



145  
014  
THS

COST OF RAISING PULLETS ON  
REPRESENTATIVE MICHIGAN FARMS

Thesis for the Degree of M. S.

MICHIGAN STATE COLLEGE

Carl Charles Hoyt

1955

This is to certify that the  
thesis entitled  
Cost of Raising Pullets on Representative  
Michigan Farms.

presented by  
Carl Charles Hoyt

has been accepted towards fulfillment  
of the requirements for

MS degree in Poultry

L. E. Dawson *L. E. Dawson*  
Major professor

Date March 29, 1955

COST OF RAISING FULLETS ON REPRESENTATIVE MICHIGAN FARMS

By

Carl Charles Hoyt

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan  
State College of Agriculture and Applied Science  
in partial fulfillment of the requirements  
for the degree of

MASTER OF SCIENCE

Department of Poultry Husbandry

Year

1955

Approved

L. E. Dawson

The poultry enterprise both in Michigan and the United States is a major source of farm income. Michigan farmers received a gross income of over ninety-four and one-half million dollars from poultry and poultry products in 1953. Returns from the laying hen enterprise actually accounted for between 85 and 90 percent of this value. Approximately two-thirds of the birds in the laying flocks in Michigan in 1953 were pullets. Since no recent accurate records were available on the cost of rearing pullets to maturity it seemed desirable to undertake a study of this nature.

Seventy poultry producers were contacted by correspondence in regard to their willingness to cooperate in a pullet cost study. Seven farms were selected. The operators on these farms kept complete records on the cost of rearing pullet flocks to maturity.

A personal farm visit was made with each cooperator to explain an approved method of keeping records and a later visit was made to assist him with any subsequent problems. The personal visits were supplemented by letters of instruction to each farmer-producer.

Four thousand one hundred twelve chicks were started on these farms in 1954. Three thousand three hundred and thirty seven were housed as pullets. The difference



represents losses due to culling and mortality. The average mortality was 12.8 percent but varied between farms from 1.9 to 46.3 percent.

Feed consumption varied from 25.0 to 45.9 pounds per pullet raised. Feed cost ranged from \$.95 to \$2.16 per pullet. The average feed expenditures on these farms represented 46.4 percent of the pullet cost.

A close correlation between flock size and the cost of producing pullets was found. On the farms studied, the flock size ranged from 70 to 1709 pullets. Although the largest flock was reared by a man with considerable experience, it was noted that such items as labor and overhead per pullet were considerably lower on this farm.

The net cost per pullet housed varied from \$1.89 to \$4.06. This variation was due largely to mortality and a variation in total feed cost. Both management and environment affected these items considerably. Mortality on Michigan farms should and could be reduced considerably through the use of recommended practices. The variation in feed consumption undoubtedly represents not only the difference in pullet ability to utilize feed efficiently but also the difference in feed wastage.

**COST OF RAISING PULLETS ON REPRESENTATIVE MICHIGAN FARMS**

**By**

**Carl Charles Hoyt**

**A THESIS**

**Submitted to the School of Graduate Studies of Michigan  
State College of Agriculture and Applied Science  
in partial fulfillment of the requirements  
for the degree of**

**MASTER OF SCIENCE**

**Department of Poultry Husbandry**

**Year 1955**



g

## ACKNOWLEDGEMENT

The author wishes to express his appreciation to Mrs. Wilbur Achenbach, Mr. Jack Auringer, Mr. Harry Burns, Mr. Darrell Fuller, Mr. William Gunningham and Mr. James Lightfoot for their willingness to cooperate by keeping accurate poultry account records and making these records available for this study. Also a special thanks to those men who were willing to cooperate with the record keeping but were called into the Armed Forces.

The author also wishes to thank Dr. L. E. Dawson, Dr. H. C. Zindel, Professor J. M. Moore and Professor J. A. Davidson from the Department of Poultry Husbandry, for their guidance, assistance and cooperation in making this work possible.

## TABLE OF CONTENTS

	Page
I. INTRODUCTION . . . . .	1
II. LITERATURE REVIEW . . . . .	4
III. PURPOSE . . . . .	17
IV. PROCEDURE . . . . .	18
V. RESULTS AND DISCUSSION . . . . .	22
VI. SUMMARY . . . . .	42
VII. BIBLIOGRAPHY . . . . .	43
VIII. APPENDIX . . . . .	45

# LIST OF TABLES

TABLE	Page
I. Cost of rearing pullets to maturity, Farm No. 1	23
II. Cost of rearing pullets to maturity, Farm No. 2	25
III. Cost of rearing pullets to maturity, Farm No. 3	26
IV. Cost of rearing pullets to maturity, Farm No. 4	28
V. Cost of rearing pullets to maturity, Farm No. 5	30
VI. Cost of rearing pullets to maturity, Farm No. 6	31
VII. Cost of rearing pullets to maturity, Farm No. 7	32
VIII. Expense, Income, and Net cost in rearing pullets to twenty-four weeks of age, seven Michigan farms, 1954	34
IX. Influence of mortality on pullet cost, 7 Michigan farms, 1954	37
X. The influence of breed and sex on pullet cost, 7 Michigan farms, 1954	39



## LIST OF FIGURES

FIGURE	Page
1. Location of farms where records were kept . . . .	21
2. Relationship between pounds of feed consumed and total cost per pullet (pounds of feed per pullet raised), 7 Michigan farms, 1954 . . . . .	36
3. Average pullet cost, 7 Michigan farms, 1954 , . . .	41

## INTRODUCTION

The poultry industry in the United States has grown to the place where it is a major source of farm income. According to Butler (1954) farmers received a gross income of more than four billion dollars from poultry and poultry products in 1953. Poultry ranked third of all agricultural industries in value of products produced and was surpassed only by returns from dairy products and meat animals.

Michigan has kept pace with the nation in poultry production. In 1953 Michigan farmers received a gross income of over ninety-four and one-half million dollars from the sale of poultry and poultry products. As a source of farm income poultry was surpassed only by dairy products and meat animals (Borum 1954). Of this total gross income, eggs contributed over two-thirds and chickens (other than broilers) accounted for another one-fifth. Thus, according to the Michigan statistics, returns from the egg production enterprise actually accounted for between 85 and 90 percent of the total poultry income in Michigan.

Since 1940 poultry production has increased more rapidly than any other comparable group of farm commodities. This increased production was encouraged by war-time requirements and resulting high prices, and was sustained by the adaptation

of new developments by poultrymen in nutrition, breeding, disease control, management and marketing. Due to these developments the total cost of production per unit increased less than the increase in feed and other cost items would indicate (Agricultural Marketing Service, 1954).

In 1940 poultry was found on 78 percent of all Michigan farms. The percentage of farms with poultry decreased slightly to 75 percent in 1945 and to 67 percent in 1950 (U.S.D.A. Census, 1950). In the same period egg production per hen, based on hen-day average, increased from 168.7 eggs (average for 1943-52 period), to 185.5 eggs in 1952 and 186.3 eggs in 1953 (Borum 1954). There has also been an upward trend in numbers of layers per flock on Michigan farms. The average farm flock in 1950 was more than 17 percent larger than in 1940 (Census, 1950).

The poultry business in Michigan, as in other states, fluctuates in relatively short cycles. This is due to the short period of time required to get into production with a poultry flock when the cost-price relationship (egg-feed ratio) appears favorable and the ease of disposing of birds when prices decline. Some poultrymen have found it advisable to decrease or eliminate their poultry enterprise while others have continued to produce and some have expanded their volume of production. Management practices which either reduce the cost of production or increase sales have considerable effect on these decisions.

Michigan farmers must decide whether or not to replace a majority of hens in their laying flocks each year. Sixty-four percent of the total number of hens on farms January 1, 1954, were classed as pullets and 30 percent as hens (Kimball, Smith and Moore, 1954). The remaining six percent were not classified.

It was felt that a study of the factors affecting costs of replacing poultry flocks would be timely since economic conditions have changed greatly during the past few years.

## LITERATURE REVIEW

Studies have been carried on in different parts of the United States to determine the cost of raising pullets as replacements for the laying flock. However, many factors influence production costs in different geographical locations and under varying economic conditions.

Wright (1938) analyzed the poultry records from 316 Michigan farm flocks. During a five year period (1932-1937), the costs of raising 210,000 pullets varied between individual farms. Some of the major variations were due to (1) feeding efficiency, (2) death loss or mortality, (3) cost of baby chicks, (4) breed, (5) hatching date, and (6) number of chicks raised.

### Feeding Costs

One of the largest cost items in producing pullets is feed. Wright (1938) found that feed costs averaged 47 percent of the total cost of producing pullets on Michigan farms. The number of pounds of feed used to raise a three and one-half pound pullet varied from 13.3 pounds on the more efficient farms to 22.4 pounds on the less efficient farms. It was also reported by Oberholtzer (1943) that feed cost per chicken was the most important cost item on poultry

farms in North Central Indiana. He found that feed comprised 47.7 percent of the total cost of raising pullets. This percentage varied from 45 for sexed pullets to 49 for straight run pullets.

In a study of records from general farm flocks and semi-commercial farm flocks in Illinois, Wilcox and Card (1942) reported that 28 pounds of feed were required to produce a pullet and during the six year period an average of 49.5 percent of the total pullet cost was feed.

In a study of cost records from poultry farms in Central Indiana, Johnson, Robertson and Sicer (1948) attributed 47.8 percent of the total cost of raising pullets to feed. It was reported by Pickler (1950) that feed consumption of pullets on poultry farms in New York was almost the same in 1941 as it was in 1947. He concluded that the feed cost for raising pullets can be predetermined if the cost per hundred pounds of feed is known. Feed expenditures comprised 50.7 percent of the total costs in 1947.

Keperling (1954) found that 20.34 pounds of feed per pullet were required to raise 2000 Single Comb White Leghorns to maturity in Pennsylvania. According to Maxton (1936) feed was also found to be the largest single item of expense. His study included records from 157 Virginia farms with an average of 569 pullets per farm. Feed accounted for 64 percent of the total cost in 1931. In 1932, however, the records from 207 farms (463 pullets per farm) showed that feed accounted for only 53 percent of the total cost.



Sicer and Wilhelm (1942) found that feed contributed 74 percent of the total cost of raising "light breed",<sup>1</sup> pullets on Indiana farms in 1941-42 and 85 percent of the cost of producing "heavy breed" pullets. No labor charge was made against the bird, however, which accounts for this high percentage.

The average feed cost to produce pullets from thirty-three cooperators in the New York Random Sample Test was 56 percent of the total cost of producing the pullets (King 1955). The average consumption of feed was 38 pounds to produce a pullet. The number of pounds of feed consumed varied from 32.9 pounds for the most efficient White Leghorn pullets, to 46.6 pounds of feed per pullet for the least efficient New Hampshires.

These results indicate that feed cost is definitely a major expense item in producing pullets. Feed cost as a percentage of total cost varies from 47 to 85 percent.

### Mortality

The number of pullets raised from each one hundred chicks started affects both feed consumption and total pullet cost.

---

<sup>1</sup> "Light breed" in this paper will refer to Leghorns, Minorcas and any of the light weight hybrid chickens. "Heavy breed" will refer to Plymouth Rock, Rhode Island Reds, New Hampshires and any others which commonly reach a weight of five and one-half to six pounds at maturity.

Wright (1938) reported a range in mortality from 0 to 40 percent, with an average mortality of 15 percent in Michigan farm flocks. Although no definite reasons for these differences in death loss were shown by the data compiled, one reason suggested by the author was that the floor space provided for each one hundred chicks started was larger in those flocks which had the lower mortality.

A mortality of 13 percent in sexed Leghorns, 10 percent in sexed heavy breeds and 23 percent in straight run heavy breeds was reported by Pickler (1950) on New York farms. His records showed an average mortality of 14 percent. In Indiana, Sicer and Wilhelm (1942) reported a mortality of 27 percent in light breeds but only 16 percent in heavy breeds.

Maxton (1936) did not report mortality to be one of the factors affecting variations in pullet costs on Virginia poultry farms.

Records from Iowa demonstration flocks showed an average mortality for sexed chicks of 14.8 percent and for straight run chicks 13.0 percent (Whitfield 1951).

Records from 182 Indiana farms (101 straight run and 60 sexed flocks) showed an average mortality of only 12.4 percent over a three year period (Oberholtzer 1943). This average was the same for both straight run and sexed flocks.

Johnson, Robertson and Sicer (1948) reported that mortality was about the same for large as for small flocks on

Central Indiana farms. They found that flock mortality was reduced nearly one-half from 1942 to 1946. This decrease in mortality from an average of 14 percent in 1942 to 8 percent in 1946 was attributed to a combination of factors. The major factors reported were (1) an increase in use of better sanitation practices, (2) better quality chicks purchased, and (3) better feeding programs followed.

In a summary of records kept by Indiana poultrymen, Sicer (1947) reported a range in mortality in Leghorn flocks from 8.6 to 21.4 percent. Mortality in heavy breeds varied slightly between flocks in the upper one-third on the basis of efficiency and lower one-third on the same basis. The mortality was 36 percent and 35 percent respectively. Efficiency was based on the cost of producing pullets to maturity.

Wilcox and Card (1942) did not report mortality as one of the factors affecting pullet costs. However, they did find that a 10 percent increase in mortality over the six year period of the study increased the cost of producing a dozen eggs by 2.5 cents per dozen. It is assumed that this included pullet mortality as well as mortality during the laying year. King (1955) reported that mortality ranged from 0 to 19 percent in the New York Random Sample Test.

From these studies it can be concluded that mortality has a very definite influence on pullet cost. Mortality ranging from 0 to 40 percent indicates the need for adopting

practices which will help to curb the death loss. Good management practices call for adequate floor space, effective sanitation, good feeding programs and the purchase of well bred chicks.

### Cost of Chicks

One of the direct costs in producing pullets is the cost of baby chicks.

Wright (1938) reported that chick cost averaged 21 percent of the total cost of producing pullets on Michigan farms and was second to feed in importance. He found that those producers who purchased medium priced chicks had a medium cost pullet, and received more profit than did either those who purchased low priced chicks or high priced chicks.

In the New York Random Sample Test, King (1955) reported a range in chick cost from 29 cents per chick for New Hampshires to 60 cents per chick for "Hybrid"<sup>1</sup> chicks.

Sicer (1947) reported a chick cost of 26.7 cents for the more efficient light breeds and 29.8 cents for the less efficient light breeds on Indiana poultry farms. The cost of heavy breed chicks varied between 14.9 cents and 17.7 cents per chick. Efficiency in this study was based on pullet costs at maturity.

---

<sup>1</sup> "Hybrid" will be used in this paper to designate any of the so-called hybrid strains.

Differences in chick cost between farms reporting were not listed by Johnson, Robertson and Sicer (1948) on Central Indiana farms. They did report, however, an average chick cost of 13 cents per chick in 1942 and 18 cents per chick in 1946.

Wilcox and Card (1942) did not report chick cost as having a significant influence on the cost of raising pullets.

The total cost per hundred for sexed pullets was found to be \$18.03 more than for straight run chicks on Indiana farms (Oberholtzer 1943). He found, however, that the labor return per hour for both groups was about equal.

Chick cost ranged from 40 cents per chick for sexed flocks to 21 cents per chick for straight run chicks in Iowa (Whitfield 1951). He concluded that it is profitable to buy straight run chicks if a special market for cockerels can be found and they are sold at an early age.

Summarizing poultry records from Indiana farms, Sicer and Wilhelm (1942) reported that light breeds cost 13 cents per chick and heavy breeds 11.5 cents per chick.

Pickler (1950) did not report chick cost as being an important factor in affecting pullet costs.

A wide variety of prices are paid by poultrymen for day-old chicks. From these reports it may be concluded that chick cost is important in determining the cost of rearing pullets. Straight run chicks are usually lower priced and offer some advantages if there is a market for the cockerels

at an early age. In general, there appeared to be little correlation between price paid per pullet chick and total rearing cost.

### Breed

The cost of raising pullets to maturity varies between light breeds and heavy breeds for two reasons. Light breed chicks are more commonly purchased as sexed pullets than are heavy breed chicks and this affects chick cost. Light breeds also weigh less at maturity and reach sexual maturity at an earlier age than do heavy breeds and consequently require less feed for their growth.

Wright (1938) found that the cost of producing light breeds on Michigan farms was 17.6 cents per pound as compared to 16.0 cents per pound for heavy breeds. He reported that this difference was due largely to more efficient gains made by the heavy breed broilers. These broilers also sold for 5 cents more per pound than did the light breed broilers. This higher broiler income resulted in lower total costs for producing these pullets. In the New York Random Sample Tests, King (1955) reported differences in costs of rearing pullets between breeds. The total cost of production did not include a labor charge for rearing or a value for poultry products sold. It was based on the number of chicks started and not on those raised. The entries which had the highest pullet costs were an entry of New Hampshires which



had a total cost of \$3.76 per chick started and a "Hybrid" entry which had a total cost of \$3.40 per chick started. The entries which had the lowest costs were a White Leghorn entry with a total cost of \$2.73 per chick started and a second "Hybrid" entry which had a total cost of \$2.79 per chick started.

Reports from the Iowa demonstration flocks (1950-1951) did not indicate differences in rearing costs between breeds but did indicate considerable differences between breeds in the net income per hen per year during the first year of production. It was reported that Leghorns earned 5.7 percent interest on the investment, "Hybrids" 2.7 percent, White Rocks 1.8 percent, mixed or cross breeds .3 percent and New Hampshires a loss of 7.2 percent interest on the investment (Whitfield 1951).

Indiana poultry flock records (1946-1947) indicated that the cost per pullet ranged between \$1.06 for the most efficient light breeds and \$2.02 for the less efficient light breeds based on the total costs of production. With heavy breeds these differences ranged between \$0.59 and \$1.44 on the most efficient farms and the less efficient farms respectively (Sicer 1947).

Maxton (1936) found considerable variation in the cost of producing pullets on Virginia poultry farms but did not attribute this to breed differences.

In an effort to determine the differences in costs of producing pullets between heavy and light breeds in New

York, Pickler (1950) analyzed the records from 167 farms. He reported that the total cost of producing sexed light breed pullets averaged \$2.31 with a net pullet cost of \$2.27 while the cost of producing sexed heavy breed pullets averaged \$2.56 with a net cost of \$2.49. No records were reported on straight run light breeds but straight run heavy breeds were produced for a total cost of \$3.94 per pullet with a net cost of \$2.27 per pullet. On Indiana farms Sicer and Wilhelm (1942) found differences in rearing costs between light and heavy breeds. The average net cost for each light breed pullet was 69 cents and the average cost for each heavy breed pullet housed was 40.6 cents. Wilcox and Card (1942) did not report differences between breeds in cost studies of producing pullets on Illinois farms. Oberholtzer (1943) did not report breed differences as a significant factor in the costs of raising pullets to maturity on farms in North Central Indiana.

From these studies it can be concluded that there are considerable differences between the total cost of producing light breed and heavy breed pullets. Light breed pullets can be produced with less feed and at a lower total cost. However, the net pullet cost may be reversed between heavy breeds and light breeds if well bred straight run chicks are purchased and a good market is available for the cockerels at broiler age.

### Hatching Date

The hatching date can be expected to have some influence on the cost of raising pullets because of the differences in brooding costs during warm and cold seasons of the year.

In a study of records from poultry farms in Michigan Wright (1938) reported that the hatching date influenced several cost items in raising pullets to maturity. He found early hatched chicks were higher priced than those purchased later, more feed was consumed, mortality was slightly higher, and more labor was required to care for them. Although early hatched broilers brought a higher price per pound, the net cost of March hatched pullets was slightly higher than those hatched in April and considerably higher than those hatched in May. He concluded, however, that the purchase of late hatched chicks was not necessarily the most desirable plan because of cheaper costs, since late hatched chicks will come into production when there is a surplus of eggs and the price may be considerably lower. Whitfield (1951) reported the purchase of early chicks in Iowa as one of the key practices followed by those poultry cooperators who were the most successful.

After summarizing records from Indiana poultry farms, Sicer (1947) reported that purchasing chicks early enough to get 50 percent production by early September was one of the essential steps for successful poultry raising.

Although most of the studies have not included the hatching date as an important cost factor between poultry farms in raising pullets to maturity, it is very important as far as profit during the laying year is concerned. From these studies it can be concluded that early hatched pullets will cost slightly more to raise to maturity but this difference should be more than off-set by the advantage of selling eggs at a higher price.

#### Flock Size

It is generally conceded that an adequate volume or size of business is necessary if any business is to be successful. Although size alone does not insure efficiency in a poultry enterprise, the larger units should have a lower overhead and a lower labor cost per bird.

Wright (1938) reported that the main advantages of larger flocks, in Michigan, were better labor efficiency and lower building and equipment cost. The farmers with less than 400 chicks, (average flock size of 282 chicks) produced pullets for 64 cents each. Those farmers with between 401 and 800 chicks, (average of 535 chicks) produced pullets for 56 cents each and the larger flocks over 800 which averaged 1,376 chicks cost 58 cents per pullet. He concluded that the size of flock was actually not a very important factor in affecting the pullet cost.

Pickler (1950) reported that a particular advantage was gained with larger poultry flocks on New York farms when sexed pullets were raised. When farms with all sexed chicks were divided by breed and then into two groups, one with flocks of less than 800 pullets and the other with 800 or more pullets, every item of cost per pullet, except interest was less for the larger flocks. The amount of labor per pullet was about 50 percent less with the larger flocks and as a result the total cost was considerably less. The chick cost was slightly less and the amount of feed consumed and/or wasted per pullet was also less. As a result the feed cost was substantially lower. The net effect was that Leghorn pullets in large flocks cost 60 cents less per pullet to produce than those in small flocks. For heavy breeds the difference was 49 cents.

Flock size has not been considered of major importance in influencing the cost of raising pullets in most of the studies. However, the results from the Michigan and New York studies do indicate that there are certain efficiencies to be gained by maintaining larger flocks.

## PURPOSE

The purpose of this study was to determine the cost of raising pullets on representative Michigan farms and to evaluate the factors affecting those costs.

This study could give farmer-producers some assistance in planning their poultry enterprises and making the necessary adjustments. In addition, such records would offer invaluable help to young people, or anyone, who wanted to get started in the poultry business.



## PROCEDURE

Since a uniform method of reporting poultry production costs and returns was not being followed by Michigan poultrymen, two problems were apparent. What records should be secured and from whom should they be obtained? A simple yet satisfactory record form was necessary which would include the necessary costs and returns with a minimum of time and effort by the producer. For this purpose, the mimeographed record form, Baby Chick Record,<sup>1</sup> was selected for this study.

Poultrymen, who would record and make available the necessary records, had to be selected. An interest survey of graduates of the specialized poultry short course at Michigan State College and of a number of recommended poultrymen was conducted in 1953. Seventy questionnaires were mailed to these poultrymen. Thirty replies were received, but only twenty were interested in keeping detailed records for our purpose.

Only seven kept complete enough records for use in this report. Several had flocks of mixed ages with no accurate method of segregating costs. Others discontinued their records for military reasons.

---

<sup>1</sup> Agricultural Economics Department, Michigan State College.

During the summer of 1953, all of the farm operators who had indicated a willingness to cooperate in the project were visited by the author. A poultry cost record book was presented to each cooperator. Suggested methods for keeping records were discussed and the plans for initiating the study were outlined.

During the pullet growing season two personal letters were mailed to each cooperator. Additional personal service was given to several of these farmers. This included bringing birds back to the poultry pathology laboratory, getting information on disease control from the poultry extension veterinarian and, in one or two cases, making contacts for the extension veterinarian to work with the cooperator on his farm.

During the summer of 1954 all of the poultry farmers still cooperating by keeping records were again visited by the author. During this same visit the record books were examined and analyzed. Some of the records were not complete and others were not accurate. Suggestions were made for entering the correct information in the record books which were incomplete. These records were later sent to the author for summarizing. Some of these farmers had already summarized their books but some errors and omissions were found in each record. Personal correspondence was necessary to correct errors that were not found during the farm visit. It was not until after January 1, 1955, that

all of the records were received and the summarization could be completed.

The farmers who cooperated in this study were located in the counties of Kalkaska, Lapeer, Livingston, and two each from Ingham and Tuscola.

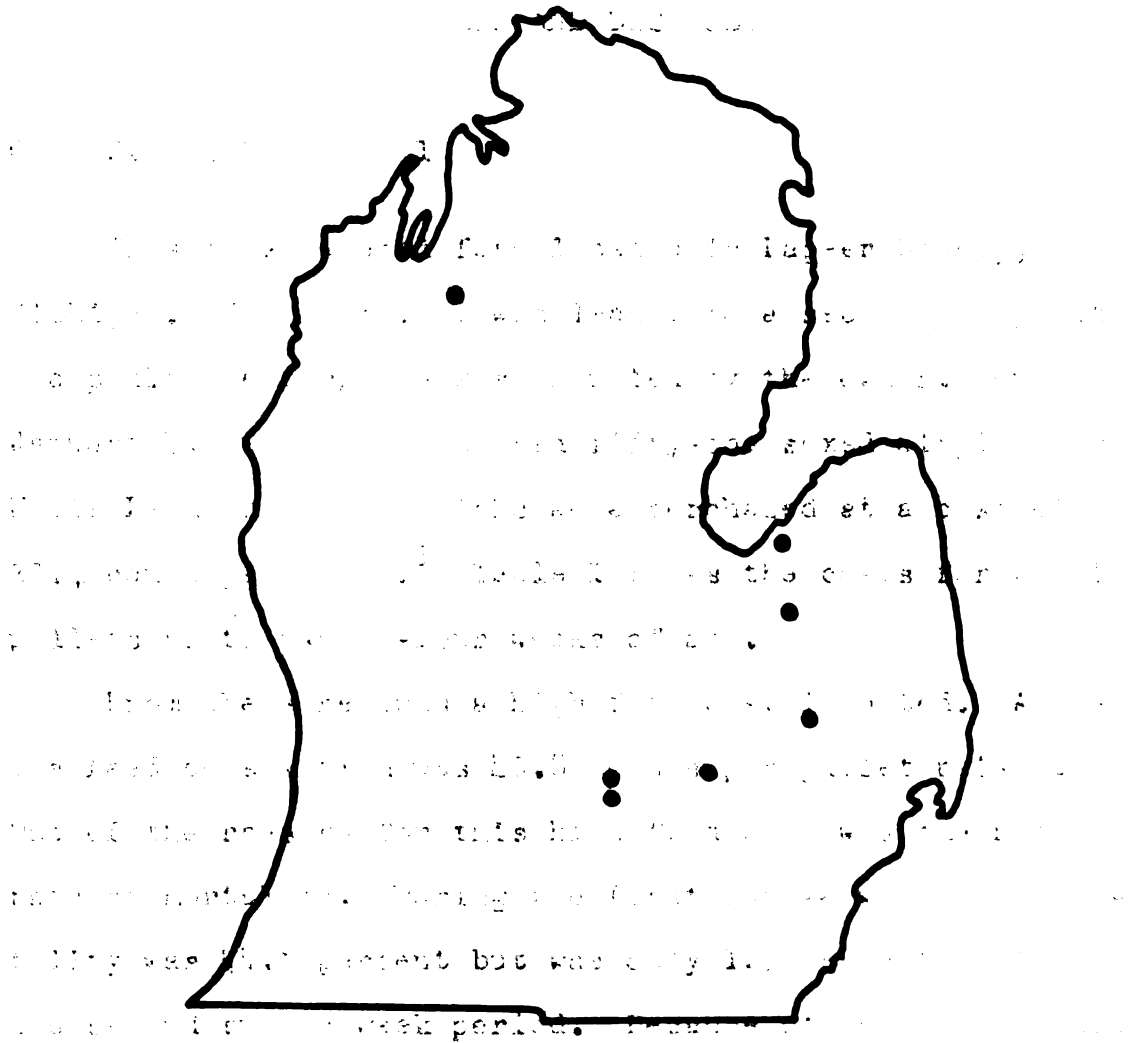


Fig. 1. Location of farms where records were kept.

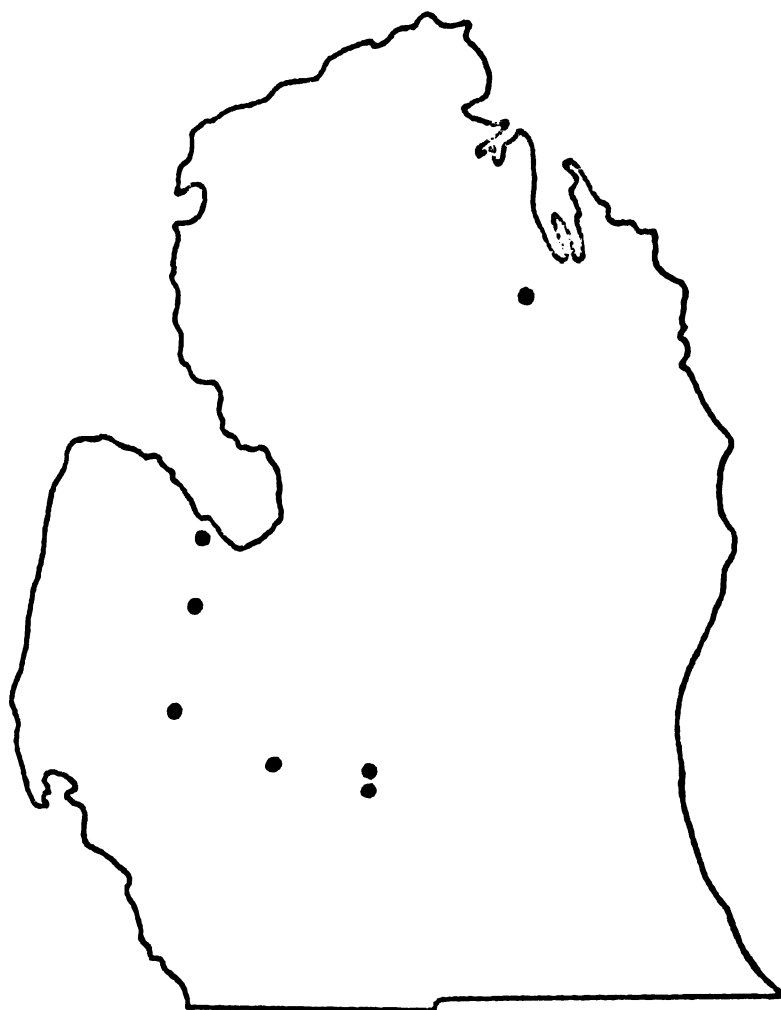


Fig. 1. Location of farms where records were kept.

## RESULTS AND DISCUSSION

### Case Study, Farm No. 1

This is a general farm located in Lapeer County, Michigan. The farm land was leased to a second party but the poultry enterprise was operated by the owner. On January 4, 1954, four hundred fifty-one sexed Single Comb White Leghorn pullet chicks were purchased at a cost of 33.4 cents per chick.<sup>1</sup> Table I shows the costs for rearing pullets up to twenty-four weeks of age.

From these records a high feed cost is noted. Actually the feed consumption was 40.8 pounds per pullet raised. One of the reasons for this high feed cost was the high rate of mortality. During the first twelve weeks the mortality was 44.8 percent but was only 1.5 percent during the second twelve week period. Because of this high death loss, the remaining 53.7 percent of the pullets had to bear the entire costs. Since the greater losses were incurred during the first twelve weeks of age, the feed costs still appear rather high. This might be due to excessive feed wastage.

---

<sup>1</sup> Chick numbers in this study included extras given when chicks were purchased, but chick cost was based on the number of chicks purchased.

TABLE I  
COST OF REARING PULLETS TO MATURITY, FARM NO. 1

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	438.90	1.81
Labor <sup>1</sup>	280.50	1.16
Chicks	138.20	.571
Overhead (5% of all charges)	48.01	.198
Building and Equipment	26.20	.108
Fuel and Lights	60.00	.248
Miscellaneous	16.40	.068
<b>TOTAL</b>	<b>1,008.21</b>	<b>4.163</b>

The majority of chick losses was due to crowding and/or smothering. This undoubtedly was caused by inadequate brooding facilities. The chicks were started in a milkhouse which was converted to a brooding house. This building was small and excessive ventilation was necessary to remove moisture from the house. The chicks also tended to crowd and losses were excessive in severe weather, because of these conditions.

Returns from the sale of eggs and poultry, together with a value for the products used by the household gave a

---

<sup>1</sup> Labor was charged at \$1.50 per hour in this study.

credit to the flock of \$.099 per pullet. Fifty-three and six tenths percent of the birds purchased were housed at a net cost of \$4.06 per pullet.

#### Case Study, Farm No. 2

This is a specialized poultry farm where poultry products are the main source of farm income. This farm is located in Tuscola County, Michigan. Since this farm does a large volume of business, feed is purchased in carload lots at a low cost. The owner also has had several years experience with poultry which gives him an added advantage over those with less poultry experience.

For flock replacement purposes, 1,872 Single Comb White Leghorn pullet chicks were purchased February 4, 1954, at a cost of 52.5 cents per chick. Table II shows the costs for rearing the pullets to twenty-four weeks of age.

Economies of scale and good management show up in these cost figures. Feed consumption was only 25.1 pounds for each pullet raised. Costs for feed, labor, buildings and overhead were low because of the size of the flock and good management practices. The central heating system contributed to the low costs of brooding.

The pullets were vaccinated for bronchitis when they were moved into the laying house. Apparently one pen of the



TABLE II  
COST OF REARING PULLETS TO MATURITY, FARM NO. 2

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	1,628.72	.953
Labor	378.00	.221
Chicks	946.00	.554
Overhead	158.83	.093
Building and Equipment	58.50	.034
Fuel and Lights	140.70	.082
Miscellaneous	24.78	.014
TOTAL	3,335.53	1.951

birds had contracted the disease prior to vaccination, because it spread through the flock before the vaccination had an opportunity to take effect. Although few losses were incurred, about 3 percent of the birds were removed as culls and sold.

The returns from the sale of eggs and cull birds, together with the value of those products used by the household accounted for \$.063 per bird housed. Ninety-one and two tenths percent of the pullets purchased were housed at a net cost of \$1.89 per pullet.

## Case Study, Farm No. 3

This is a general farm in Livingston County, Michigan, and is operated by a retired salesman. Five hundred Single Comb White Leghorn pullet chicks one month old were purchased May 8, 1954, at a cost of 60.2 cents per chick. Table III shows the rearing costs for pullets on this farm.

TABLE III  
COST OF REARING PULLETS TO MATURITY, FARM NO. 3

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	630.01	1.607
Labor	417.00	1.064
Chicks	310.00	.791
Overhead	73.18	.187
Buildings and Equipment	72.35	.185
Fuel and Lights	14.75	.038
Miscellaneous	19.50	.049
TOTAL	1,536.79	3.921

In reviewing the records of this farm it becomes apparent that feed consumption was high. A total of 44.9 pounds of feed was required for each pullet raised. This high feed

consumption was due largely to the high rate of mortality. Since birds were purchased at one month of age the feed consumption should have been somewhat less than normal. However, a mortality rate of 21.6 percent means that the birds which survived had to bear extra costs for feed.

The high mortality in the flock may have been due to several factors. The chicks received were not very uniform in size, although they were presumed to be the same age. When the chicks arrived the brooder houses were not yet complete. This meant that the necessary preparation had not been made previous to the arrival of the chicks.

Apparently the birds became infected with a respiratory disease during the summer which resulted in considerable losses. These losses resulted in extra costs for those which survived since pullet costs were based on the number of pullets raised.

Since started chicks were purchased, the chick cost was considerably higher than would normally be expected.

Returns from the pullet flock accounted for \$.251 per pullet. This left a net cost of \$3.67 per pullet housed.

#### Case Study, Farm No. 4

This farm is located in Ingham County, Michigan. It is a general farm with only a small poultry enterprise. One hundred fifty-six straight run White Plymouth Rock chicks

were purchased January 26, 1954, at a cost of 17.5 cents per chick. The cockerels were marketed at about eleven weeks of age at \$.27 per pound. The cost records on this farm are shown in Table IV.

TABLE IV  
COST OF REARING PULLETS TO MATURITY, FARM NO. 4

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	151.21	2.16
Labor	54.00	.771
Chicks	26.35	.376
Overhead	13.93	.199
Building and Equipment	30.00	.429
Fuel and Lights	8.85	.126
Miscellaneous	8.25	.118
TOTAL	292.59	4.18

Since straight run chicks were purchased, the feed consumption charged against each pullet was relatively high with 44.3 pounds being used for each pullet housed. The small flock size resulted in overhead, building and labor costs per pullet being higher than they might have been with a larger enterprise. Mortality was very low, since only 1.9 percent

of the chicks died during the twenty-four week growing period. The cost per chick was not high because of the purchase of straight run chicks, since the purchase price per chick was about one-half as much for straight run as for sexed pullets. Forty-four and nine-tenths percent of the chicks purchased were housed as mature pullets. Returns from the sale of broilers and eggs plus a value for products used by the household amounted to \$1.71 per pullet housed leaving a net cost of \$2.47.

#### Case Study, Farm No. 5

This farm is located in Tuscola County, Michigan. Four hundred sexed White Plymouth Rock pullets one month old were purchased February 26, 1954, at a cost of 27 cents per pullet. Table V shows the cost records for rearing this flock to maturity.

The feed consumed per pullet housed on this farm was 27.3 pounds. Since these were heavy pullets, the feed consumption was quite favorable. The chicks were purchased at a very reasonable price considering they were one month old. Mortality was relatively low with losses of only 7.5 percent during the pullet growing period. The labor per chick was very high with each pullet being charged with \$1.17 for labor during the twenty-week period. This undoubtedly represents time spent with the chicks rather than actual labor being

TABLE V  
COST OF REARING PULLETS TO MATURITY, FARM NO. 5

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	477.58	1.291
Labor	432.00	1.168
Chicks	108.00	.292
Overhead	56.26	.152
Building and Equipment	97.00	.262
Fuel and Lights	6.66	.018
Miscellaneous	3.88	.010
<b>TOTAL</b>	<b>1,181.38</b>	<b>3.193</b>

performed. Since this is not an "out of the pocket" cost item, it apparently has been allowed to assume a large part of the cost of production on this farm. Ninety-two and five-tenths percent of the pullets purchased were housed. Returns from the sale of eggs amounted to \$.004 per pullet leaving a net rearing cost of \$3.19 per pullet.

#### Case Study, Farm No. 6

This is a general purpose farm located in Kalkaska County, Michigan. On March 14, 1954, two hundred and three

sexed White Plymouth Rock pullet chicks (day old) were purchased, at a cost of 24.5 cents per chick. The cost records from this flock are shown in Table VI.

TABLE VI  
COST OF REARING PULLETS TO MATURITY, FARM NO. 6

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	298.81	1.669
Labor	201.00	1.123
Chicks	49.00	.274
Overhead	29.00	.162
Buildings and Equipment	13.35	.075
Fuel and Lights	16.00	.089
Miscellaneous	1.85	.010
TOTAL	609.01	3.402

The records from this farm showed that feed consumption was high. Even though sexed pullets were purchased, 45.9 pounds of feed were required for each pullet raised. Mortality in this flock was 13.7 percent, based on number of chicks started. This high feed consumption apparently is due to an error in the records and/or excessive feed wastage. It is true that there is a difference in the efficiencies of

different breeds and strains to utilize feed, but this difference cannot be conceived as being this great.

Returns from this flock were \$.306 per pullet. Eighty-eight and one-tenth percent of the chicks purchased were housed as mature pullets. This left a net rearing cost of \$3.10 per pullet.

#### Case Study, Farm No. 7

This is a small acreage farm located in Ingham County, Michigan. The poultry enterprise was administered as a part of a supervised farming program in vocational agriculture. Five hundred thirty New Hampshire sexed pullet chicks were purchased January 26, 1954, at a cost of 30 cents per chick. The rearing costs for this flock are shown in Table VII.

TABLE VII  
COST OF REARING PULLETS TO MATURITY, FARM NO. 7

Cost Items	Total Cost	Cost per Pullet
	(Dollars)	(Dollars)
Feed	465.23	1.241
Labor	112.88	.301
Chicks	150.00	.400
Overhead	39.98	.107
Buildings and Equipment	36.47	.097
Fuel and Lights	14.50	.039
Miscellaneous	<u>20.55</u>	<u>.055</u>
TOTAL	839.61	2.240



The rate of mortality in this flock was 10.1 percent. Chickens were reared in inadequate quarters and as a result, a high percentage of culls were removed from the flock before housing. This loss, through culls and mortality, resulted in the feed consumption being rather high per pullet housed. A total of 30.1 pounds of feed per pullet was required to rear these pullets to twenty-three weeks of age. Due to an error in the farm records, costs were computed on this flock for twenty-three weeks instead of twenty-four weeks.

The mortality and the high percentage of culls resulted in the chick cost being relatively high, as well as the other costs being higher than they otherwise would have been.

#### A Comparison of Costs Between Farms

The total costs for rearing pullets on seven Michigan farms ranged from \$1.89 on the most efficient farm to \$4.06 on the farm which was the least efficient. Table VIII shows a summary of the production costs and returns on these farms.

Several factors influenced the costs of production in rearing the pullet flocks. In general they were very similar to those reported by Wright (1938).

#### Feed Costs

Feed consumption ranged from 25 to 45.9 pounds of feed

TABLE VIII  
EXPENSE, INCOME, AND NET COST IN REARING PULLETS TO  
TWENTY-FOUR WEEKS OF AGE, SEVEN MICHIGAN FARMS, 1954

Item	Farm No.1	Farm No.2	Farm No.3	Farm No.4	Farm No.5	Farm No.6	Farm No.7
(Dollars per pullet raised)							
<u>Charges</u>							
Chicks	.571	.554	.791	.376	.292	.274	.400
Feed	1.810	.953	1.607	2.160	1.291	1.669	1.241
Labor	1.160	.221	1.064	.771	1.168	1.123	.301
Fuel and Lights	.248	.082	.038	.126	.018	.089	.039
Building and Equip.	.108	.034	.185	.429	.262	.075	.097
Miscellaneous	.068	.014	.049	.118	.010	.010	.055
Overhead <sup>1</sup>	.198	.093	.187	.199	.152	.162	.107
TOTAL CHARGES	4.163	1.951	3.921	4.179	3.193	3.402	2.240
<u>Credits</u>							
Sale of Eggs, Meat	.072	.049	.047	.861	.004	.093	.216
Home Use	.015	.014	.204	.710	--	.079	.019
Other	.012			.143	--	.134	.027
TOTAL CREDITS	.099	.063	.251	1.714		.306	.262
Net Cost	4.064	1.888	3.670	2.465	3.189	3.096	1.978

<sup>1</sup> Overhead charges at 5 percent of all charges.

per pullet raised on the seven farms. Figure 2 shows the relationship between feed efficiency and pullet cost. Feed cost ranged from \$.95 to \$2.16 per pullet raised. This higher feed cost was for straight run chicks, however, and does not offer a direct comparison. The highest feed cost for sexed pullets was \$1.81. Both the high and low feed cost were for sexed Single Comb White Leghorn pullets. This difference is due largely to high mortality in the less efficient flock which reflected higher costs attributed to the birds which survived.

Feed represented 46.4 percent of the total pullet cost. This compares very favorably with the results found by Wright (1938) who reported feed cost as 47 percent of the total cost of producing pullets on Michigan farms. Although changing economic conditions have increased the total feed costs, the proportion of the costs attributed to feed remain about the same.

#### Death Loss or Mortality

The results of this study show that flock mortality does have a direct bearing on pullet cost. Although the lowest mortality rate did not result in the lowest cost pullet, those flocks with the lower mortality rate did produce the lower cost pullets. Table IX shows that mortality ranged from 1.9 percent to 46.3 percent of the chicks started. Several factors contributed to these death losses.

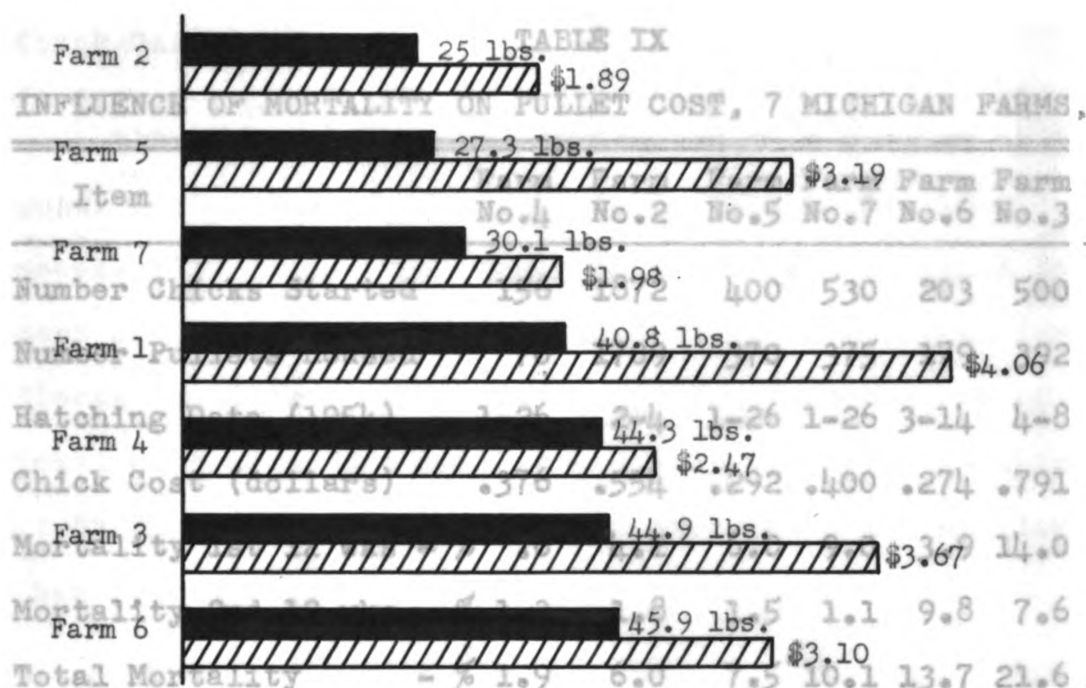


Fig. 2. Relationship between pounds of feed consumed and total cost per pullet (pounds of feed per pullet raised), 7 Michigan farms, 1954.

The most apparent contributing factor, however, was inadequate floor space per chick. A respiratory infection was present in two flocks which added to the losses.

Although not considered as mortality, the percentage of culls which was removed before the pullets were housed affected the cost of pullets housed. This seemed to be aggravated in one instance by the outbreak of bronchitis, which might have been prevented by earlier vaccination. In another flock, overcrowding seemed to be the stress factor.

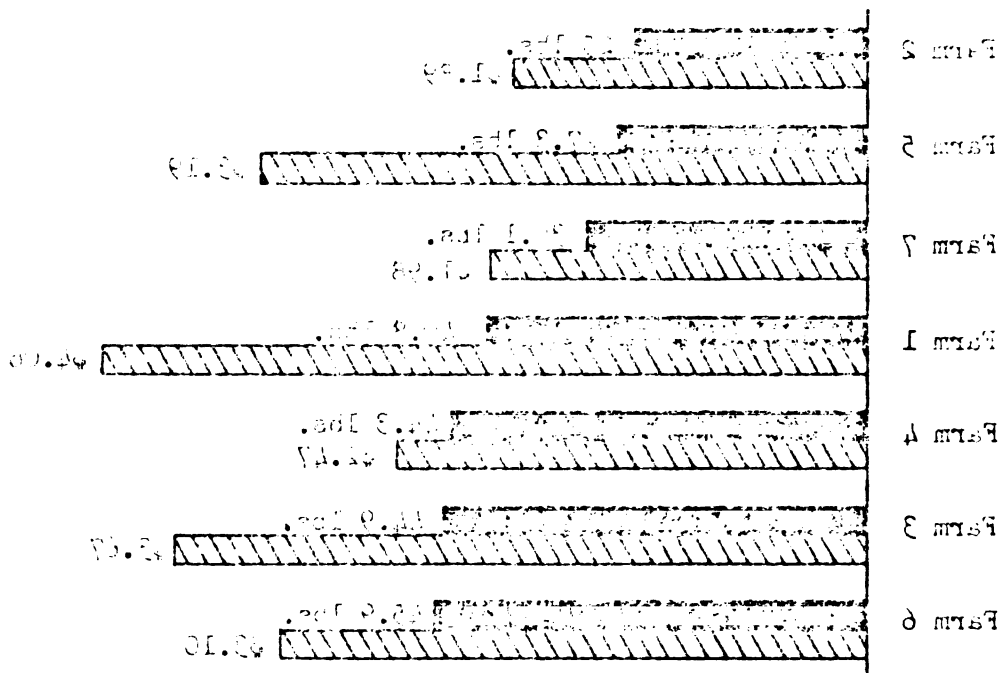


Fig. 2. Relationship between points of food consumed and total cost per pullet (points of food per pullet raised), 7 flocks, 1934.

The most apparent contributing factor, however, was inadequate floor space per chick. A respiratory infection was present in two flocks which added to the losses. Although not considered as mortality, the percentage of culls which was removed before the pullets were housed affected the cost of pullets housed. This seemed to be aggravated in one instance by the outbreak of bronchitis, which might have been prevented by earlier vaccination. In another flock, overcrowding seemed to be the stress factor.

TABLE IX  
INFLUENCE OF MORTALITY ON PULLET COST, 7 MICHIGAN FARMS, 1954

Item	Farm No.4	Farm No.2	Farm No.5	Farm No.7	Farm No.6	Farm No.3	Farm No.1
Number Chicks Started	156	1872	400	530	203	500	451
Number Pullets Housed	70	1709	370	375	179	392	242
Hatching Date (1954)	1-26	2-4	1-26	1-26	3-14	4-8	1-4
Chick Cost (dollars)	.376	.554	.292	.400	.274	.791	.571
Mortality 1st 12 wks - %	.6	4.2	6.0	9.0	3.9	14.0	44.8
Mortality 2nd 12 wks - %	1.3	1.8	1.5	1.1	9.8	7.6	1.5
Total Mortality - %	1.9	6.0	7.5	10.1	13.7	21.6	46.3
Net Cost per Pullet Raised (dollars)	2.47	1.89	3.19	1.98	3.10	3.67	4.06

Mortality was highest in the sexed light breeds, intermediate in the sexed heavy breeds and least in the straight run heavy flock. It does not necessarily follow, however, that mortality is related to these breeds in that order, or due to sexing. The lowest mortality was in the straight run heavy breed, which was one of the smaller flocks and population density was not an adverse factor. The second lowest mortality was in a flock of sexed Single Comb White Leghorns and the highest mortality was also in a flock of sexed Single Comb White Leghorns.

## Chick Cost

Although chick costs represented 19.6 percent of the total costs of producing pullets in this study, it did not necessarily follow that lower priced chicks produced lower cost pullets. Wright (1938) in a study of Michigan farm flocks found that chick cost constituted 21 percent of the total cost of production, second only to feed. In this study chick cost ranked third in importance and was lower than feed and labor.

## Breed

The cost of raising pullets to maturity varies materially between light and heavy breeds. As shown in Table X sexed light breeds were raised more economically than were sexed heavies or straight run pullets. Straight run heavy breed pullets cost second highest and sexed heavy breeds cost the most.

It was the observation of the author that management affected costs more than breed and variety differences did. Although the most economical production was found in a flock of sexed Single Comb White Leghorn pullets, the least economical production also occurred in a flock of Single Comb White Leghorns.

TABLE X  
THE INFLUENCE OF BREED AND SEX ON PULLET COST,  
7 MICHIGAN FARMS, 1954

	Sexed Light	Sexed Heavy	Straight Run	All Farms
Number of farms	3	3	1	7
Chicks Started	2823	1133	156	4112
Pullets Raised	2343	924	70	3337
Percent Mortality	15.2	8.3	1.9	12.8
Labor (minutes per bird)	18.10	32.3	30.8	22.5
Feed (pounds per bird)	29.98	32.038	44.3	30.9
Cost Per Pullet	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Chicks	.595	.332	.376	.517
Feed	1.151	1.344	2.160	1.226
Labor	.459	.807	.770	.562
Fuel and Lights	.092	.040	.126	.078
Bldgs. and Equip.	.067	.159	.429	.100
Miscellaneous	.026	.028	.118	.029
Overhead ( 5 percent of all charges)	.120	.136	.199	.126
Total Cost per Pullet	2.510	2.796	4.178	2.638
Returns other than pullets	.099	.167	1.668	.151
Net Cost per Pullet	2.411	2.629	2.510	2.487



### Hatching Date

Since all of the chicks in this study were hatched in January, February, March and early April, the advantages and disadvantages of early and late hatched chicks could not be compared.

### Flock Size

There was a range in flock size from 70 to 1,709 pullets on the farms studied. Pullets were produced the most efficiently in the largest flock. The smallest flock was straight run chicks and the net pullet cost was reduced by returns from the sale of broilers. The difference in size of flock on the other farms was not considered significant.

The total cost and percentages in the various cost items for producing pullets are shown in Figure 3.

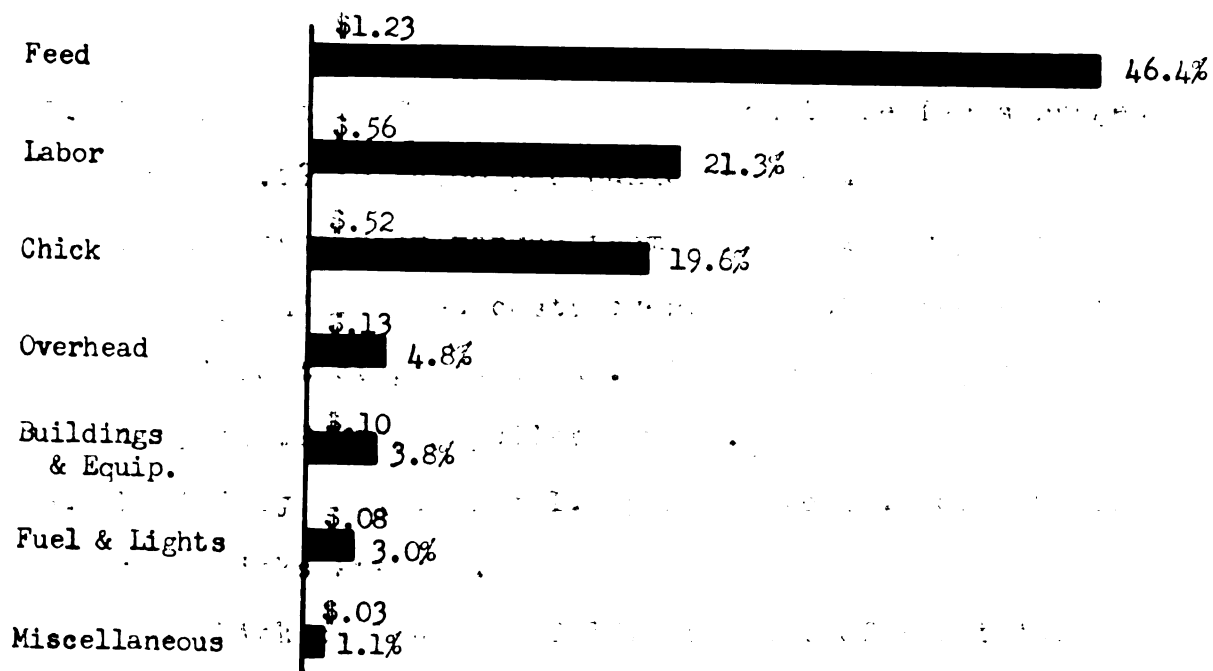


Fig. 3. Average pullet cost, 7 Michigan farms, 1954

Feed	21.23	46.23
Labor	21.36	21.36
Chick	19.62	19.62
Overhead	4.92	4.92
Buildings & equip.	3.22	3.22
Fuel & Lights	3.02	3.02
Miscellaneous	1.12	1.12

Fig. 3. Average pullet cost, 7 Michigan farms, 1954

## SUMMARY

1. The net cost of raising pullets on these farms ranged from \$1.89 to \$4.06 per pullet housed.
2. Feed consumption ranged from 25.1 pounds per pullet to 45.9 pounds. Feed costs averaged 46.4 percent of the total cost of production . These costs ranged from \$.95 to \$2.16 per pullet housed.
3. Mortality ranged from 1.9 percent to 46.3 percent of the chicks started.
4. The chick cost averaged 19.6 percent of the total rearing costs but did not seem to have a direct correlation with cost of the pullet at maturity. These costs per chick at the time of purchase varied from 17.5 cents to 52.5 cents for day old chicks and from 30 cents to 60.2 cents for started chicks.
5. Labor contributed 21.3 percent of the total pullet cost and was second to feed cost..
6. Pullets were produced most efficiently in the largest flock. The net pullet costs ranged from \$1.89 to \$4.06 per pullet housed.

## BIBLIOGRAPHY

- Agricultural Marketing Service, 1954. Poultry and egg situation, Outlook issue, 1955. United States Department of Agriculture, Washington, D. C.
- Borum, G. J., 1954. Michigan agricultural statistics 1953. Michigan Department of Agriculture, Lansing, Michigan.
- Butler, Clara H., 1954. Poultry and egg statistics. United States Department of Agriculture, Agricultural Marketing Service, Washington, D. C.
- Carpenter, K. S., 1953. Estimated costs of producing eggs, New York State, 1926-1952. Cornell Experiment Station, Bulletin 897.
- Census, 1950. Farms, farm characteristics, livestock and products. United States Census of Agriculture, United States Government Printing Office, Washington, D. C.
- Darrah, L. B., 1943. Costs and returns from the laying flock on commercial poultry farms, 1940-41. Cornell Experiment Station, Bulletin 802.
- Darrah, L. B., 1947. Make your poultry farm pay. Cornell Experiment Station, Bulletin 713.
- Gooding, P. H., 1948. A guide to poultry farming in South Carolina, twenty years of poultry records. Clemson Agricultural College, Circular 318.
- Johnson, H. A., L. S. Robertson, and J. W. Sicer, 1948. Profitable poultry management on central Indiana farms. Purdue Agricultural Experiment Station, Special Bulletin No. 531.
- Kearl, C. D., 1950. Seasonal costs and returns in producing eggs New York, 1946-47. Cornell Agricultural Experiment Station, Bulletin 1950.
- Keperling, Paul S., 1954. Production cost of growing pullets. Route #2, Lancaster, Pennsylvania.
- Kimball, E. S., P. W. Smith, and R. F. Moore, 1954. Agricultural Marketing Service (Egg Marketing Service), April 1954.

- King, Steven C., 1955. Fifth random sample poultry test at Horseheads, New York. Cornell Agricultural Experiment Station, Poultry Department, Mimeographed report.
- Lee, C. E., 1954. Cost of raising pullets in 1954. Beacon Milling Company, Inc., Cayuga, New York. Mimeographed report dated, September 28, 1954.
- Maxton, J. L., 1936. An economic study of poultry farming in Virginia. Virginia Agricultural Experiment Station, Bulletin 300.
- Oberholtzer, J. W., 1943. An economic study of semi-commercial egg farms in north central Indiana. Purdue Agricultural Experiment Station. Bulletin 486.
- Pickler, M. J., 1950. Costs of raising pullets on New York farms, 1947. Cornell Agricultural Experiment Station. Bulletin 859.
- Plaxico, J. S., 1950. The laying hen enterprise, costs and returns 1946-47. Virginia Agricultural Experiment Station. Bulletin 438.
- Sicer, J. W., 1947. Cooperators' summary Indiana poultry flock records. Purdue University Poultry Department, Mimeographed report.
- Sicer, J. W., and L. A. Wilhelm, 1942. Cooperators' summary Indiana poultry flock records. Purdue University, Poultry Department, Mimeographed report.
- Smith, E. E., P. W. Smith and Robert F. Moore, 1954. Egg Marketing Service, United States Department of Agriculture, Washington, D. C., April 1954.
- Whitfield, W. R., 1951. Report Iowa poultry demonstration flocks 1950-51. Iowa State College, Agricultural Extension Service, Mimeographed report.
- Wilcox, R. H., and L. E. Card, 1942. Poultry costs and profits, a six year study of general farm flocks and semi-commercial flocks. Illinois Agricultural Experiment Station, Bulletin 486.
- Winner, E. B., and T. L. Joule, 1949. Poultry record summary. Missouri Agricultural Experiment Station, Poultry Department.
- Wright, K. T., 1938. Profitable poultry management. Michigan Agricultural Experiment Station, Special Bulletin 294.

**APPENDIX**

# BABY CHICK RECORD

From \_\_\_\_\_ To \_\_\_\_\_

Name \_\_\_\_\_

Post Office \_\_\_\_\_

Township \_\_\_\_\_

County \_\_\_\_\_

<u>Index</u>	<u>Page</u>
Feed - - - - -	1
Inventory - - - - -	2
Cash expenses - - - - -	3-5
Losses - - - - -	6
Labor, regular chores on baby chicks - - - - -	7
Labor, special and marketing - - - - -	7-8
Chickens, used and sold - - - - -	9
Eggs, used and sold - - - - -	9
Supplementary notes - - - - -	10
Financial summary of the record - - - - -	11

\*\*\*\*\*

AGRICULTURAL ECONOMICS DEPARTMENT  
 Agricultural Experiment Station  
 Michigan State College  
 of Agriculture and Applied Science  
 East Lansing, Michigan



FIRST 12 WEEKS				SECOND 12 WEEKS			
1. First four-weeks:				4. Fourth four-weeks:			
Kind of feed	Lbs.	Value		Kind of feed	Lbs.	Value	
		\$				\$	
Total				Total			

2. Second four-weeks:				5. Fifth four-weeks:			
Kind of feed	Lbs.	Value		Kind of feed	Lbs.	Value	
		\$				\$	
Total				Total			

3. Third four-weeks:				6. Sixth four-weeks:			
Kind of feed	Lbs.	Value		Kind of feed	Lbs.	Value	
		\$				\$	
Total				Total			
Total mash (12 weeks)x				Total mash (24 weeks)x			
Total scratch " " x				Total scratch " " x			

\* Total feed fed, which includes both purchased and home-grown feed, should be recorded here. Feed bought and expense for grinding should also be entered under cash expenses, pages 3, 4 or 5.

x Carry these totals to page 11, lines 2 and 3.



## INVENTORIES

## 1. Poultry Buildings and Equipment

Items	At beginning		At end	
	No.	Value	No.	Value
Brooder house		\$		\$
Brooders				
Feeders				
Waterers				
Poultry fencing				
Totals				
Expenses on equipment (from page 5)				
Interest on investment @ 6%				
Total				
Less total value at end of 24 weeks				
Buildings and equipment cost (to page 11, line 8)				

2. Land used by baby chicks \_\_\_\_\_ acres. Charge for it's use \$ \_\_\_\_\_.

## 3. Chicks on Hand at End of 12 Weeks - (Date \_\_\_\_\_)

Description	No.	Av. Wt.	Total	Price	Value
Pullets					\$
Broilers					
Totals (to page 11, line 14, column 1)					

## 4. Young stock on Hand at End of 24 Weeks - (Date \_\_\_\_\_)

Description	No.	Av. Wt.	Total	Price	Value
Pullets (for layers)					\$
Pullets (culls)					
Cockerels					
Meat Stock					
Totals (to page 11, line 14, column 2)					

[illegible]



PUBLISHED WEEKLY  
 Vol. 41, No. 1, January 1, 1927

Subscription price, Five Dollars per Annum in Advance. Single Copies, Fifteen Cents.

Published by the AMERICAN MEDICAL ASSOCIATION  
 535 North Dearborn Street, Chicago, Ill.

Entered as Second-Class Matter, May 26, 1917. Postpaid at Special Rate of \$3.75 per Annum.  
 Postage paid at Chicago, Ill., and at additional mailing offices.

Acceptance for mailing at special rate of postage provided for in Act of October 3, 1917.

Postmaster: This publication is published weekly except during the summer months.

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association  
 Printed at the Chicago Press and Publishing Co., Chicago, Ill.

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association

Copyright, 1926, by American Medical Association



序号	姓名	性别	出生日期	民族	籍贯	学历	学位	职称	工作单位	联系电话	电子邮箱	备注
1	张三	男	1990-01-01	汉族	江苏南京	本科		助理工程师	南京理工大学	13812345678	zhangsan@nupt.edu.cn	
2	李四	女	1992-03-05	汉族	浙江杭州	硕士	理学硕士	讲师	浙江大学	15987654321	lisi@zju.edu.cn	
3	王五	男	1988-07-12	汉族	广东广州	本科		助教	华南理工大学	13545678901	wangwu@scut.edu.cn	
4	赵六	女	1995-09-20	汉族	四川成都	本科		实验员	四川大学	18623456789	zhaoliu@scu.edu.cn	
5	孙七	男	1991-11-03	汉族	湖北武汉	硕士	工学硕士	副教授	华中科技大学	15734567890	sunqi@hust.edu.cn	
6	周八	女	1993-05-18	汉族	湖南长沙	本科		助教	中南大学	13678901234	zhouba@csu.edu.cn	
7	吴九	男	1989-12-25	汉族	安徽合肥	硕士	理学硕士	讲师	中国科技大学	15890123456	wujiu@ustc.edu.cn	
8	郑十	女	1994-08-07	汉族	山东济南	本科		实验员	山东大学	18701234567	zhengshi@sdu.edu.cn	
9	冯十一	男	1990-02-14	汉族	河南郑州	硕士	工学硕士	副教授	郑州大学	13912345678	fengshiji@zzu.edu.cn	
10	陈十二	女	1992-06-22	汉族	江西九江	本科		助教	江西师范大学	15623456789	chenjishi@jnu.edu.cn	
11	林十三	男	1987-10-09	汉族	福建厦门	硕士	理学硕士	讲师	厦门大学	13734567890	linshisi@xmu.edu.cn	
12	黄十四	女	1993-04-16	汉族	广西桂林	本科		实验员	广西大学	18845678901	huangshisi@gxu.edu.cn	
13	刘十五	男	1989-08-23	汉族	云南昆明	硕士	工学硕士	副教授	云南大学	15956789012	liushisi@ynu.edu.cn	
14	周十六	女	1994-12-01	汉族	贵州贵阳	本科		助教	贵州大学	13867890123	zhoushisi@gzu.edu.cn	
15	吴十七	男	1991-05-28	汉族	陕西西安	硕士	理学硕士	讲师	西安交通大学	15778901234	wushisi@xjtu.edu.cn	
16	郑十八	女	1993-09-05	汉族	山西太原	本科		实验员	山西大学	18689012345	zhengshisi@sxu.edu.cn	
17	冯十九	男	1988-01-13	汉族	河北石家庄	硕士	工学硕士	副教授	河北大学	13590123456	fengshiji@hebu.edu.cn	
18	陈二十	女	1992-07-21	汉族	辽宁沈阳	本科		助教	东北大学	15601234567	chenjishi@neu.edu.cn	
19	林二十一	男	1990-11-29	汉族	吉林长春	硕士	理学硕士	讲师	吉林大学	13712345678	linshiji@jlu.edu.cn	
20	黄二十二	女	1994-03-06	汉族	黑龙江哈尔滨	本科		实验员	哈尔滨工业大学	18823456789	huangshisi@hit.edu.cn	
21	刘二十三	男	1989-06-14	汉族	内蒙古呼和浩特	硕士	工学硕士	副教授	内蒙古大学	15934567890	liushisi@imnu.edu.cn	
22	周二十四	女	1993-10-22	汉族	宁夏银川	本科		助教	宁夏大学	13845678901	zhoushisi@nnu.edu.cn	
23	吴二十五	男	1991-02-09	汉族	新疆乌鲁木齐	硕士	理学硕士	讲师	新疆大学	15756789012	wushisi@xju.edu.cn	
24	郑二十六	女	1994-05-17	汉族	青海西宁	本科		实验员	青海大学	18667890123	zhengshisi@qhu.edu.cn	
25	冯二十七	男	1988-09-25	汉族	甘肃兰州	硕士	工学硕士	副教授	兰州大学	13578901234	fengshiji@lzu.edu.cn	
26	陈二十八	女	1992-12-03	汉族	四川成都	本科		助教	四川大学	15689012345	chenjishi@scu.edu.cn	
27	林二十九	男	1990-04-11	汉族	重庆重庆	硕士	理学硕士	讲师	重庆大学	13790123456	linshiji@cqu.edu.cn	
28	黄三十	女	1993-08-19	汉族	湖南长沙	本科		实验员	中南大学	18801234567	huangshisi@csu.edu.cn	
29	刘三十一	男	1989-11-27	汉族	湖北武汉	硕士	工学硕士	副教授	华中科技大学	15912345678	liushisi@hust.edu.cn	
30	周三十二	女	1994-01-04	汉族	广东广州	本科		助教	华南理工大学	13823456789	zhoushisi@scut.edu.cn	
31	吴三十三	男	1991-05-12	汉族	浙江杭州	硕士	理学硕士	讲师	浙江大学	15734567890	wushisi@zju.edu.cn	
32	郑三十四	女	1993-09-20	汉族	江苏南京	本科		实验员	南京理工大学	18645678901	zhengshisi@nupt.edu.cn	
33	冯三十五	男	1988-12-28	汉族	安徽合肥	硕士	工学硕士	副教授	中国科技大学	13556789012	fengshiji@ustc.edu.cn	
34	陈三十六	女	1992-03-06	汉族	山东济南	本科		助教	山东大学	15667890123	chenjishi@sdu.edu.cn	
35	林三十七	男	1990-07-14	汉族	河南郑州	硕士	理学硕士	讲师	郑州大学	13778901234	linshiji@zzu.edu.cn	
36	黄三十八	女	1994-11-22	汉族	江西九江	本科		实验员	江西师范大学	18889012345	huangshisi@jnu.edu.cn	
37	刘三十九	男	1989-02-09	汉族	福建厦门	硕士	工学硕士	副教授	厦门大学	15990123456	liushisi@xmu.edu.cn	
38	周四十	女	1993-06-17	汉族	广西桂林	本科		助教	广西大学	13801234567	zhoushisi@gxu.edu.cn	
39	吴四十一	男	1991-10-25	汉族	云南昆明	硕士	理学硕士	讲师	云南大学	15712345678	wushisi@ynu.edu.cn	
40	郑四十二	女	1994-04-03	汉族	贵州贵阳	本科		实验员	贵州大学	18623456789	zhengshisi@gzu.edu.cn	
41	冯四十三	男	1988-08-11	汉族	陕西西安	硕士	工学硕士	副教授	西安交通大学	13534567890	fengshiji@xjtu.edu.cn	
42	陈四十四	女	1992-12-19	汉族	山西太原	本科		助教	山西大学	15645678901	chenjishi@sxu.edu.cn	
43	林四十五	男	1990-05-27	汉族	河北石家庄	硕士	理学硕士	讲师	河北大学	13756789012	linshiji@hebu.edu.cn	
44	黄四十六	女	1994-09-05	汉族	辽宁沈阳	本科		实验员	东北大学	18867890123	huangshisi@neu.edu.cn	
45	刘四十七	男	1989-01-13	汉族	吉林长春	硕士	工学硕士	副教授	吉林大学	15978901234	liushisi@jlu.edu.cn	
46	周四十八	女	1993-05-21	汉族	黑龙江哈尔滨	本科		助教	哈尔滨工业大学	13889012345	zhoushisi@hit.edu.cn	
47	吴四十九	男	1991-09-29	汉族	内蒙古呼和浩特	硕士	理学硕士	讲师	内蒙古大学	15790123456	wushisi@imnu.edu.cn	
48	郑五十	女	1994-03-07	汉族	宁夏银川	本科		实验员	宁夏大学	18601234567	zhengshisi@nnu.edu.cn	
49	冯五十一	男	1988-07-15	汉族	新疆乌鲁木齐	硕士	工学硕士	副教授	新疆大学	13512345678	fengshiji@xju.edu.cn	
50	陈五十二	女	1992-11-23	汉族	青海西宁	本科		助教	青海大学	15623456789	chenjishi@qhu.edu.cn	
51	林五十三	男	1990-03-31	汉族	甘肃兰州	硕士	理学硕士	讲师	兰州大学	13734567890	linshiji@lzu.edu.cn	
52	黄五十四	女	1994-07-09	汉族	四川成都	本科		实验员	四川大学	18845678901	huangshisi@scu.edu.cn	
53	刘五十五	男	1989-11-17	汉族	重庆重庆	硕士	工学硕士	副教授	重庆大学	15956789012	liushisi@cqu.edu.cn	
54	周五十六	女	1993-03-25	汉族	湖南长沙	本科		助教	中南大学	13867890123	zhoushisi@csu.edu.cn	
55	吴五十七	男	1991-07-03	汉族	湖北武汉	硕士	理学硕士	讲师	华中科技大学	15778901234	wushisi@hust.edu.cn	
56	郑五十八	女	1994-11-11	汉族	广东广州	本科		实验员	华南理工大学	18689012345	zhengshisi@scut.edu.cn	
57	冯五十九	男	1988-03-19	汉族	浙江杭州	硕士	工学硕士	副教授	浙江大学	13590123456	fengshiji@zju.edu.cn	
58	陈六十	女	1992-07-27	汉族	江苏南京	本科		助教	南京理工大学	15601234567	chenjishi@nupt.edu.cn	
59	林六十一	男	1990-11-05	汉族	安徽合肥	硕士	理学硕士	讲师	中国科技大学	13712345678	linshiji@ustc.edu.cn	
60	黄六十二	女	1994-05-13	汉族	山东济南	本科		实验员	山东大学	18823456789	huangshisi@sdu.edu.cn	
61	刘六十三	男	1989-09-21	汉族	河南郑州	硕士	工学硕士	副教授	郑州大学	15934567890	liushisi@zzu.edu.cn	
62	周六十四	女	1993-01-29	汉族	江西九江	本科		助教	江西师范大学	13845678901	zhoushisi@jnu.edu.cn	
63	吴六十五	男	1991-05-07	汉族	福建厦门	硕士	理学硕士	讲师	厦门大学	15756789012	wushisi@xmu.edu.cn	
64	郑六十六	女	1994-09-15	汉族	广西桂林	本科		实验员	广西大学	18667890123	zhengshisi@gxu.edu.cn	
65	冯六十七	男	1988-12-23	汉族	云南昆明	硕士	工学硕士	副教授	云南大学	13578901234	fengshiji@ynu.edu.cn	
66	陈六十八	女	1992-04-01	汉族	贵州贵阳	本科		助教	贵州大学	15689012345	chenjishi@gzu.edu.cn	
67	林六十九	男	1990-08-09	汉族	陕西西安	硕士	理学硕士	讲师	西安交通大学	13790123456	linshiji@xjtu.edu.cn	
68	黄七十	女	1994-12-17	汉族	山西太原	本科		实验员	山西大学	18801234567	huangshisi@sxu.edu.cn	
69	刘七十一	男	1989-04-25	汉族	河北石家庄	硕士	工学硕士	副教授	河北大学	15912345678	liushisi@hebu.edu.cn	
70	周七十二	女	1993-08-03	汉族	辽宁沈阳	本科		助教	东北大学	13823456789	zhoushisi@neu.edu.cn	
71	吴七十二	男	1991-12-11	汉族	吉林长春	硕士	理学硕士	讲师	吉林大学	15734567890	wushisi@jlu.edu.cn	
72	郑七十二	女	1994-04-19	汉族	黑龙江哈尔滨	本科		实验员	哈尔滨工业大学	18645678901	zhengshisi@hit.edu.cn	
73	冯七十二	男	1988-08-27	汉族	内蒙古呼和浩特	硕士	工学硕士	副教授	内蒙古大学	13556789012	fengshiji@imnu.edu.cn	
74	陈七十二	女	1992-12-05	汉族	宁夏银川	本科		助教	宁夏大学	15667890123	chenjishi@nnu.edu.cn	
75	林七十二	男	1990-02-13	汉族	新疆乌鲁木齐	硕士	理学硕士	讲师	新疆大学	13778901234	linshiji@xju.edu.cn	
76	黄七十二	女	1994-06-21	汉族	青海西宁	本科		实验员	青海大学	18889012345	huangshisi@qhu.edu.cn	
77	刘七十二	男	1989-10-29	汉族	甘肃兰州	硕士	工学硕士	副教授	兰州大学	15990123456	liushisi@lzu.edu.cn	
78	周七十二	女	1993-02-06	汉族	四川成都	本科		助教	四川大学	13801234567	zhoushisi@scu.edu.cn	
79	吴七十二	男	1991-06-14	汉族	重庆重庆	硕士	理学硕士	讲师	重庆大学	15712345678	wushisi@cqu.edu.cn	
80	郑七十二	女	1994-10-22	汉族	湖南长沙	本科		实验员	中南大学	18623456789	zhengshisi@csu.edu.cn	
81	冯七十二	男	1988-04-30	汉族	湖北武汉	硕士	工学硕士	副教授	华中科技大学	13534567890	fengshiji@hust.edu.cn	
82	陈七十二	女	1992-08-08	汉族	广东广州	本科		助教	华南理工大学	15645678901	chenjishi@scut.edu.cn	
83	林七十二	男	1990-12-16	汉族	浙江杭州	硕士	理学硕士	讲师	浙江大学	13756789012	linshiji@zju.edu.cn	
84	黄七十二	女	1994-04-24	汉族	江苏南京	本科		实验员	南京理工大学	18867890123	huangshisi@nupt.edu.cn	
85	刘七十二	男	1989-08-02	汉族	安徽合肥	硕士	工学硕士	副教授	中国科技大学	15978901234	liushisi@ustc.edu.cn	
86	周七十二	女	1993-12-10	汉族	山东济南	本科		助教	山东大学	13889012345	zhoushisi@sdu.edu.cn	
87	吴七十二	男	1991-04-18	汉族	河南郑州	硕士	理学硕士	讲师	郑州大学	15790123456	wushisi@zzu.edu.cn	
88	郑七十二	女	1994-08-26	汉族	江西九江	本科		实验员	江西师范大学	18601234567	zhengshisi@jnu.edu.cn	
89	冯七十二	男	1988-12-04	汉族	福建厦门	硕士	工学硕士	副教授	厦门大学	13512345678	fengshiji@xmu.edu.cn	
90	陈七十二	女	1992-04-12	汉族	广西桂林	本科		助教	广西大学	15623456789	chenjishi@gxu.edu.cn	
91	林七十二	男	1990-08-20	汉族	云南昆明	硕士	理学硕士	讲师	云南大学	13734567890	linshiji@ynu.edu.cn	
92	黄七十二	女	1994-12-28	汉族	贵州贵阳	本科		实验员	贵州大学	18845678901	huangshisi@gzu.edu.cn	
93	刘七十二	男	1989-06-06	汉族	陕西西安	硕士	工学硕士	副教授	西安交通大学	15956789012	liushisi@xjtu.edu.cn	
94	周七十二	女	1993-10-14	汉族	山西太原	本科		助教	山西大学	13867890123	zhoushisi@sxu.edu.cn	
95	吴七十二	男	1991-02-22	汉族	河北石家庄	硕士	理学硕士	讲师	河北大学	15778901234	wushisi@hebu.edu.cn	
96	郑七十二	女	1994-06-30	汉族	辽宁沈阳	本科		实验员	东北大学	18689012345	zhengshisi@neu.edu.cn	
97	冯七十二	男	1988-10-08	汉族	吉林长春	硕士	工学硕士	副教授	吉林大学	13590123456	fengshiji@jlu.edu.cn	
98	陈七十二	女	1992-02-16	汉族	黑龙江哈尔滨	本科		助教	哈尔滨工业大学	15601234567	chenjishi@hit.edu.cn	
99	林七十二	男	1990-06-24	汉族	内蒙古呼和浩特	硕士	理学硕士	讲师	内蒙古大学	13712345678	linshiji@imnu.edu.cn	
100	黄七十二	女	1994-10-02	汉族	宁夏银川	本科		实验员	宁夏大学	18823456789	huangshisi@nnu.edu.cn	







## LOSSES

[illegible]

- Regular Chores on Baby Chicks -

- Special and Marketing Labor\* -

\*Also indicate the number loads of manure hauled out, and the amount of litter hauled in.

[illegible]

\*Combine regular chore labor with special and marketing labor for the 12 and 24 weeks and carry to the proper lines on page 11.









## SUPPLEMENTARY NOTES

Date chicks were hatched \_\_\_\_\_ Number \_\_\_\_\_ Breed \_\_\_\_\_

Were chicks bought \_\_\_\_\_ From whom \_\_\_\_\_

Were chicks raised on new ground \_\_\_\_\_ Any growing crops on the ground \_\_\_\_\_

Was a starting mash fed \_\_\_\_\_ Home-mixed or commercial \_\_\_\_\_

Formula or brand of starting mash \_\_\_\_\_

Was a growing mash fed \_\_\_\_\_ Home-mixed or commercial \_\_\_\_\_

Formula or brand of growing mash \_\_\_\_\_

Was milk fed \_\_\_\_\_ In what form \_\_\_\_\_

Was cod liver oil fed \_\_\_\_\_ Price per gallon \_\_\_\_\_

Was any green feed fed \_\_\_\_\_ Kind \_\_\_\_\_

Were chicks raised in battery brooders \_\_\_\_\_ Kind \_\_\_\_\_

Were chicks raised on screened porches \_\_\_\_\_

Were summer shelters used \_\_\_\_\_

Kind of brooder house used \_\_\_\_\_ Size \_\_\_\_\_ No. \_\_\_\_\_

How many times was brooder house moved \_\_\_\_\_ Kind of brooder stove \_\_\_\_\_

Feeders - description: \_\_\_\_\_

Waterers - description: \_\_\_\_\_

Date first egg laid \_\_\_\_\_ Date pullets put in laying house \_\_\_\_\_

Number pullets put in laying house \_\_\_\_\_ Average weight of pullets then \_\_\_\_\_

No. chicks started \_\_\_\_\_ Sold \_\_\_\_\_ Used \_\_\_\_\_ Died \_\_\_\_\_

No. pullets left \_\_\_\_\_ No. cockerels left \_\_\_\_\_ No. not accounted for \_\_\_\_\_

Remarks: \_\_\_\_\_

1.3.3

Total charges and credits:		At 12 weeks age		At 24 weeks age	
CHARGES:		Amount	Value	Amount	Value
1. Baby chicks . . . . (from p. 5)			\$		\$
2. Mash . . . . . ( " " 1)					
3. Scratch . . . . . ( " " 1)					
4. Man labor . . . . . ( " " 8)					
5. Horse labor . . . . . ( " " 8)					
6. Tractor use . . . . . ( " " 8)					
7. Auto use . . . . . ( " " 8)					
8. Buildings & equip. " " 2)					
9. Use of land . . . . . ( " " 2)					
10. Fuel . . . . . ( " " 5)					
11. Litter . . . . . ( " " 5)					
12. Other items . . . . . ( " " 5)					
13. Overhead (5% of all charges)					
Total charges . . . . .			\$		\$
CREDITS:		No.	Wt.	No.	Wt.
14. Poultry on hand (from p. 2)					
15. Poultry sold . . . . ( " " 9)					
16. Poultry used . . . . ( " " 9)					
17. Eggs sold and used " " 9)					
18. Manure . . . . . ( " " 8)					
Total credits . . . . .			\$		\$
PROFIT OR LOSS . . . . .					
RETURN PER HOUR LABOR . . . . .					
NET COST PER PULLET AT 24 WEEKS AGE (No. _____) . . . . .					

Charges and credits per Pound of Poultry:				Charges per Pullet:			
Items	At 12 Weeks		At 24 Weeks	(Cost per lb. times av. wt. )			
Baby chick cost . . . .		¢		¢	Baby chick cost . . . .		¢
Feed cost . . . . .					Feed cost . . . . .		
Labor charge . . . . .					Labor charge . . . . .		
Bldgs. & equip. charge					Bldgs. & equip. charge		
Other charges . . . . .					Other charges . . . . .		
Total charges . . . . .		¢		¢	Total charges* . . . .		¢
Total credits . . . . .					*The total charge per pullet is		
Profit or Loss per lb.		¢		¢	_____ than the		
Lbs. mash fed " "					Net Cost Per Pullet above due to the		
Lbs. scratch fed " "					_____ on broilers.		



M I C H I G A N   S T A T E   C O L L E G E  
E A S T   L A N S I N G

School of Agriculture  
Department of Short Courses

Dear

As you may know, since January 1st of this year I have been working with the Poultry Department here at Michigan State College in teaching Short Courses. I am doing advanced work in poultry management and have found that we have no farm records available for the cost of producing eggs and raising chicks in Michigan. We are aware that cost account records involve some extra book-keeping but we are hoping that we can offer the farmer some service in return for this work. Because of my work with Short Course students I am trying to confine these records to the farms of Short Course students or former Short Course students. I hope these records will assist in studies in the cost of production with future classes.

The Farm Management Department in cooperation with the Poultry Department has prepared a simplified cost account record book for the laying flock and also for the baby chicks. We know it is too late to get an accurate record on baby chicks this year, but we would like to get a record on the laying flock from as many cooperators as we can, and next spring get the record on the cost of producing chicks. In return for the farmers keeping these records we will supply the record books, summarize the records and compare your flock with the flocks of the other cooperators. All records kept and summarized here at the college will be confidential. We believe a record of this type would be very valuable for you as a flock owner and also would be of much value for future Short Course classes in their poultry studies.

If you would be willing to cooperate in a project of this kind will you return the enclosed card with the information requested. I will then contact you personally and help you start out the record book. I want to thank you for your consideration.

Sincerely yours,

  
Carl C. Hoyt, Ass't to  
Director of Short Courses

CCH:mmm  
Enclosure



Name \_\_\_\_\_

Location of farm: \_\_\_\_\_

\_\_\_\_\_ Produce market eggs \_\_\_\_\_ Hatching eggs only

Average number of layers kept \_\_\_\_\_

Date replacement chicks were purchased \_\_\_\_\_

\_\_\_\_\_  
Signed







ROOM USE ONLY

MICHIGAN STATE UNIVERSITY LIBRARIES



3 1293 03082 9133