3.9	4.4	8.4
Yield in bushels per acre	14.3	15.3	4.4	7.0	8.1	14.6	19.1	11.8
Hours of human labor per acre	33.0	40.2	36.0	35.9	41.8	67.9	41.8	42.4
Hours of horse labor per acre	48.9	48.0	49.8	47.0	50.9	56.3	52.8	50.5
Cost of lime and other fertilizers per acre	$1.10	$1.68	$1.56	$1.72	$2.37	$2.70	$2.55	$1.93
Cost of manure per acre	$1.15	$3.71	$3.73	$4.53	$5.55	$5.84	$10.74	$5.04
Cost per acre	$30.38	$36.11	$39.79	$45.17	$59.78	$77.09	$71.27	$51.37
Cost per bushel	$1.93	$2.16	$8.62	$6.12	$6.87	$5.04	$3.61	$4.91
Value per bushel	$2.13	$3.02	$5.67	$4.01	$3.86	$4.50	$2.22	$3.63
Profit (+) or loss (–) per acre	+$2.93	+$13.05	–$12.97	–$14.82	–$24.35	–$7.97	–$26.50	–$10.09
Profit (+) or loss (–) per bushel	+$0.20	+$0.86	–$2.95	–$2.11	–$3.01	–$0.54	–$1.39	–$1.28
Returns per hour of human labor	$0.34	$0.58	–$0.07	–$0.07	–$0.19	$0.34	–$0.12	$0.12
Buckwheat:								
Number of farms	6	12	10	10	12	7	7	—
Acres grown per farm	6.0	8.8	6.4	3.5	4.9	8.2	6.8	6.4
Yield in bushels per acre	18.7	17.1	9.0	16.9	12.0	22.0	14.3	15.7
Hours of human labor per acre	24.0	21.7	20.9	20.4	21.6	19.8	17.0	20.8
Hours of horse labor per acre	41.5	30.5	33.2	31.2	33.7	26.4	24.0	31.5
Cost of lime and other fertilizers per acre	$0.52	$0.73	$0.85	$1.30	$2.40	$2.57	$1.70	$1.44
Cost of manure per acre	$0.21	$0.53	$0.71	$2.09	$3.35	$1.35	$3.05	$1.61
Cost per acre	$20.35	$19.19	$21.33	$26.47	$33.10	$31.53	$28.44	$25.77
Cost per bushel	$1.03	$1.04	$2.20	$1.47	$2.65	$1.34	$1.82	$1.65
Value per bushel	$0.73	$0.79	$1.27	$1.84	$1.22	$1.45	$0.96	$1.18
Profit (+) or loss (–) per acre	–$5.48	–$4.25	–$8.35	+$6.32	–$17.23	+$2.46	–$12.23	–$5.54
Profit (+) or loss (–) per bushel	–$0.30	–$0.25	–$0.93	+$0.37	–$1.43	+$0.11	–$0.85	–$0.47
Returns per hour of human labor	$0.02	$0.05	–$0.11	$0.68	–$0.42	$0.57	–$0.28	$0.07

*See footnote on page 133.

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