

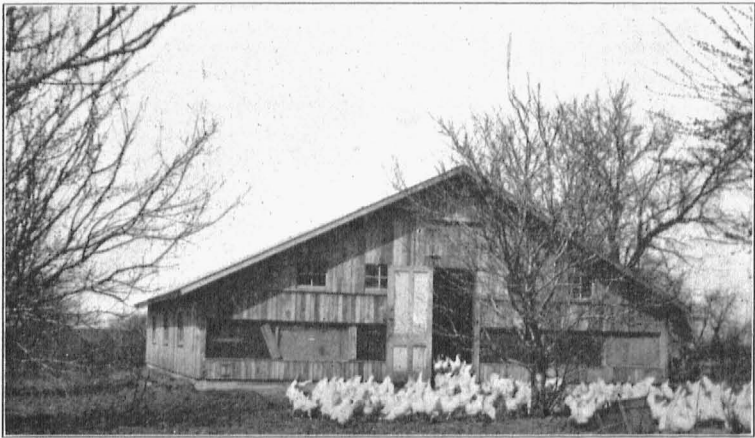
UNIVERSITY OF MISSOURI

COLLEGE OF AGRICULTURE

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BULLETIN 219

# The Cost and Income of the Farm Poultry Flock



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AUGUST, 1924

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# The Cost and Income of the Farm Poultry Flock

O. R. JOHNSON AND B. H. FRAME

**ABSTRACT.**—This report deals with the poultry enterprise on the farms cooperating with the rural life department of the Missouri Agricultural Experiment Station in keeping complete farm records. The data includes the years 1912 to 1922 inclusive. It shows first, the cost of keeping the poultry flock including labor, feed, cash, and distributed costs. It also gives the portion of the cost of the ration made up of various feeds. Then is shown the cost of keeping a hen each year for eleven years and the average total cost of keep. Lastly, a comparison is made of costs and income from different sized flocks.

The following study has to do with analyzing the poultry flock records kept on the farms cooperating with the rural life department of the Missouri Agricultural Experiment Station. Most of these flocks are typical of the poultry flock found on the general farm where poultry occupies a position of little importance as gauged by the sale of poultry products. It has long been recognized that the general farm poultry flock is an important factor, both in contributing toward the farmer's living and in determining the price of poultry products.

The flocks varied in size from less than 20 to more than 800 hens. Needless to say, the few farms near the upper limit placed more importance on poultry than did the farms keeping 100 hens or less. The size of flock referred to hereafter throughout this bulletin has to do with the number of hens in the flock, and does not count the number of chicks produced each year in determining the size of the flock.

The importance of the profit derived from poultry in the case of any individual farm is illustrated by the following figures. From 1912 to 1916 inclusive the average profit from the poultry flocks on all cooperative farms was less than \$100. From 1917 to 1921 this profit gradually increased until it reached the total of a little more than \$300. In 1922 it dropped back to less than \$50.

## COST OF KEEPING POULTRY

When the cost of keeping poultry is analyzed, it will be found that these costs divide themselves into about four general groups. These groups are (1) labor cost, (2) feed cost, (3) cash expenses, (4) the distributed charges. As this seems to be a fairly logical sequence, the various costs will be discussed in this order.

**Labor Cost.**—In studying the cost of keeping poultry, it was at once recognized that labor plays a rather important part. Two kinds of labor are involved, viz., man labor and horse labor. Man labor includes all labor put in on poultry by all members of the farm working force. In fact most of the man labor has been done by the housewife or the children. Whenever the labor was performed by children, its adult equivalent was reported. In other words, if this work was done in the same time it would have taken an adult to perform the same task, full time was charged. If on the other hand, an adult could

have done the work in one-half the time then only one-half the time reported was counted. Most of the work with poultry is such that a woman or a child over 12 or 14 years can do that work as quickly as a man could do it. In these cases full credit was allowed.

Horse labor was charged against poultry whenever horse labor was used. Occasionally horses were used in hauling manure away from the poultry plant or in hauling feed to the plant. Sometimes special trips to town for feed or to market a load of culls would call for horse labor. Horse labor was not charged for the regular marketing of eggs or chickens when this work was performed in connection with regular trips to market.

TABLE 1.—MAN LABOR REQUIREMENTS OF POULTRY  
(By Months.—1912 to 1922.)

Month	Hours per hen	Cost	Per cent of total labor cost
January	0.150	\$0.0286	8.77
February	0.140	0.0267	8.18
March	0.169	0.0323	9.90
April	0.212	0.0405	12.41
May	0.179	0.0342	10.48
June	0.144	0.0275	8.43
July	0.112	0.0213	6.53
August	0.109	0.0208	6.37
September	0.107	0.0204	6.25
October	0.103	0.0196	6.01
November	0.143	0.0273	8.37
December	0.142	0.0271	8.30
Total	1.710	0.3263	100.00

First, the amount of man labor required to care for poultry is given in Tables 1 and 2. Table 1 shows the amount of man labor required each month in the year together with the cost of this labor. These figures represent the average for the eleven-year period. It should be noted that the largest amount of time is required in March, April, and May, the season of hatching and caring for the young chicks. Practically one-third of the total time required to care

TABLE 2.—MAN LABOR REQUIREMENTS OF POULTRY  
(Per Year.—1912 to 1922.)

Year	Hours per hen	Cost	Variations from average per cent
1912	2.10	0.2602	79.7
1913	1.66	0.2350	72.0
1914	1.98	0.2727	83.6
1915	1.51	0.2071	63.5
1916	2.03	0.2865	87.8
1917	1.76	0.3002	92.0
1918	1.71	0.3437	105.3
1919	1.26	0.3268	100.1
1920	2.44	0.7385	226.3
1921	1.66	0.3350	102.7
1922	1.54	0.2839	87.0
Average per hen	1.71	0.3263	



for poultry for the year is used in these three months. The least time is required in the months of August, September, and October. This is a period when the hens are not laying heavily, and the vacation time for the average flock. It required 1.71 hours of labor per hen to care for the average farm flock in this eleven-year period. The average cost of this labor was 32.63 cents.

Looked at from the standpoint of variation in cost year by year, Table 2 shows that the most expensive years were 1918 to 1921 inclusive, and the least expensive years 1916 and 1913. The year 1920 was by far the most expensive year in the entire list. It required more labor, and the labor cost more money per hour than any other year. This resulted in a reduction in the profit per farm flock from \$173.55 to \$117.08. A careful study of the records did not yield a satisfactory explanation of the large increase in labor cost for 1920.

**Horse Labor Cost.**—The horse labor required to care for the farm poultry flock is much less regular and of considerably less importance than the man labor requirements. Tables 3 and 4 give for horse labor the same figures that are given for man labor in Tables 1 and 2, namely, the average horse labor cost by months for the entire period and the cost by years for the eleven-

TABLE 3.—HORSE LABOR REQUIREMENTS OF POULTRY.  
(By Months.—1912 to 1922.)

Month	Hours per hen	Cost per hen	Per cent of total horse labor cost
January	0.0139	0.0014	12.8
February	0.0110	0.0011	10.1
March	0.0122	0.0012	11.0
April	0.0106	0.0010	9.2
May	0.0058	0.0006	5.5
June	0.0036	0.0003	2.7
July	0.0047	0.0005	4.6
August	0.0047	0.0005	4.6
September	0.0061	0.0006	5.5
October	0.0089	0.0009	8.3
November	0.0093	0.0009	8.3
December	0.0193	0.0019	17.4
Total	0.1101	0.0109	100.0

TABLE 4.—HORSE LABOR REQUIREMENTS OF POULTRY  
(By Years.—1912 to 1922.)

Year	Hours per hen	Cost	Variations from average per cent
1912	0.0980	0.0080	73.3
1913	0.2409	0.0199	182.6
1914	0.1884	0.0165	151.4
1915	0.1207	0.0099	90.8
1916	0.1417	0.0128	117.4
1917	0.0854	0.0110	100.9
1918	0.0922	0.0129	118.2
1919	0.0092	0.0012	11.0
1920	0.0651	0.0109	100.0
1921	0.0806	0.0091	83.5
1922	0.0894	0.0073	67.0
Average per hen	0.1101	0.0109	

year period. More horse labor is required in the winter and early spring months, the heaviest requirement being in December with January, March, and February following in order. With poultry as with many other livestock enterprises, the months of heavy field labor are the months when little time is spent by the work stock on poultry. It will be noted from Table 4 that there is no regularity in the annual cost of horse labor given to care of poultry. During the year 1913 this cost was the heaviest, and in 1913 horse labor was cheap compared to other years.

### FEED COST

The largest single item of cost in the maintenance of the farm poultry flock is feed. Table 5 shows the distribution of feed cost by months. The total annual feed bill for the eleven-year period was slightly more than 66 cents per hen. One-third of this feed expense was incurred in December, January, and February. February seems to have the largest feed requirement. This is usually the month of most severe weather, and the month when the poultry flock is given special attention to develop their laying habits. This is reflected in the feed charge. For the remainder of the year there is not a great deal of variation.

TABLE 5.—FEED COST OF KEEPING POULTRY  
(By Months.—1912 to 1922.)

Month	Feed cost per hen	Per cent of feed cost
January	0.0736	11.1
February	0.0808	12.2
March	0.0655	9.9
April	0.0525	7.9
May	0.0441	6.6
June	0.0411	6.2
July	0.0469	7.1
August	0.0428	6.4
September	0.0471	7.1
October	0.0451	6.8
November	0.0557	8.4
December	0.0684	10.3
Total	0.6636	100.00

In this connection it is recognized that on most farms it is not possible to measure and report all feed consumed by poultry, as the hens will usually eat with the hogs or cattle, run to the wheat fields and other places, consuming feed which cannot be measured. A portion of this unmeasurable feed is that which would otherwise be wasted. A greater portion is stolen from other classes of livestock or from crop harvest. On the other hand the hen undoubtedly, in addition to consuming some feed that would otherwise be wasted, consumes many insects, etc. that would actually prove harmful without this constant check. Thus it is entirely possible that the hen makes up in these savings, what she steals from other farm animals. Very likely the farmer who has to keep poultry netting over his barn doors and windows to keep the hens out of the horse troughs would not quite agree with this statement. So that the 66 cents charge for feed probably does not quite represent the total feed consumption, but this is as complete as records have been able to make it.

Table 6 shows the variation in cost per year from 1912 to 1922. As would be expected, the period of high prices from 1917 to 1920 is also the period of high cost of feeding the farm poultry flock. Nineteen eighteen was the most expensive year followed by 1920, 1919, and 1917 in order. The lowest year, the farm hen was kept on less than 25 cents worth of feed, while in the highest year her feed cost was nearly \$1.20.

TABLE 6.—FEED COST OF KEEPING POULTRY  
(1912 to 1922.)

Year	Feed cost per hen	Variation from average %
1912	0.3928	58.9
1913	0.2460	37.1
1914	0.4738	71.4
1915	0.3952	59.6
1916	0.6259	94.4
1917	0.8661	130.8
1918	1.1966	180.5
1919	0.9572	144.4
1920	0.9743	146.9
1921	0.6047	91.2
1922	0.5670	85.5
Average	0.6636	

The proportion of the total feed cost made up of various feeds for the average year of this period is shown in Table 7. As might be expected, corn makes up nearly one-half of the total feed bill for the hen. Grain produced on the farm contributes 70 per cent of the feed fed. Mill feeds including bran, shorts, middlings, etc. amount to 15 per cent of the total feed cost. This is second in importance to corn. Oats is next in importance making up approximately one-tenth of the total ration. Wheat and protein feeds come next. Of the protein feeds, milk is of greatest importance. This is a farm product.

TABLE 7.—THE KINDS OF FEED FED THE FARM HEN  
(1912 to 1922)

Class of feed	Cost	Per cent of total cost
<b>Farm Grains</b>		
Corn	0.3275	49.3
Wheat	0.0577	8.8
Oats	0.0692	10.4
Other	0.0136	2.0
<b>Mill Feeds</b>	0.1033	15.6
Bran, Shorts		
<b>Proteins</b>	0.0576	8.7
Milk, Tankage, Meat Scraps, etc.		
<b>Green Feed</b>	0.0129	1.9
Pasture, Silage, etc.		
<b>Grit</b>	0.0057	0.9
<b>Unclassified Feeds</b>	0.0161	2.4
Total	0.6636	100.00

Slightly more than 5 of the 8.7 per cent which proteins make of the total cost was milk produced on the farm. It is safe to say that approximately 80 per

cent of the total feed cost is made up of farm-produced feeds. In connection with green feed listed in Table 7 it should be pointed out that a pasture charge was made only where special crops were planted for pasture for poultry. There is no doubt but that pasture from a nutrition standpoint makes up a great deal more than two per cent of the total ration of the farm hen. But for the most part no charge is made for this pasture as it is one of those feeds which would otherwise not be utilized. A few feeds were reported of such variable nature that they were difficult to classify. These are given as unclassified feeds.

### CASH AND DISTRIBUTED COSTS

Cash and distributed costs are rather easy to dispose of in discussion, but are exceedingly tedious to study. These charges will be considered in this section.

TABLE 8.—MISCELLANEOUS COSTS OF KEEPING POULTRY 1912-22  
(Cash Expenses)

Year	Amount per hen	Per cent of total cost
1912	\$0.0548	7.0
1913	0.1387	20.1
1914	0.0794	8.0
1915	0.0420	5.7
1916	0.0823	7.3
1917	0.0704	5.4
1918	0.0731	4.3
1919	0.0287	2.1
1920	0.1489	7.5
1921	0.1338	11.5
1922	0.1171	10.7
Average	0.0881	7.5

**Cash Expenses.**—Cash expenses for the farm poultry flock represent only about 7 per cent of the total cost of maintaining the flock (Table 8). These costs are rather irregular by years and do not well admit of an analysis by months. They include such items as medicines, purchase of eggs for hatching, breeding stock, etc. General cash costs seem to be higher when other charges are lower. For instance, the years of low cash charges were 1917, 1918, and 1919. It will be recalled that these were years when feed and labor costs were high.

**Distributed Costs.**—Under distributed costs come the maintenance charge against poultry for their share of building and equipment maintenance, also their share of taxes and interest on investment in poultry and poultry equipment. Taxes and interest are distributed on the basis of the portion of total investment represented by the value of poultry and poultry equipment.

The building charge is computed by charging against poultry that per cent of the total building maintenance cost represented by the investment in poultry buildings as compared to the total building investment; also their portion of the investment in store rooms for feed is based on their relative food consumption and included in the building maintenance charge. The equipment charge involves first, the purchase and maintenance of special poultry equipment, and second, poultry's portion of the maintenance bill of the general farm equipment based on the amount of horse labor given directly

to the care of poultry. Needless to say, the first item under poultry equipment is of greatest importance. These distributed items are of about equal importance with the cash cost of maintaining the poultry flock (Table 9).

TABLE 9.—MISCELLANEOUS COSTS OF KEEPING POULTRY 1912-22  
(Distributed Charges)\*

Year	Amount per hen	Per cent of total cost
1912	\$0.0694	8.8
1913	0.0506	7.3
1914	0.1504	15.1
1915	0.0770	10.6
1916	0.1228	10.9
1917	0.0516	4.0
1918	0.0784	4.6
1919	0.0637	4.6
1920	0.1256	6.2
1921	0.0771	6.6
1922	0.1176	10.8
	\$0.0895	7.6

\*Distributed charges include the share of building, equipment, taxes, and interest on investment chargeable to poultry.

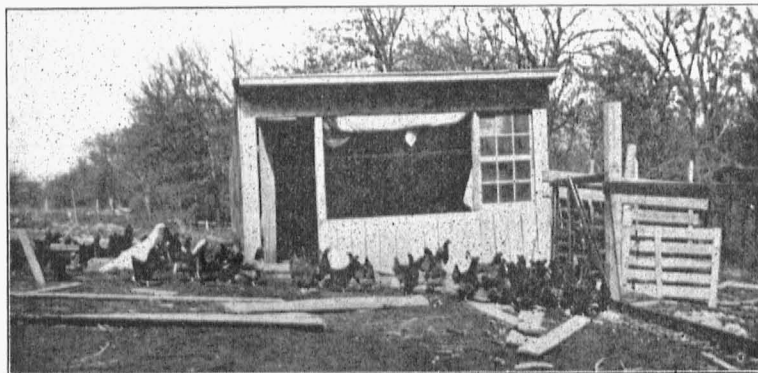


Fig. 2.—The poultry plant on one of the farms where records were kept in this investigation.

### SUMMARY OF COST OF KEEPING POULTRY FLOCK

The following is a summary by years of the total cost of keeping the farm poultry flock. A comparison of these tables numbered 10 to 20 inclusive will show the variation by years in the various items of expense.

In 1912 the feed cost made up exactly one-half of the total cost of keeping poultry. Man labor made up one-third the cost, while horse labor was of little importance. (Table 10).

In 1913 feed was less important than in 1912. Man labor was about the same while cash expenses were heavier that year. (Table 11).

TABLE 10.—THE COST OF THE 1912 POULTRY FLOCK.—TWO FARMS  
(Average size of flocks, 157.12 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2602	33.2
Horse Labor	0.0080	1.0
Cash Expense	0.0548	7.0
Feed	0.3928	50.0
Bldg. and Equipment	0.0275	3.5
Taxes and Interest	0.0419	5.3
Total	\$0.7852	100.0

TABLE 11.—THE COST OF THE 1913 POULTRY FLOCK.—SIX FARMS  
(Average size of flocks, 217.2 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2350	34.1
Horse Labor	0.0199	2.9
Cash Expense	0.1387	20.1
Feed	0.2460	35.6
Bldg. and Equipment	0.0305	4.4
Taxes and Interest	0.0201	2.9
Total	\$0.6902	100.0

TABLE 12.—THE COST OF THE 1914 POULTRY FLOCK.—FOURTEEN FARMS  
(Average size of flocks, 184.3 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2727	27.5
Horse Labor	0.0165	1.7
Cash Expense	0.0794	8.0
Feed	0.4738	47.7
Bldg. and Equipment	0.1136	11.4
Taxes and Interest	0.0368	3.7
Total	\$0.9928	100.0

TABLE 13.—THE 1915 POULTRY FLOCK.—NINETEEN FARMS  
(Average size of flocks, 224.7 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2071	28.3
Horse Labor	0.0099	1.4
Cash Expense	0.0420	5.7
Feed	0.3952	54.0
Bldg. and Equipment	0.0450	6.2
Taxes and Interest	0.0320	4.4
Total	\$0.7312	100.0

In 1914 the feed cost was about as important as in 1912. Man labor cost was of less importance, while the building charge was heavy. (Table 12).

In 1915 only two items stand out in importance, namely, man labor and feed. The distributed costs were heavier than the average, while man labor was much below the average. (Table 13)

In 1916 the feed cost grows in importance, while other charges shrink. Man labor is only one-fourth of the total cost, while feed is close to the average in importance. (Table 14).

In 1917 feed is of more than average importance. Man labor is considerably less than average. The building and equipment charge is especially low, while horse labor and cash expenses are about average. (Table 15).

In 1918 the feed cost is nearly 30 per cent above the average. The labor cost is considerably below average. Distributed costs are still low. (Table 16).

TABLE 14.—THE 1916 POULTRY FLOCK.—TWELVE FARMS.  
(Average size of flocks, 191.7 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2865	25.4
Horse Labor	0.0128	1.1
Cash Expense	0.0823	7.3
Feed	0.6259	55.3
Bldg. and Equipment	0.0914	8.1
Taxes and Interest	0.0314	2.8
Total	\$1.1303	100.0

TABLE 15.—THE 1917 POULTRY FLOCK.—FOURTEEN FARMS  
(Average Size of flocks 209. hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.3002	23.1
Horse Labor	0.0110	.8
Cash Expenses	0.0704	5.4
Feed	0.8661	66.7
Bldg. and Equipment	0.0179	1.4
Taxes and Interest	0.0337	2.6
Total	\$1.2993	100.0

TABLE 16.—THE 1918 POULTRY FLOCK.—EIGHT FARMS  
(Average size of flocks, 212.7 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.3437	20.1
Horse Labor	0.0129	0.8
Cash Expenses	0.0731	4.3
Feed	1.1966	70.2
Bldg. and Equipment	0.0324	1.9
Taxes and Interest	0.0460	2.7
Total	\$1.7047	100.0

In 1919 the feed charge is about of equal importance with 1918, the labor charge a little higher, and other charges still below the average. (Table 17).

In 1920 there is a sharp return of feed cost to slightly below the average. Man labor cost is considerably above the average, the other charges about normal. (Table 18).

In 1921 feed and man labor are about average, while cash expenses are high. (Table 19).

TABLE 17.—THE 1919 POULTRY FLOCK.—EIGHT FARMS  
(Average size of flocks, 252.4 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.3268	23.7
Horse Labor	0.0012	0.1
Cash Expenses	0.0287	2.1
Feed	0.9572	69.5
Bldg. and Equipment	0.0274	2.0
Taxes and Interest	0.0363	2.6
Total	\$1.3776	100.0

TABLE 18.—THE 1920 POULTRY FLOCK.—NINE FARMS  
(Average size of flocks, 166.1 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.7385	37.0
Horse Labor	0.0109	0.5
Cash Expenses	0.1489	7.5
Feed	0.9743	48.8
Bldg. and Equipment	0.0628	3.1
Taxes and Interest	0.0628	3.1
Total	\$1.9982	100.0

TABLE 19.—THE 1921 POULTRY FLOCK.—SIX FARMS  
(Average size of flocks, 238.6 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.3350	28.9
Horse Labor	0.0091	0.8
Cash Expenses	0.1338	11.5
Feed	0.6047	52.2
Bldg. and Equipment	0.0197	1.7
Taxes and Interest	0.0574	4.9
Total	\$1.1597	100.0

In 1922 the record for 1921 is about duplicated, except that the distributed costs are again high. (Table 20). There is an indication in 1921 and 1922 that farmers are repairing their poultry plant to make up for previous years in which they spent little money in maintaining their farm improvements.



TABLE 20.—THE 1922 POULTRY FLOCK.—SEVENTEEN FARMS  
(Average size of flocks, 282.1 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.2839	26.0
Horse Labor	0.0073	0.7
Cash Expenses	0.1171	10.7
Feed	0.5670	51.8
Bldg. and Equipment	0.0500	4.6
Taxes and Interest	0.0676	6.2
Total	\$1.0929	100.0

TABLE 21.—THE 1912-22 POULTRY FLOCK.—TOTAL OF 115 FARMS  
(Average size of flocks, 207.8 hens.)

Expense items	Per hen	Per cent of total
Man Labor	\$0.3263	27.7
Horse Labor	0.0109	0.9
Cash Expenses	0.0881	7.5
Feed	0.6636	56.3
Bldg. and Equipment	0.0471	4.0
Taxes and Interest	0.0424	3.6
Total	\$1.1784	100.0

Table 21 gives the average expenses of the poultry flock for labor, cash, feed, and distributed items for the entire eleven-year period. This is of special interest in connection with the tables preceding.

### INCOME FROM THE FARM POULTRY FLOCK

In studying the farm poultry flock, an important phase is the matter of income. When it comes to getting records of income from poultry, this also has its difficulties. It is fairly easy to secure a record of sales. It is even easier to get satisfactory inventories. An important source of income which is not so easy to measure is that of eggs and chickens used for food in the farm home. The cooperators of the Experiment Station have made a splendid effort to report these facts carefully. With all of this effort, certain years have not yielded satisfactory records. These years are 1912, 1916, 1919, 1920, and 1921. For the other years very good data have been secured.

**Income From Sales.**—The income from the sale of eggs and poultry is shown in Table 22. The largest returns per hen in the eleven years covered by this report is shown in 1920. The next highest was 1918, followed by 1917, 1921, and 1919 in order. These are for the most part the years of high prices for poultry products. The average sales per hen for the eleven years was \$1.32.

**Products Used in Home.**—As is indicated at the beginning of this section some years did not yield records giving a complete report on the value of poultry products used in the home. Good records were available for six out of eleven years. These figures are also given in Table 22. It should be noted from these six years that there is a very marked regularity in the value, per hen, of products used in the home. For instance, in 1913 and 1914 the

value was 24 and 27 cents respectively. This it will be recalled was a period of relatively low prices. In 1917 and 1918 the amounts used per hen were 23 and 25 cents respectively. This was a period of high prices. These figures mean that as prices rise, the amount of products used in the home decreases.

TABLE 22.—INCOME FROM HENS (PER HEN)  
(1912 to 1922.)

Year	Sales, dollars	Used, dollars	Misc. † dollars	Total, dollars
1912	0.9068	*0.2499	-0.2243	0.9324
1913	0.7169	0.2446	0.1658	1.1273
1914	0.9499	0.3771	0.1779	1.5049
1915	0.8300	0.1428	0.0131	0.9859
1916	0.6703	*0.2499	*0.0960	1.0162
1917	1.2217	0.2356	0.3279	1.7852
1918	2.2588	*0.2529	-0.0051	2.5066
1919	1.7193	*0.2499	*0.0960	2.0652
1920	2.3574	*0.2499	*0.0960	2.7031
1921	1.9820	0.2499	0.2205	2.4524
1922	0.9090	0.2463	0.0926	1.2479
Average	1.3202	0.2499	0.0960	1.6661

\*No report was given on values used or miscellaneous for these years. The figure here used is the average of all years for which reports were made.

†Miscellaneous includes, manure credits, premiums, change of inventory value, etc.

This is the farmer's effort to economize and make poultry return as much as possible in the way of cash receipts. When prices are low, the farmer uses more products, as illustrated by the fact that the total value of products used is about the same. In Table 22, for the years for which no record was available, the average value per hen for those years when records were available is used in computing the total value of products produced. The value of the last-named figure depends on the reasonableness of the interpretation given above of the relation between prices and the amount of products used in the home. The authors believe that this is a fair interpretation. Whether this interpretation is accepted or not, it is still true that for the six years the average amount of products used was 25 cents per hen.

**Miscellaneous Income.**—The miscellaneous income figures include changes in inventory values from year to year, collections from fair premiums, credit for manure produced, etc. It should be stated that in the case of only three farms was credit given for manure produced, so that this item is a negligible one so far as these figures go. It should be noticed that in 1912 and 1918 this miscellaneous income item is a negative quantity. This is because there was a rather large decrease in inventory value. The average poultry credit from miscellaneous sources was approximately 10 cents.

The last column of Table 22 gives a summary of all sources of income from the poultry flock for each year of the period studied. The largest income was realized in 1920, when the hen returned \$2.70. This year was followed in order by 1918, 1921, and 1919. The lowest income years were 1912, 1913, 1916 in order. The average income per hen was \$1.66.

**SUMMARY OF COST AND INCOME**

Table No. 23 gives a summary comparison of costs and income for each of the years studied, together with the gain or loss for those years. The most prosperous year for the farm hen on these cooperative farms in the last eleven years was 1921, when she made a profit two and one-half times above the average. In only one year did she show a loss. In 1916 she shows a loss of eleven cents for the year. She paid in returns above cost of keeping nearly 50 cents per year, as an average for the eleven years. This is a fine percentage on the cost of keeping. It amounts to a little more than 41 per cent on the cost. If all farm enterprises could do this well, little complaint would be heard.

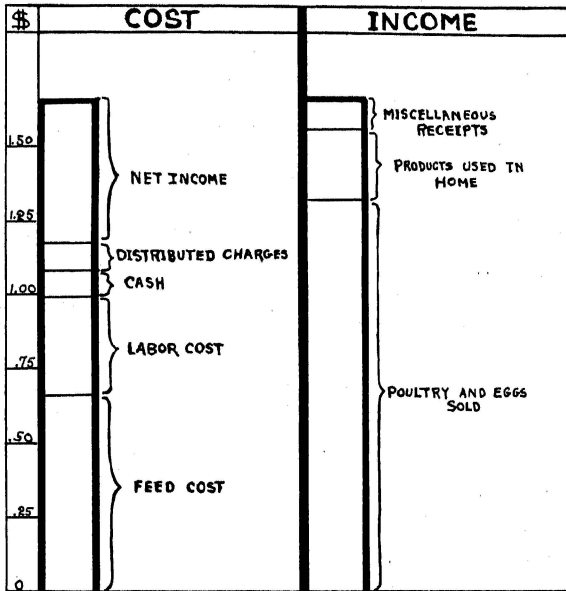


Fig. 3.—Average cost and income of the farm hen from 1912 to 1922, inclusive.

TABLE 23.—COST AND INCOME PER YEAR FROM POULTRY (PER HEN) (1912 to 1922.)

Year	Total cost	Total income	Gain or loss
1912	\$0.7852	\$0.9324	\$0.1472
1913	0.6902	1.1273	0.4371
1914	0.9928	1.5049	0.5121
1915	0.7312	0.9859	0.2547
1916	1.1303	1.0162	0.1141
1917	1.2993	1.7852	0.4859
1918	1.7047	2.5066	0.8019
1919	1.3776	2.0652	0.6876
1920	1.9982	2.7031	0.7049
1921	1.1597	2.4524	1.2927
1922	1.0929	1.2479	0.1550
Average	\$1.1784	\$1.6661	\$0.4877

## INFLUENCE OF SIZE OF FLOCK ON COST AND INCOME

The magnitude of a business usually has a rather definite influence on the outcome of that business. It has long been a recognized principle of farm management that there is a definite relation between size of enterprise and the profitableness of that enterprise. In this study it has been possible to make some comparison along this line. The first comparison has to do with the effect of size of flock on cost of keeping poultry.

**The Effect of Size of Flock on Cost Per Hen.**—Table No. 24 gives a comparison of costs on poultry flocks of different size. The farms are divided

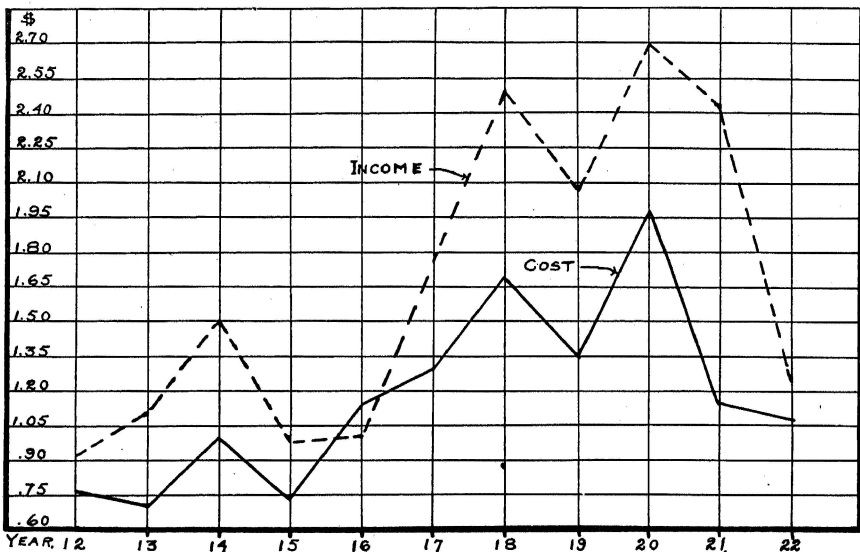


Fig. 4.—Cost and income per hen by years: 1912 to 1922 inclusive.

TABLE 24.—INFLUENCE OF SIZE OF FLOCK ON COST PER HEN

Item	Group 1 (17 farms) Under 100 hens	Group 2 (34 farms) 100-199 hens	Group 3 (23 farms) 200-299 hens	Group 4 (23 farms) 300 or more
<b>Man Labor</b>				
Hours	2.5741	1.9350	1.9583	1.5567
Cost	\$0.4336	\$0.3427	\$0.2395	\$0.2866
<b>Horse Labor</b>				
Hours	0.1551	0.1200	0.0960	0.1100
Cost	\$0.0231	\$0.0118	\$0.0098	\$0.1020
<b>Cash Expenses</b>	\$0.1176	\$0.0989	\$0.0612	\$0.0988
<b>Feed</b>	0.5604	0.5585	0.5898	0.6837
<b>Bldg. &amp; Equipment</b>	0.0594	0.0441	0.0238	0.0318
<b>Taxes &amp; Interest</b>	0.0660	0.0572	0.0453	0.0409
<b>Total cost per hen</b>	<b>\$1.2601</b>	<b>1.1132</b>	<b>0.9694</b>	<b>1.2438</b>

into four groups, Group 1 having less than 100 hens. The other three groups have the following numbers: Group 2, flocks of 100-199 hens, Group 3, flocks of 200-299 hens, and Group 4, flocks of 300 or more. Seventeen farms fall in the first group, thirty-four in the second group, and twenty-three in each of the last two groups.

In studying the details of cost it should be noted first that the smallest and the largest flocks agree almost exactly in total cost, but in the detailed items entering into that cost there is a distinct difference. The labor requirements of the small flock are much greater than for the large one, while the feed cost per hen for the large flock is considerably greater. What the small flock loses in labor expenses it gains in feed saving. As may be expected, the distributed costs are greater with the small flock. More horse labor is used with the large flock, thus making up for the greater expense in building, equipment, taxes, and other charges on the small flock. Group 1 rather clearly represents the flock kept on the farm for the purpose of contributing food toward the family living and not primarily for selling poultry products. The large size of flocks in Group 4 indicates just as clearly an effort to commercialize the poultry business on these diversified farms. The larger feed cost is attributed to the fact that poultry has moved from the scavenger class on to a plane comparable to that occupied by hogs, cattle, etc. In other words, greater care is given to preparing feed and feeding poultry in these larger flocks. In the smallest flocks the poultry evidently have to "rustle" for much of their ration. Group 2 is a more common situation than Group 1, there being twice as many farms represented. This group is kept in about the same manner as Group 1, namely, without any special effort being made to make them a commercial flock. Merely enlarging the number of hens kept, but using the same tactics in keeping them, has resulted in a lowering of the cost of keeping. The feed cost per hen is almost exactly the same. The labor cost is reduced about as one would expect in the case of the larger flock. The distributed costs have been affected in the same way as the labor cost, being slightly reduced when compared with Group 1, this reduction being due to increasing the number of hens without providing special equipment.

Group 3 appears to be a transition group. Judged by the cost figures in Table 24, an effort has been made to keep these hens in the same way that those in Groups 1 and 2 are kept. So that the cost of keep per hen is reduced from Group 1 to Group 3. They did not succeed in reducing the labor cost in hours, but evidently used a little cheaper labor as the labor charge is not so great. The feed charge is practically the same, while the distributed costs are proportionately lower. The interesting development in this direction is better illustrated when the next comparison is considered.

**Influence of Size of Flock on Income Per Hen.**—Table 25 shows the receipts from each of the above mentioned groups, and also the difference between cost and income. Comparing Groups 1 and 2 the advantage of having the slightly larger flock is apparent. The income per hen was 20 per cent more in Group 2, while it will be recalled from Table 24 that the cost per hen was considerably less. The net result is three times the profit per hen in the 100 to 200-hen flock as compared to the hens in Group 1. From the standpoint of income, Group 3 illustrates the undesirability of increasing the flock too much without changing the basic method of production. In other words, in numbers

this group has come into the commercial class while in management they are still within the "home use" class. It should be remembered that the cost was relatively lower because of home-use practices, but it should also be observed that the income is equally low and unsatisfactory because of these same methods. On these farms the transition is apparently one-sided. They have enlarged in number more rapidly than in their methods.

TABLE 25.—INFLUENCE OF SIZE OF FLOCK ON INCOME PER HEN

Item	Group 1 (17 farms) Under 100 hens	Group 2 (34 farms) 100-199 hens	Group 3 (25 farms) 200-299 hens	Group 4 (23 farms) 300 or more
Stock and eggs sold	\$1.0309	1.2407	0.6096	1.3615
Used in Home	0.6197	0.4044	0.2403	0.1390
Other income change in inv. etc.	-0.1362	0.1750	0.1673	0.2600
Gross income per hen	\$1.5144	\$1.8191	\$1.0172	\$1.7605
Cost per hen from table 24.	1.2601	1.1132	0.9694	1.2438
Net income per hen	\$0.2543	\$0.7059	\$0.0478	\$0.5167

Group 4 has made the necessary adjustment in both directions, namely, in numbers and in methods. The cost as shown by Table 24 was about equal to the cost of the smallest flocks. The income is one-sixth more than for the smallest flocks, giving a net result of 50 per cent increase in net profit.

Attention is directed to the trend of the figures showing the amount of poultry products used in the home. This series of figures is in descending order. This does not mean that with a larger flock the farm used less poultry products, but does mean that it uses less per hen as the flock increases. In other words the amount used per hen is in inverse proportion to the size of the flock.

These tables indicate rather definitely that the methods which work satisfactorily on a flock of under 200 hens will not be profitable on larger flocks. This is a principle which has long been recognized in many other lines of endeavor.

The foregoing study indicates that when all costs are considered, it will require a rather large flock of poultry to justify a farmer giving any considerable amount of time to them. The hand labor requirement is relatively large. Assuming that costs and income per hen can be maintained on the scale shown in this study it would require nearly two thousand hens to keep a man employed full time and return for management \$1000 above hired man's wages. Here again one encounters the competition furnished by the poultry products from farms where no special attention is given to poultry, but where enough poultry products are marketed to determine largely the market price. The farmer who gives more attention to poultry must meet this competition with more efficient hens and methods. With all the agitation and propaganda that is now being circulated, there is the very grave danger that the farmer who emphasizes the poultry enterprise will face a more or less marked over production, because of the general increase in size of flock on the type of farm represented by Groups 1 and 2 in Tables 24 and 25.

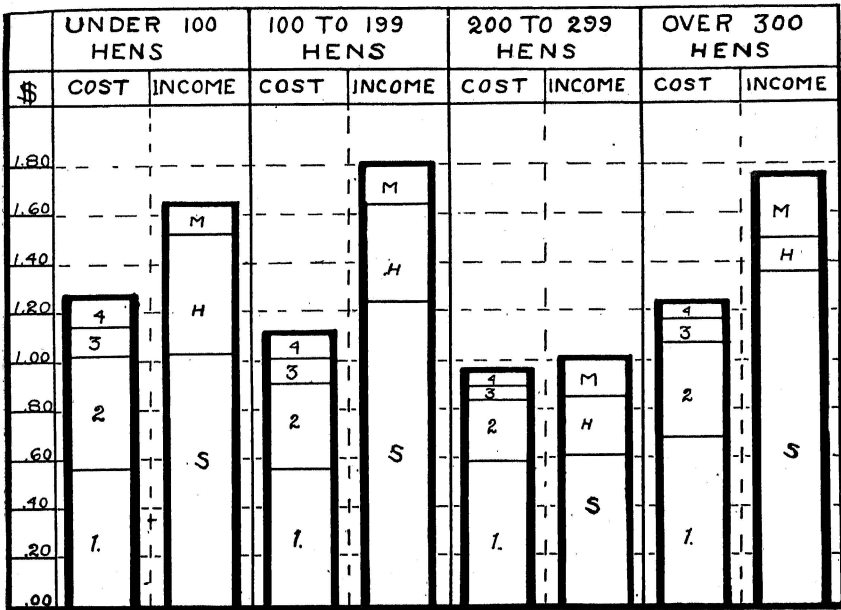


Fig. 5.—A comparison of cost and income of different sized flocks of poultry. The sections numbered 1 in each column represents feed cost, No. 2 labor cost, No. 3 cash expenses, No. 4 distributed charges. In the income column "S" represents cash sales, "H" represents value of poultry products used in the home, and "M" represents miscellaneous income. In the first group the miscellaneous income account shows a loss because of decreased inventory values so that the net income is represented by total height of column less the space marked "M".

### SUMMARY

1. In this study covering eleven years it required 1.71 man hours and 0.11 horse hours of labor to care for the average farm hen one-year.
2. The heaviest man-labor requirement was in March, April, and May, and the most horse labor was used in December, January, February, and March.
3. The cost of feed for poultry was heaviest in February with January, and December next in importance. It costs an average of 66 cents per hen per year to feed poultry.
4. In importance, corn leads in the poultry ration, followed by mill feed, oats and wheat in order. Corn made up 49.3 per cent of the total feed cost.
5. Cash expenses amounted to 7 ½ per cent of the total cost, and distributed charges (building, equipment, taxes, and interest) made up 7.6 per cent of the total.
6. The average cost of keeping poultry for the eleven years was \$1.178. This was divided as follows: labor 28.6%, feed 56.3%, cash 7.5%, and distributed costs 7.6%.
7. The total income from poultry was \$1.666 per hen, realized from the following sources: Sales of poultry, and eggs \$1.32; products used \$.25; miscellaneous income \$0.096.

8. The average hen returned \$0.4877 in income above cost of keep. The most successful year was 1921 with a margin of \$1.29 and the least successful was 1916 with a loss of \$0.114 per hen.

9. When flocks were compared on the basis of size, it was found that the total cost of keep decreased from 100 to 300 hens. The flocks larger than 300 cost as much as the smallest flocks.

10. The change in cost was in items other than feed in those flocks of under 300 hens, the feed cost being fairly constant. The feed bill was greater on the large flocks.

11. Labor cost decreased regularly up to Group 4. It was slightly higher in Group 4 than in Group 3. Cash and distributed costs acted in exactly the same manner.

12. The total income was larger in Groups 2 and 4 followed by Groups 1 and 3 in order. Net incomes were in the same order.