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ECONOMIC FACTORS AFFECTING POULTRY PRODUCTION AND MARKETING IN UTAH 1929, 1930, and 1931

W. PRESTON THOMAS AND MARION CLAWSON

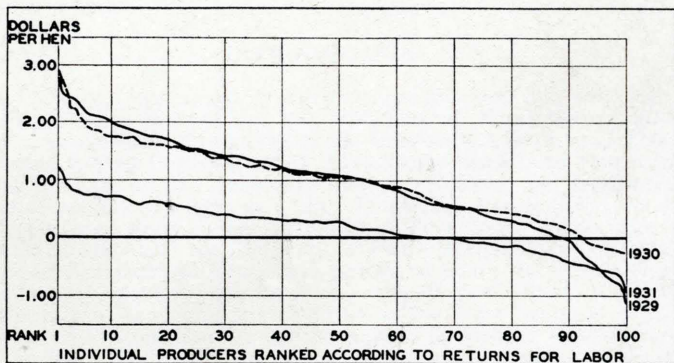


Figure 13—The returns per hen for labor of the operator and his family ranged from \$2.75 in 1929 to minus 96 cents in 1931. In 1931 one-third of the poultrymen had no return for labor.

This report is based on a study made under a cooperative agreement between the Bureau of Agricultural Economics (United States Department of Agriculture) and the Utah Agricultural Experiment Station.

Utah Agricultural Experiment Station

UTAH STATE AGRICULTURAL COLLEGE

Logan, Utah

ECONOMIC FACTORS AFFECTING POULTRY PRODUCTION AND MARKETING IN UTAH¹

W. Preston Thomas² and Marion Clawson³

CONTENTS

	Page		Page
Introduction	3	Analysis of Farm Business	19
Purpose of Study	4	Analysis of Poultry Enterprise	25
Source of Data	4	Egg Production Costs and Returns	32
Growth of Poultry Industry in Utah	5	Cost of Rearing Pullets	49
Available Feed Supply	10	Factors Influencing Costs and Returns	52
Egg Prices	11	Summary	66
Marketing	16	Definitions of Terms Used	68
Poultry Farms Studied	17	Appendix	69

INTRODUCTION

Since 1929 the Department of Agricultural Economics of the Utah Agricultural Experiment Station and the Divisions of Farm Management and Costs and of Cooperative Marketing of the Bureau of Agricultural Economics of the United States Department of Agriculture have been cooperating in conducting a study of the economic factors affecting the production and marketing of poultry products in Utah. Under the arrangement, as entered into by these three groups, the Agricultural Economics Department of the Experiment Station and the Division of Farm Management and Costs of the Bureau of Agricultural Economics agreed to study the trends in production, feed supply, poultry management, cost of production, price factors, and relationship of the poultry enterprise to the farm business as a whole. The Division of Cooperative Marketing agreed to make a business analysis study of the Utah Poultry Producers Cooperative Association. This bulletin contains the results secured, giving an analysis of the factors affecting the production of poultry products and certain phases of marketing as they relate to production. Two preliminary reports,⁴ giving the results of this

Acknowledgments: The authors are indebted to the following: To the poultry producers who cooperated in giving information on their farm and poultry business; to George T. Blanch, Lyman Roberts, Fred H. Knobel, and Cruz Venstrom for assistance in taking field records from poultrymen; to the Utah Poultry Producers Cooperative Association for the information supplied on egg grades, sales, and prices; to John J. Scanlan of the Division of Cooperative Marketing for information on variation in egg prices in various parts of the state; to Oris V. Wells of the Federal Bureau of Agricultural Economics for assistance in the correlation analysis; to Edith Hayball, Inez Tingey, and Beth Van Fleet for statistical assistance on the study; and to county agricultural agents in the counties where this work was conducted.

¹Contribution from Department of Agricultural Economics, Utah Agricultural Experiment Station.

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Report on Purnell Project 101: Economic Factors Affecting the Production and Marketing of Utah's Poultry Products.

⁴Preliminary Report: Economic Factors Affecting the Production and Marketing of Poultry Products in Utah (October 1, 1928, to September 30, 1929). By W. Preston Thomas and Marion Clawson. Utah Agr. Exp. Sta. Misc. Pub. 8. June, 1931. 24 pp. (Out of print)

Second Preliminary Report: Economic Factors Affecting the Production and Marketing of Poultry Products in Utah (October 1, 1929, to September 30, 1930). By W. Preston Thomas and Marion Clawson. Utah Agr. Exp. Sta. Misc. Pub. 9. February, 1932. 24 pp. (Out of print)

Publication authorized by Director, August 30, 1933.

study, have been published by the Utah Station as Miscellaneous Publications 8 and 9. A later bulletin, entitled "Business Analysis of the Utah Poultry Producers Cooperative Association," will contain a more specific analysis of the marketing of these products.

PURPOSE OF THE STUDY

The object of this study has been: (1) To show the relation of the poultry business in Utah to other farm enterprises and to poultry production in competing states; (2) to determine the average investment, costs, and returns from poultry production as conducted in Utah; (3) to study the methods of marketing eggs in Utah; (4) to study efficient practices of individual producers in poultry management; and (5) to point out some factors to be considered in the future of the poultry business, both in the state as a whole as well as in various parts of the state.

SOURCE OF DATA

Data on farm organization, poultry business, egg-production costs, costs of rearing pullets, and the factors affecting these various costs and the returns were secured from poultrymen located in Boxelder, Cache, Weber, Morgan, Summit, Davis, Salt Lake, Utah, Juab, Sanpete, and Sevier Counties. During the three years of the study 319 records were secured from various poultrymen. Of these, 119 were taken in 1929, 100 in 1930, and 100 in 1931. Most of the data were secured by the survey method through a personal visit to the poultry farms by a representative of one of the cooperating agencies. Many of the poultrymen cooperating in this study kept detailed records on income and expenditures for their poultry business. This is especially true during the second and third years of the study because of the arrangement made at the beginning of the work to secure records for the 3-year period. Practically all cooperators purchased feeds from Utah Poultry Producers Cooperative Association, and data on kinds, quantity, and price of feeds were secured from sales slips of this association. To supplement these data, information on feed purchased was secured from the records of the association. Data on sale of eggs by individual producers who were association members were secured from the records of the association. More than 90 per cent of the cooperating poultrymen were members of the Utah Poultry Producers Cooperative Association.

It is the general practice in the poultry business to consider that the poultry production year begins on October 1 and ends on September 30. Therefore, throughout this bulletin the year beginning October 1, 1928, and running until September 30, 1929, is called 1929; the year from October 1, 1929, to September 30, 1930, is designated as 1930; and the year October 1, 1930, to September 30, 1931, is considered as 1931. The producers from whom records were secured were classified into various groups, on the basis of number of hens in the flock or on the basis of the efficiency with which they conducted their business.

The producers from whom these 319 records were secured kept a total of 315,577 Leghorn hens, farmed 15,447 acres of land, and had a total investment in their farms of \$4,754,871. The inclusion of so many producers, representing such a large number of hens from various parts of the state over a period of three years, gives a representative sample which should give a high degree of reliability to the results secured.

This study includes the analysis of: (1) Economic factors affecting poultry production in Utah; (2) analysis of the poultry business as found on the farms in this state.

Economic factors affecting production include the factors influencing the growth of the industry, competition with other poultry-producing areas, available feed-supply, variation in egg prices, and marketing of poultry products.

The second part of this study includes an analysis of the factors in production, costs, and returns as found on poultry farms in Utah. This analysis is as follows: (1) A report on the entire farm business as a unit, including receipts, expenses, and net returns from the farm as a whole;

(2) the analysis of the poultry enterprise including factors of costs and receipts for the laying and rearing flocks combined; (3) the cost of producing eggs, including the costs and receipts for the laying flock separate from the rearing flock; (4) the cost of rearing pullets; and (5) the influence of certain factors as they relate to the costs and returns of the individual poultrymen.

GROWTH OF POULTRY INDUSTRY IN UTAH

The number of chickens in Utah has increased greatly in recent years, approximately doubling in the period from 1920 to 1930 (Table 1). In 1920 consumption of eggs within the state was about equal to production. The number of farms reporting chickens on hand was about 14 per cent less in 1930 than in 1920; however, the increase in the average size of flocks accounted for the increase in number of chickens. During this same period there was also some increase in the number of eggs produced per hen, so that total egg production increased at an even faster rate than did number of chickens.

TABLE 1. Chickens on farms, farms reporting chickens on hand, and eggs produced in Utah (1900 to 1930).*

Census Date	Chickens on Farms	Farms Reporting Chickens	Eggs Produced in Preceding Year
	No.	No.	Doz.
June 1, 1900	534,842	.....	3,387,340
April 15, 1910	673,662	17,443	4,644,829
January 1, 1920	954,695	21,016	5,709,076
January 1, 1925	1,366,873	19,706	9,016,514
April 1, 1930	2,095,723	18,164	18,462,515

*Based on the United States Census Reports.

This trend in increased numbers of chickens apparently reached its peak in 1931, there having been some recession since that time. Sales of eggs were estimated to have been in excess of 23,000,000 dozen in 1931, or more than three times as many as were sold in 1925 (Table 2).

TABLE 2. Estimated total sales of Utah eggs (1925 to 1932).*

Year	Eggs Sold
	Doz.
1925	7,500,000
1926	9,000,000
1927	10,500,000
1928	12,333,000
1929	15,167,000
1930	18,917,000
1931	23,083,000
1932	19,583,000

*Preliminary only. Division of Crop and Livestock Estimates, Bureau of Agricultural Economics. Includes sales within and outside of the state.

FACTORS INFLUENCING GROWTH OF POULTRY INDUSTRY

The rapid increase in poultry numbers which took place during the period from 1923 to 1931 was due to a combination of factors, all of which had an influence on the poultry industry of the state. Egg prices were relatively high because consumers, especially in the large eastern cities to which most of Utah's eggs were shipped, had a high purchasing power. Feed prices were relatively low in Utah, as elsewhere, due to the fact that during the past decade most grains have been at a lower price level than have livestock or many other farm products. The surplus wheat produced

in Utah and in southern Idaho has been an economic factor in the development of the poultry industry in this state.

Although the combination of relatively high egg prices and relatively low feed prices was important in the profitableness of the poultry industry, one which brought about this rapid expansion was the Utah Poultry Producers Cooperative Association. Not only did this association provide a satisfactory market for the surplus eggs, but it was active in expanding the poultry industry by interesting new producers in commercial poultry production. This resulted in increased volume and improved quality, which in turn lowered costs of handling eggs and brought increased returns.

The settlement of Utah was based on a policy of small-farm acreage. On these farms, which were not intensively cultivated, there was a surplus of family labor during certain times of the year. During the 1923-31 period poultry production provided one remunerative way of increasing the intensity of the farming, thus being able to profitably employ a larger number of workers on the same area. In many cases young men started into poultry production on the farm on which they were reared, converting a 1-man farm into a 2-man farm. In other cases, farmers were able to increase their income from the same area of land or were able to reduce the area of land they farmed and still maintain a larger income.

The teaching of efficient practices to the poultrymen of the state by the Poultry Department of the Utah State Agricultural College has also been an important factor in the development of the poultry industry of the state. The uniformity in kind of poultry houses used and improvement in feeding practices and care of eggs has largely been the result of this extension teaching.

Egg Shipments

Previous to 1923 Utah was producing only sufficient eggs for home consumption. Even when the state was on a self-sufficiency basis for the year as a whole, there were certain periods of surplus egg production which had a depressing effect upon prices received. Since 1923 the rapid increase in egg production has resulted in increased shipments of eggs from Utah to markets outside of the state. Receipts of eggs shipped from Utah to six large markets in various parts of the country have increased year by year from 1923 to 1931, declining slightly in 1932. More than 90 per cent of the eggs shipped from Utah to these markets were sold in New York City, the largest center of population in the United States, which is widely known as a premium-paying market for white-shelled eggs (Table 3).

TABLE 3. Percentage of egg shipments from Utah to New York City and other markets (1925 to 1932).*

Year	Percentage Shipped to Various Markets	
	New York City	Other Markets†
	Per cent	Per cent
1925	69	31
1926	71	29
1927	84	16
1928	98	2
1929	90	10
1930	87	13
1931	99	1
1932	85	15
Average, 1925-32, inclusive	92	8

*Division of Dairy and Poultry Products, Bureau of Agricultural Economics.

†Chicago, Philadelphia, Boston, San Francisco, and Los Angeles.

In 1931 more than 7 per cent of all eggs shipped to the New York City market came from Utah; during the same year over 30 per cent of New York City's total receipts came from five western states—Washington, Oregon, California, Idaho, and Utah (Table 4). During the fall months,

a much larger proportion of the total receipts from New York City came from these western states and from Utah than during other parts of the year. These shipments of eggs from the West exerted a marked influence on the price of eggs in New York City during these months.

TABLE 4. Percentage of New York City's egg receipts from Utah, from five western states, and from all other states (1927 to 1932)*

Year	Percentage of Total Receipts from		
	Utah	Five Western States	All Other States
	Per cent	Per cent	Per cent
1927	1.6	19.2	80.8
1928	3.0	21.6	78.4
1929	3.0	21.7	78.3
1930	5.2	26.0	74.0
1931	7.3	30.2	69.8
1932	5.6	27.5	72.5

*Five Western States: Washington, Oregon, California, Idaho, and Utah.

Source: Division of Dairy and Poultry Products, Bureau of Agricultural Economics.

CHICKENS ON FARMS IN UTAH, 1930

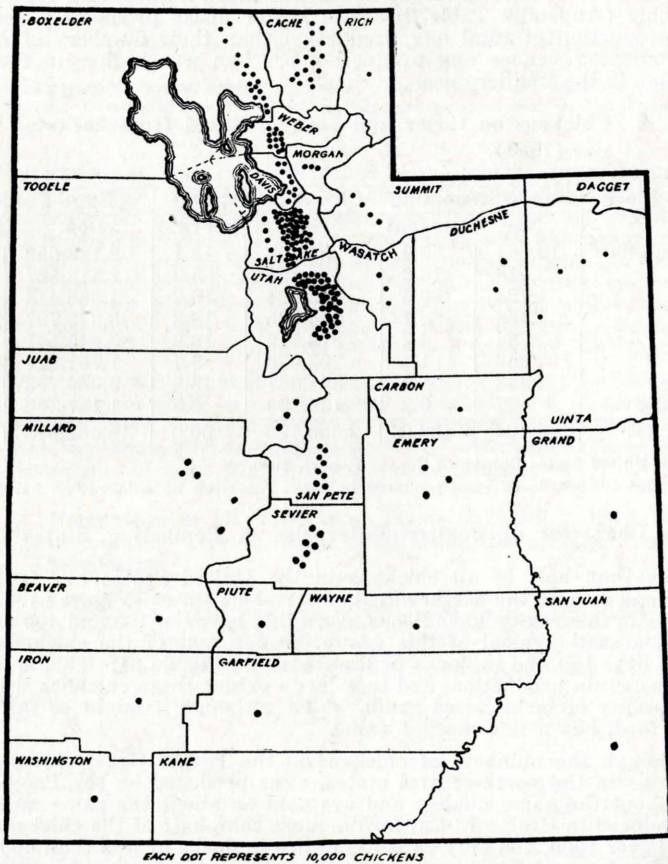


Figure 1.—More than 50 per cent of the chickens in Utah were located in Salt Lake and Utah Counties, and 75 per cent in these two counties and Boxelder, Cache, and Weber Counties.

Distribution of Chickens within Utah

Although chickens were found in all the counties in Utah, in 1930, nearly half of all chickens in the state were in Salt Lake and Utah Counties (Figure 1 and Appendix Table 1). There were also considerable numbers of chickens in Boxelder, Cache, and Weber Counties, approximately 25 per cent of all chickens in the state being located in these counties. Thus, in 1930, 71 per cent of the chickens in the state were within these five counties. With the exception of these five counties and Morgan, Summit, Juab, Sanpete, and Sevier Counties, chickens were kept chiefly to provide eggs for local consumption.

Considering the state as a whole, no one size of flock stands out as having an especially high percentage of all chickens (Table 5). More than half of all the farms reporting chickens had less than 50 or were producing only for family consumption. About one-third of all the chickens in the state were in flocks of less than 200; another third were in flocks between 200 and 700, and the remaining third in flocks of over 700. For the state as a whole, flocks of over 1000 chickens accounted for only 22 per cent of the entire number of chickens. However, in the more important commercial poultry districts the percentage of larger flocks was much higher than for the state as a whole (Appendix Table 2). The larger flocks produced a somewhat larger proportion of total egg production than their numbers of chickens would indicate, because egg production per hen was higher in the larger flocks than in the smaller ones.

TABLE 5. Chickens on farms and eggs produced from flocks of varying size (1930).*

Size of Flock	Farms Reporting		Chickens on Hand		Eggs Produced	
	No.	Percent	No.	Percent	Doz.	Percent
Less than 50	10,654	58.7	254,243	12.1	2,128,656	11.5
50-99	3,018	16.6	186,156	8.9	1,515,527	8.2
100-199	1,724	9.5	223,964	10.7	1,886,418	10.2
200-399	1,468	8.1	383,535	18.3	3,373,797	18.3
400-699	764	4.2	376,912	18.0	3,445,141	18.7
700-999	256	1.4	203,056	9.7	1,751,427	9.5
1000-2499	243	1.3	331,057	15.8	3,066,795	16.6
2500 and over	37	0.2	136,800	6.5	1,187,866	6.4
All Flocks	18,164	100.0	2,095,723	100.0	18,462,515†	100.0

*From United States Bureau of Census Report, 1930.

†Included 106,888 dozen eggs produced in flocks reporting no chickens on hand April 1.

Character of Poultry Enterprise in Competing States

More than half of all chickens in the United States are found in a rather small area in the northcentral or corn-belt states (Figure 2). Most of the farms in this region have flocks averaging between 100 and 400 chickens. In Iowa, a state typical of this group, 80 per cent of the chickens are in flocks of over 100 and in flocks of less than 400 (Table 6). This is a region of surplus grain production, and to a large extent these chickens utilize the poorer quality of farm-raised grain, which, although it might be fairly good poultry feed, has a low market value.

Although the numbers of chickens in the Pacific Coast states are not as large as in the north-central states, eggs produced on the Pacific Coast are of about the same quality and are sold on about the same markets as eggs produced in Utah. In California, more than half of the chickens are in flocks of over 1000, and only 25 per cent are in flocks of less than 400 (Table 6). In Oregon and Washington, the flocks are also large. In all three of these states poultry production is conducted on a commercial scale, the production and marketing being similar to methods followed in Utah.

CHICKENS ON FARMS IN THE UNITED STATES

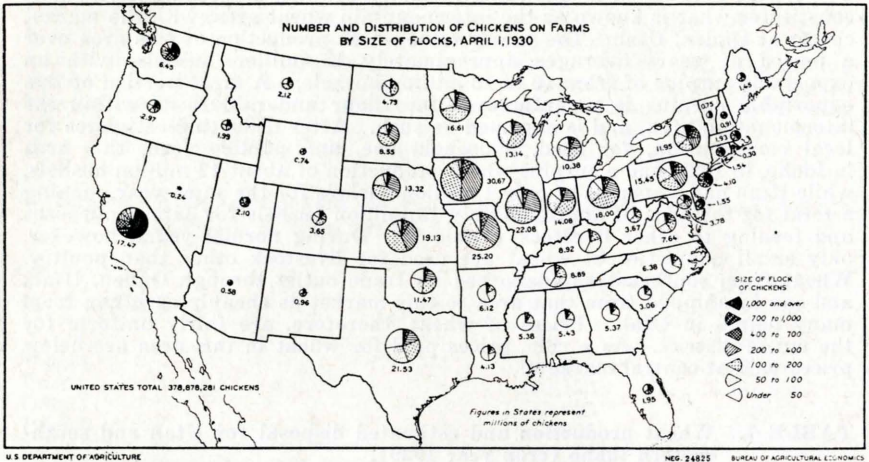


Figure 2.—The region of largest poultry numbers in the United States was the north central states. Considerable numbers of chickens were found also in the Pacific Coast states, where large flocks predominated.

Large numbers of chickens were found in the eastern states, distributed in flocks of all sizes. In New York, for example, no one size of flock contained a considerable part of all the chickens in the state, as was the case in Utah. Although commercial poultry production was important in many areas in the eastern states, flocks generally were not as large as in the West. Eastern poultry producers have the advantage of nearby markets for their eggs and are often able to obtain considerable better prices than can poultrymen who must ship long distances to these markets. Feed prices are also higher in the East and much of the feed used must be purchased.

There were relatively small numbers of chickens in the South, and these were almost entirely in small flocks. Mississippi, a state typical of this region, had more than three-fourths of its chickens in flocks of less than 50 and less than 10 per cent in flocks of over 100. There was no appreciable volume of eggs for export from the South.

TABLE 6. Percentage of all chickens on farms on April 1, 1930, in flocks of varying size in Utah, California, Iowa, New York, and Mississippi.*

Size of Flock	Percentage of Chickens by Size of Flock				
	Utah	California	Iowa	New York	Mississippi
	Per cent	Per cent	Per cent	Per cent	Per cent
Less than 50	12.1	6.5	1.8	14.3	73.1
50 to 99	8.9	4.9	9.2	19.4	17.4
100 to 199	10.7	5.2	38.2	19.7	5.0
200 to 399	18.3	7.8	42.0	18.2	2.1
400 to 699	18.0	11.9	7.6	12.4	0.8
700 to 999	9.7	10.3	0.8	6.1	0.4
1000 to 2499	15.8	29.1	0.4	7.6	0.7
2500 and over	6.5	24.3	....	2.3	0.5
All Flocks	100.0	100.0	100.0	100.0	100.0

*United States Bureau of Census Report, 1930.

AVAILABLE FEED-SUPPLY

Wheat production in Utah and in the 24 counties in southeastern Idaho constitutes what is known as the intermountain wheat area, with the market center at Ogden, Utah. The yearly total wheat production of this area over a period of years averages approximately 18 million bushels, with an exportable surplus of from 10 to 13 million bushels.⁵ A large portion of this exportable surplus is manufactured into flour and mill feeds within the intermountain area, and is exported as such. After deducting estimates for local consumption, for seed, household use, and poultry feed, this area in Idaho, in 1929, had a surplus wheat production of about 12 million bushels, while Utah had a surplus of only 1 million bushels for the same year, making a total for the area of approximately 13 million bushels for export purposes and feeding to other livestock (Table 7). During normal years, however, only small quantities of wheat are used for livestock other than poultry. Wheat from southeastern Idaho has its trade outlet through Ogden, Utah, and can be shipped from that area to this market as cheaply as it can from many points in Utah. Prices of wheat, therefore, are fairly uniform for the entire district. As a rule, prices paid for wheat in this area are below prices paid at central markets.

TABLE 7. Wheat production and estimated disposal for Utah and southeastern Idaho (crop year 1929).

Item	Utah	24 Counties in Southeastern Idaho*	Total for Utah and Southeastern Idaho	Percentage of Total
	Bu.	Bu.	Bu.	Per cent
Total Production	5,309,953	14,907,417	20,217,370	100.0
Used for Seed†	398,548	1,150,011	1,548,559	7.7
Used for Human Consumption‡	2,122,800	905,977	3,028,777	15.0
Consumed by Poultry§	1,708,014	919,447	2,627,461	13.0
Surplus and Fed to Other Livestock	1,080,591	11,931,982	13,012,573	64.3

*Bannock, Bear Lake, Bingham, Blaine, Bonneville, Butte, Camas, Caribou, Cassia, Clark, Custer, Franklin, Fremont, Gooding, Jefferson, Jerome, Lemhi, Lincoln, Madision, Minidoka, Oneida, Power, Teton, Twin Falls.

†1.5 bushels per acre.

‡4.18 bushels per capita.

§54.4 pounds per chicken on hand April 1.

Even though there is a surplus of wheat in this area, general feed grain prices are higher than they are in the midwestern states where corn and other feed grains are produced so abundantly. This is especially true of corn and barley, both of which at the present time are imported into Utah to supply the demand. Increase in barley production and a wider use, therefore, would place the poultry industry in a more favorable position than at present.

Basing estimates of total wheat consumed by poultry for the state as a whole on quantities of feed used by poultrymen in this study, only one-third of the wheat produced in Utah in 1929 was fed to chickens (Table 8). More than three times the state's production of corn was fed to chickens, the additional supply being shipped in from middle-western states. Less corn was fed in 1931 and 1932 than in 1929, a year when wheat was higher in price than in more recent years. Little oats was used, in comparison to

⁵Wheat Compendium. Federal Farm Board and Utah Agricultural Experiment Station. April, 1930.

Utah's production. Although barley has a feeding value almost equal to that of corn, some producers are prejudiced against its use as poultry feed, and only about one-third of the barley produced was used by chickens. In making these calculations, the amount of feed as reported by the poultrymen in this study was adjusted to make allowance for the fact that ground grains were used in the prepared mash feed and also for the fact that in many of the farm flocks of the state the chickens forage for considerable amounts of their feed, so that the amount which is fed to them is lower than in the commercial flocks included in this study.

TABLE 8. Total production of grain and estimated quantities fed to chickens in Utah (1929).*

Kind of Grain	Production 1929	Fed to Chickens
	Bu.	Bu.
Wheat	5,309,953	1,708,014
Corn	232,123	789,638
Oats	1,741,902	52,393
Barley	1,453,021	403,046

*Based on the United States Bureau of Census Report, 1930.

EGG PRICES

Farm Prices in Utah

For the period 1910 to 1914, the average yearly price paid producers in Utah for eggs was approximately 24 cents per dozen (Tables 9, 10). From 1915 to 1920 the average yearly price increased to 35 cents and for the 9-year period, 1920 to 1929, prices averaged 28 cents per dozen (Figure 3). Since 1929, egg prices have declined from 28 cents to 16 cents per dozen as the average yearly price for 1932; however, during April of that year the average price was only 10 cents per dozen. Since 1915 egg prices have ranged from 71 cents in December, 1919, to the low point of 10 cents in April, 1932.

During the years 1922 and 1923 egg prices in Utah were low as compared to the preceding five years and the 5-year period which followed. The general high prices paid for eggs from 1924 to 1929 resulted in considerable expansion in commercial egg production in Utah and other areas in the United States. Some retrenchment has followed as a result of extremely low prices since 1931. The low price of feed during this period, however, has assisted greatly in carrying the poultry industry over a period of low egg prices.

RELATIVE UTAH FARM PRICES OF EGGS AND UNITED STATES RETAIL PRICES

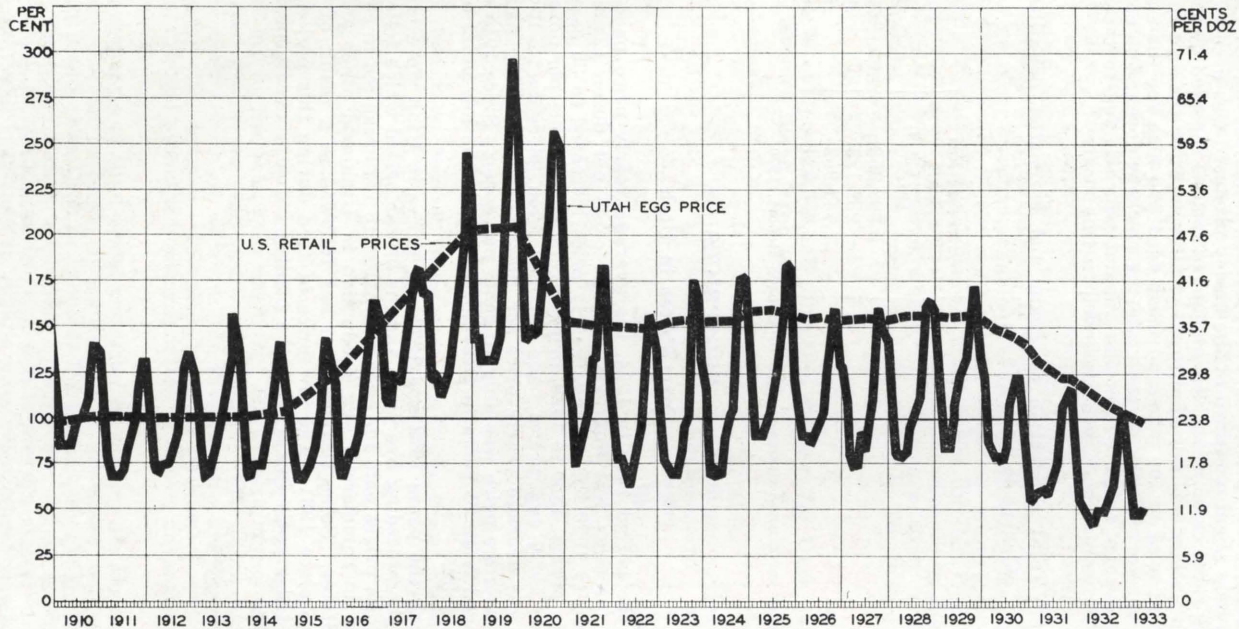


Figure 3.—Since 1929, egg prices in Utah have gone to lower levels than at any other time during the past 22 years.

TABLE 9. Monthly prices paid producers in Utah for farm eggs (1910 to 1933).* (Cents per dozen).†

Year	Egg Prices by Months												Yearly Avg.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents
1910	37	29	20	20	20	20	22	24	24	26	31	34	25.6
1911	32	26	19	16	16	16	17	20	22	24	28	32	22.7
1912	32	25	18	17	18	18	18	20	22	26	31	33	23.2
1913	30	26	20	16	17	19	21	20	23	27	32	38	24.1
1914	33	26	17	16	18	18	18	21	24	28	31	34	23.7
Avg. 1910-14	33	26	19	17	18	18	19	21	23	26	31	34	23.8
1915	30	25	19	16	16	17	18	20	22	26	32	35	23.0
1916	31	29	18	16	18	20	20	22	26	31	37	40	25.7
1917	40	37	27	26	30	29	29	33	37	39	43	44	34.5
1918	40	41	29	30	27	28	30	34	39	43	46	59	37.2
1919	54	34	35	32	32	32	32	34	43	47	58	71	42.0
1920	62	47	34	35	37	35	39	42	50	57	62	60	46.7
Avg. 1915-20	43	36	27	26	27	27	28	31	36	40	46	52	34.9
1921	47	28	26	18	19	18	25	32	32	37	45	44	30.9
1922	28	23	19	19	17	15	17	20	23	34	38	38	24.2
1923	34	25	19	18	17	17	19	23	25	35	43	41	26.3
1924	32	28	17	18	17	17	22	25	26	34	43	42	26.7
1925	43	31	22	22	23	25	28	29	33	38	45	44	31.9
1926	29	24	22	22	21	22	23	25	29	35	39	38	27.4
1927	31	27	20	18	18	22	20	22	26	34	39	36	26.1
1928	34	27	20	19	20	20	23	25	27	34	39	40	27.3
1929	38	33	28	20	20	23	26	29	32	36	42	41	30.7
Avg. 1921-29	35	27	21	19	19	20	23	26	28	35	41	40	27.9
1930	32	29	21	20	19	19	18	20	26	28	30	24	23.8
1931	18	13	13.8	13.8	14.6	13.6	15.0	17.9	22	25	27	28	18.5
1932	22	13	12	10	11	12	12	14	15.8	21	25.3	26	16.2
1933	24.6	11.4	10.7	10.7	12.0								

*Utah Agr. Exp. Sta. Bul. 217 (1930): "Prices of Farm Products in Utah."

†Price quotations are for farm eggs and do not apply to graded eggs.

TABLE 10. Index numbers of prices paid producers in Utah for farm eggs (1910 to 1933).* (1910-14=100)

Year	Index Numbers of Egg Prices												Yearly Index
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1910	155	122	84	84	84	84	92	101	101	109	130	143	108
1911	134	109	80	67	67	67	71	84	92	101	118	134	94
1912	134	105	76	71	76	76	76	84	92	109	130	139	97
1913	126	109	84	67	71	80	88	84	97	113	134	160	101
1914	139	109	71	67	76	76	76	88	101	118	130	143	100
Avg. 1910-14	138	111	79	71	75	77	81	88	97	110	128	144	100
1915	126	105	79	67	67	71	76	84	92	109	134	147	97
1916	130	122	76	67	76	84	84	92	109	130	155	168	108
1917	168	155	113	109	126	122	122	139	155	164	181	185	145
1918	168	172	122	126	113	118	126	143	164	181	193	248	156
1919	227	143	147	134	134	134	134	143	181	197	244	298	176
1920	261	197	143	147	155	147	164	176	210	239	261	252	196
Avg. 1915-20	180	149	113	108	112	113	118	130	152	170	195	216	146
1921	197	118	109	76	80	76	105	134	134	155	189	185	130
1922	118	97	80	80	71	63	71	84	97	143	160	160	102
1923	143	105	80	76	71	71	80	97	105	147	181	172	111
1924	134	118	71	76	71	71	92	105	109	143	181	176	112
1925	181	130	92	92	97	105	118	122	139	160	189	185	134
1926	122	101	92	92	88	92	97	105	122	147	164	160	115
1927	130	113	84	76	76	92	84	92	109	143	164	151	110
1928	143	113	84	80	84	84	97	105	113	143	164	168	115
1929	160	139	118	84	84	97	109	122	134	151	176	172	129
Avg. 1921-29	148	115	90	81	80	83	95	107	118	148	174	170	118
1930	134	122	88	84	80	80	76	84	109	118	126	101	100
1931	76	55	58	58	61	57	63	75	92	105	113	118	78
1932	92	55	50	42	46	50	50	59	66	88	106	109	68
1933	103	48	45	45	50								

*Price Index based on Table 9.

For the period from 1924 to 1929 there was a greater premium paid for "Extra" grade of eggs by the Utah Poultry Producers Cooperative Association than has been paid during the past three years (Figure 4). This is especially true during the months from September until January of each year. The difference in prices received in October of this period for Extra and Standard grades ranged from 18 to 25 cents per dozen, while during the period from February until June the spread between these two grades averaged from 4 to 7 cents per dozen (Appendix Table 3).

During the past two years in October, the difference in prices between these two grades has averaged 16 cents, or about 9 cents below the peak price in 1928. The spread during the spring and summer months has averaged only about 4 cents per dozen.

PRICES PAID PRODUCERS FOR EGGS OF EXTRA AND STANDARD GRADES

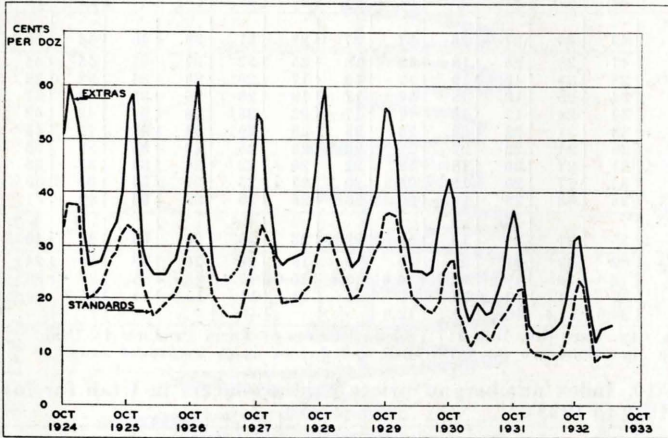


Figure 4.—The margin between the prices paid for eggs of Extra and Standard grades was greater during years and seasons of the year when egg prices were high.

In order to measure the variation in prices paid for different grades of eggs by the Utah Poultry Producers Cooperative Association, by months, for the period October, 1927, to September, 1932, an index of prices by grades for this period was constructed, using the average prices of all eggs for the five years equaling 100 (Table 11, Appendix Table 3, and Figure 5). During this period the prices of all eggs varied from an index of 85 in April to 142 in November. There was a seasonal variation in prices paid for Extra grade for this period from 97 in April to 205 in October, a difference of 111 per cent. The seasonal variation for Standards ranged from 72 in May to 127 in November. The average prices paid for Extra grade for the 5-year period was 31 per cent above the average of all eggs, while Standards were 7 per cent below the average.

TABLE 11. Index numbers of prices paid by Utah Poultry Producers Cooperative Association for eggs by grades, 5-year period (1927 to 1932).* (Oct., 1927 to Sept., 1932=100)

Item	Index Numbers of Egg Prices												Yearly Avg.
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
All Eggs	138	142	128	105	94	88	85	85	87	94	105	118	100
Extra	205	200	148	116	102	100	97	98	102	112	133	162	131
Selects	169	168	136	105	92	87	84	84	88	96	113	137	113
Standards	125	127	118	94	83	76	74	72	75	81	91	104	93
Moun- taineers	128	124	116	94	82	78	77	74	76	93	97	111	95
Pullets	97	99	98	82	73	65	62	61	62	65	73	82	77

*From Appendix Table 3.

During periods when egg prices were high, there was a much greater spread between the better and the poorer grades of eggs than was the case during years or seasons when prices were low. When prices were high the premium paid for Extra quality products was greater than during periods of low prices.

PRICES PAID FOR EGGS ACCORDING TO VARIOUS GRADES AND SEASONS OF THE YEAR

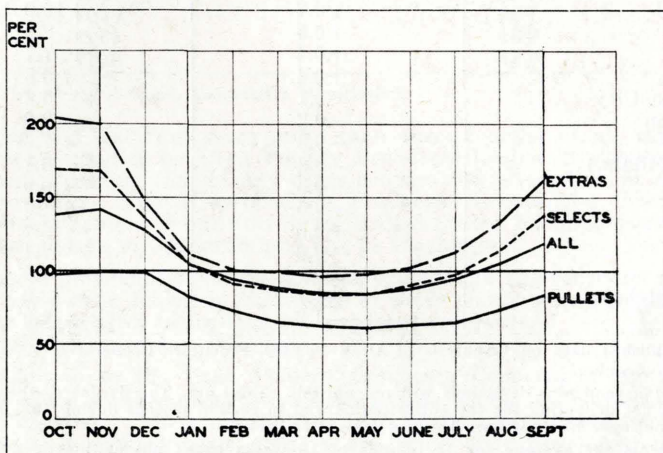


Figure 5.—The difference between prices paid for various grades of eggs was greatest in the late summer and fall (when prices averaged the highest) and least during months when prices were lowest.

Variation in Prices Received

During the period from 1928 to 1932 there was a variation in prices paid of 2.5 cents per dozen for all eggs, between the various receiving stations of the Utah Poultry Producers Cooperative Association (Table 12). The prices paid at the stations receiving the greater quantities of eggs averaged approximately 1.2 cents per dozen above the average price of all eggs, while the average price paid at some of the plants with a smaller volume was 1.3 cents below the average price. Based on the average production of 13 dozen eggs per hen, this difference in price of 2.5 cents per dozen resulted in a difference in income per hen of 32.5 cents.

At some stations the percentage of Extra grade averaged from 10 to 11 per cent above the percentage Extras for all stations, while some stations averaged 12 per cent below the average. In the main, the lower percentage of Extras and the correspondingly lower average price received were in the areas where the smaller flocks predominated and the eggs were not delivered as frequently as was the case in sections where more eggs per flock were produced.

Although the average quality of eggs in certain poultry sections was below that of others, many individual poultrymen may be producing high-quality eggs and receiving the premium for them.

TABLE 12. Price deviations from average price of eggs and deviations of percentage of Extra grade by stations of Utah Poultry Producers Cooperative Association (1929 to 1932).*

Station	Deviation from Average Price of Eggs	Deviation from Average Percentage Extra
	Cents	Per cent
Springville	+1.2	+11.4
American Fork	+1.1	+10.2
Draper	+0.8	+11.0
Midvale	+0.7	+10.0
Payson	+0.5	+ 8.5
Riverton	+0.4	+ 7.7
Provo	+0.4	+ 6.3
Salt Lake City	-0.1	- 0.3
Tremonton	-0.2	- 0.5
Ogden	-0.3	- 7.6
Preston (Idaho)	-0.4	- 6.1
Nephi	-0.5	- 0.9
Morgan	-0.5	- 1.9
Logan	-0.5	- 4.1
Richfield	-0.8	- 7.1
Brigham	-0.9	- 4.9
Malad (Idaho)	-1.1	-12.2
Manti	-1.3	-11.9

*Unpublished data on "Analysis of Utah Poultry Producers Cooperative Association," by John J. Scanlan.

The minus and plus deviations will not entirely cancel out. This is due to the omission of stations not delivering for the entire period and in certain periods during 1931 and 1932 when day-old eggs had not been handled for entire period.

Represents the average for 16 seasons of 13 weeks each; not arithmetic average of yearly average.

MARKETING

A considerable volume of poultry products produced in Utah is sold for local consumption. The requirements for Utah and adjacent areas are limited. The greater portion of the production must be shipped to outside markets. The market for Utah eggs is principally New York City, with some shipments going to other large central markets. The shipment of eggs to these distant markets requires that a high-quality product be produced in order that the prices received can bear transportation and other handling charges. To meet the demand on the New York City market, poultrymen in Utah have specialized in the production of light-yolked eggs from Leghorn hens, these being sold on a strictly graded basis.

Before 1922, or when the state's egg production was about equal to consumption there were surplus eggs on the local market during certain months of the year which resulted in an unstable market and extremely low prices. To correct this condition, the Utah Poultry Producers Cooperative Association had its beginning as a local organization in Sanpete County in 1922 and later extended to cover all important poultry-producing counties of the state and adjacent territories in adjoining states. From the beginning, this association sold eggs on a quality basis.

Due to inexperience of poultrymen who had but recently entered the poultry business on a commercial scale, the percentage of Extra grade was low compared to the percentage grading as Extras during later years (Table 13). In 1925, the percentage grading as Extras was only 14 per cent as compared to 48 per cent in 1932. The production of this high percentage of Extra quality eggs, which receive a premium on the New York City market, has been one of the factors in the development of the poultry industry of Utah.

TABLE 13. Percentage eggs graded as Extras by Utah Poultry Producers Cooperative Association (1924 to 1932).*

Year	Percentage Extras
	Per cent
1924	16.7
1925	14.0
1926	22.9
1927	26.5
1928	36.3
1929	39.2
1930	29.7
1931	46.2
1932	48.4

*Utah Poultry Producers Cooperative Association.

During the last few years more than three-fourths of all eggs sold in Utah were handled by Utah Poultry Producers Cooperative Association, this record exceeding that of any other cooperative association in America marketing eggs. The Utah Poultry Producers Cooperative Association ranks third in volume of business in the United States, being surpassed only by one association in California and one in Washington.

To serve its members, this association operates 16 egg-receiving stations in Utah and two in Idaho; in 1932 eight of these plants were shipping eggs within 24 hours after being laid, the producers receiving 1 cent a dozen as a premium for these day-old eggs.

In addition to the Utah Poultry Producers Cooperative Association, there are some smaller cooperative associations which are marketing eggs for their members. These associations ship to the central markets and sell the eggs on a graded basis. There are some eggs purchased by local stores and individual companies and commission men who either buy direct on delivery or handle them on a commission basis. Practically all of the eggs shipped from this state are sold on the New York City market on a graded basis.

POULTRY FARMS STUDIED

Records secured from the poultrymen cooperating in this study in the fall of 1929 indicate that most of these poultrymen had only a limited experience with chickens on a commercial scale. Not only did the number of poultrymen engaged in commercial production increase rapidly, but the average size of the flock kept by these poultrymen also increased. A common practice during these years was for the poultrymen to construct new buildings in which to brood baby chicks for the current year, fill this building with laying hens in the fall, and then build a new building in which to brood chicks the following year. As long as this practice continued, the baby chicks were in clean buildings and on clean ground each year; it was thus easier to control disease than after each poultryman had built his plant up to the capacity beyond which he did not wish to expand.

Size of Farm and Use of Land

As shown by 319 records taken from poultry producers during the three years of the study, the acreage per farm averaged 41.6 acres (Table 14). Twenty-four acres, or 58 per cent of this, was cultivated land. Of the cultivated area, 97 per cent was planted to field crops and 3 per cent to fruit and truck crops. Of all farms in the study 46 per cent had only sufficient land for the poultry yards and home grounds. These operators either had

a poultry unit large enough to occupy all of their time or, in many cases, supplemented the income with work away from the poultry farm.

TABLE 14. Distribution of acreage on poultry farms.

(Average for 3 years—1929, 1930, and 1931)

Use	Acreage	
	Acres	Percentage of Total Acreage
	No.	Per cent
Field Crops	23.4	56.3
Fruit and Truck Crops	0.7	1.7
Pasture	12.9	31.0
Poultry Yards	1.3	3.1
Range, Waste, and Other	3.3	7.9
Total	41.6	100.0

Acreage and Yields

The average yields for various crops grown on the farms studied were practically the same as the average yields for similar crops in the state for a 5-year period from 1927 to 1931 (Table 15). Alfalfa and wheat were the principal crops grown by the farmers in the study. The percentage of the land planted to grain was considerably above that planted on the average irrigated farm in Utah. There was a tendency for these poultrymen to plant a high percentage of their land to grain for the purpose of producing poultry feed. In a few cases the only land operated was a small dry-farm. In these instances it was found that the combination of a dry-farm and poultry enterprise worked out satisfactorily.

TABLE 15. Acreage and yields of crops grown on poultry farms and 5-year average acre-yields for Utah.

(Average for 3 years—1929, 1930, and 1931)

Crop	All Farms		Those Reporting		5-year Avg. Acre-Yields for Utah
	Acreage	Percentage Reporting	Acreage	Acre-yield	
	No. Acres	Per cent	No. Acres		
Alfalfa	7.8	16.9	15.2	2.6 T.	2.4 T.
Wheat	6.9	13.2	17.7	24 bu.	23 bu.
Barley	1.0	5.6	6.6	46 bu.	38 bu.
Oats	0.4	4.4	3.4	47 bu.	37 bu.
Peas	0.4	4.1	3.5	2495 lbs.	2439 lbs.
Tomatoes	.....	0.6	0.9	8.8 T.	8.8 T.
Sugar-beets	1.0	5.3	6.2	15.4 T.	12.1 T.
Potatoes	0.3	5.0	2.0	213 bu.	155 bu.

Number and Kind of Livestock

As was to be expected on farms included in any poultry study, the principal kind of livestock kept on farms was poultry (Table 16). The 3-year average number of hens kept was 996, or 10 animal units, equaling 62 per cent of the productive livestock. Dairy cows were kept by 68 per cent of the poultrymen in the study; only 23 per cent were keeping hogs and 49 per cent horses. The explanation given for the low percentage keeping hogs was that poultry consumed all of the waste feed on the farm and that there was a greater return from feeding purchased feeds to poultry than to hogs.

TABLE 16. Number and kind of livestock kept on poultry farms.

(Average for 3 years—1929, 1930, and 1931)

Kind	All Farms			Those Keeping		
	No. Head	Animal Units		No. Farms	No. Head	Prctg. Keeping
		No.	Per cent			
Poultry (hens)	996	10.0	62.5	319	996	100
Dairy Cattle	5.0	5.0	31.3	216	7	68
Beef Cattle	0.1	0.1	0.6	21	5	7
Sheep	1.8	0.3	1.9	30	17	9
Hogs	0.9	0.2	1.2	73	4	23
Turkeys	1.0	0.4	2.5	9	124	3
Total Productive Livestock	....	16.0	100.0	....	....	....
Horses	1.5	1.5	....	157	3	49

Thirty-two per cent of these farmers were keeping no dairy cows. The milk supply for the family was purchased either from neighbors or, in some instances, from milk dealers who delivered milk in communities adjacent to cities.

ANALYSIS OF THE FARM BUSINESS

In order to study the relationship of the poultry enterprise to the entire farm business, an analysis for the farm as a whole was made for the three years of the study. This analysis included a report on the capital invested, farm income, expenses, net returns, and relationship of enterprises. A similar analysis of the poultry enterprise as a unit is presented subsequently in this bulletin.

Capital

Three hundred and nineteen records taken from poultry farmers during the three years showed the average capital invested in the farm business for the poultry farmers to be \$11,663 (Table 17). Due to the change in the general price level, the average investment per farm dropped in 1929 from \$13,468 to \$10,405 in 1931. The principal investment was in land and buildings, comprising 76 per cent of the total, the investment in each being about equal. The value of buildings is somewhat higher for these farms than for the average farm where poultry was not the major enterprise. The capital invested in livestock was 16 per cent, while the equipment and farm supplies together equaled only 8 per cent of the total. There was also a decrease from 1929 to 1931 in indebtedness from \$2131 to \$1595.

TABLE 17. Distribution of capital invested in the farm business—1929, 1930, and 1931.

Item	Investment per Farm				Prctg. 3-Year Average
	1929	1930	1931	3-Year Average	
	Dols.	Dols.	Dols.	Dols.	Per cent
Land	5405	4092	3594	4363	37.4
Buildings	4742	4230	4430	4467	38.3
Equipment	710	488	451	550	4.7
Livestock	2088	1893	1556	1846	15.8
Farm Supplies	523	413	374	437	3.8
Total	13,468	11,116	10,405	11,663	100.0
Indebtedness	2131	1794	1595	1840	
Net Farm Equity	11,337	9322	8810	9823	

Fixed capital, or the investment in land and buildings, comprised 76 per cent of the total, while operating capital made up 24 per cent (Table 18). This represents approximately a normal ratio found on most farms. A proper balance between these two types of capital is essential for successful farm operation. It was found in this study that many individual poultrymen had a too-high investment in either fixed or operating capital.

TABLE 18. Investment in fixed and operating capital per farm.

(Average for 3 years—1929, 1930, and 1931)

Item	Investment per Farm	
	Total	Percentage
	Dols.	Per cent
Total Fixed Capital	8831	75.7
Total Operating Capital	2832	24.3
Total	11,663	100.0

Distribution of Capital in Real Estate

Of the \$8831 invested in real estate by these farm operators, \$4363, or approximately 50 per cent, was in land (Table 19). The average investment in the home was \$2326, or 26 per cent, while poultry buildings represented 19 per cent. As a rule, poultry farmers have a higher income in proportion to the capital invested than do many other types of farms; however, the ratio of expense to capital invested is also high for these farms. A more detailed analysis of the poultry farm investment is shown in the second part of this report under "Analysis of the Poultry Enterprise."

TABLE 19. Investment in real estate per farm.

(Average for 3 years—1929, 1930, and 1931)

Item	Investment per Farm	
	Total	Percentage
	Dols.	Per cent
Land	4363	49.4
Home	2326	26.3
Poultry Buildings	1712	19.4
Other Buildings	430	4.9
Total	8831	100.0

Source of Income

Three hundred and nineteen records taken from poultry farms during the three years of this study showed that the total receipts per farm were \$5006 (Table 20). The total receipts per farm varied from \$5902 in 1929 to \$3533 in 1931. This drop of 40 per cent in receipts was the result of a decline in farm prices rather than a reduction in the size of the business. The average decline in the prices paid producers in Utah for all farm products was 34 per cent⁶ for the same period.

⁶Index of Farm Prices, Utah Agricultural Experiment Station.

TABLE 20. Receipts from poultry farms—1929, 1930, and 1931.

Receipts	Receipts per Farm				Prctg.
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Total Crop Receipts	490	438	217	381	7.6
Livestock Receipts					
Dairying	500	344	161	335	6.7
Eggs and Poultry	3910	4472	3144	3842	76.7
Other	134	21	18	58	1.2
Total Livestock Receipts	4544	4837	3323	4235	84.6
Total Crops & Livestock	5034	5275	3540	4616	92.2
Misc. Farm Receipts*	63	29	49	47	0.9
Total Cash Farm Rpts.	5097	5304	3589	4663	93.1
Increased Capital†	496	—83	—233	60	1.2
Total Farm Receipts	5593	5221	3356	4723	94.3
Incm. other than Farm*	309	362	177	283	5.7
Total Receipts	5902	5583	3533	5006	100.0

*Income other than farm includes salary of operator while working away from the farm at regular part-time employment, dividends on stock owned in Utah Poultry Producers Cooperative Association, and other similar receipts. Where the operator did miscellaneous custom or other miscellaneous work away from the farm such employment was included in miscellaneous farm receipts.

†Decrease capital in 1930 and 1931.

For the three years indicated the average receipts from the sale of eggs and poultry were \$3842, or 77 per cent of the total. The receipts from other livestock, crops, and miscellaneous sources amounted to less than one-fourth of the total. The major portion of the grain and other feed produced was fed on the farm.

TABLE 21. Distribution of expenses per farm—1929, 1930, and 1931.

Distribution of Expense	Expense per Farm				Prctg.
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Cash Expense					
Feed Grain	1904	2076	1567	1849	52.7
Hired Labor	256	153	165	192	5.5
Int. on Brwd. Money	157	123	106	129	3.7
Taxes and Insurance	168	148	152	156	4.4
Rent—Land & Water	30	20	6	19	0.5
Repairs to Buildings and Equipment	78	68	38	61	1.7
Auto and Truck Exp.	95	87	83	88	2.5
Crop Expense	16	44	28	29	0.8
Hay and Straw	61	70	50	60	1.7
Supplies	12	17	19	16	0.5
Light, Power and Fuel	32	32	32	32	0.9
Miscellaneous (Includ- ing hauling eggs)	49	41	39	43	1.2
Total Cash Operating Expense	2858	2879	2285	2674	76.2
Livestock Purchased	430	423	270	374	10.7
Total Cash Expense	3288	3302	2555	3048	86.9
Non-cash Expense					
Unpaid Family Labor	277	244	172	231	6.6
Depreciation	255	210	217	228	6.5
Total Farm Expense	3820	3756	2944	3507	100.0

Distribution of Expense

The total expense per farm for the three years was \$3507 (Table 21). Of this amount \$3048, or 87 per cent, represented cash farm expenses; \$459, or 13 per cent, represented family labor and depreciation. The total expense for these farms varied from \$3820 in 1929 to \$2944 in 1931, a difference of only 23 per cent as compared to 40 per cent reduction in receipts over the same period. The expenditure for feed grain was 61 per cent of the total cash expense and 69 per cent of the cash operating expense.

Returns from the Farm Business

The average farm receipts for the three years were \$4723, with expenses at \$3507, leaving \$1216 as farm income (Table 22 and Figure 6). The interest on the farmer's equity at 5 per cent amounted to \$491, leaving \$725 as a labor income for the operator. The farm income, however, was \$1773 in 1929 and only \$412 in 1931. The labor income for 1929 was \$1206 and for 1931 it was a minus \$29. The inability of the operator to reduce expenses to correspond to the rapid decline in farm receipts resulted in the lower labor income in 1931.

FARM RECEIPTS AND EXPENSES

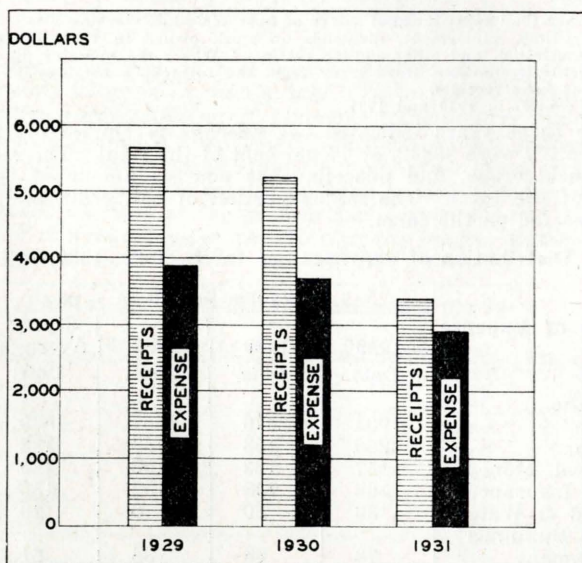


Figure 6.—In 1931 receipts were 60 per cent below those of 1929 and 1930, while expenses declined only 20 per cent.

TABLE 22. Receipts, expenses, and income from poultry farms—1929, 1930, and 1931.

Item	Returns per Farm			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Total Farm Receipts	5593	5221	3356	4723
Total Farm Expenses	3820	3756	2944	3507
Farm Income	1773	1465	412	1216
Interest on Equity at 5%	567	466	441	491
Labor Income	1206	999	-29	725

Returns on Investment

The average estimated value of the operator's labor on his farm was \$825. Deducting this from the farm income, \$391 remained as a net return on the farmer's equity, or a percentage return of 3.9 (Table 23). The return on the farmer's equity varied from 7 per cent in 1929 to a minus return in 1931. In other words, the farm business lacked \$208, or 2.4 per cent, of paying any return on the farmer's equity in 1931.

TABLE 23. Return on investment in farm business—1929, 1930, and 1931.

Item	Return on Investment per Farm			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Farm Income	1773	1465	412	1216
Value of Operator's Labor	982	872	620	825
Return on Farmer's Equity	791	593	—208	391
Percentage Return on Equity	7.0	6.4	—2.4	3.9

Total Family Income

The family income from the farm includes the amount received as a labor income, interest on equity, the value of unpaid family labor, products furnished by the farm for use in the household, and the annual rental value of the home (Table 24). The average 3-year family income from the farm was \$1874. In addition to this, the farm operator had an income of \$283 from other sources, bringing this total income—farm and other—to \$2157. This total income varied from \$2866 in 1929 to \$1120 in 1931, which, in the total income for these producers, represented a decline of 61 per cent from the first to the third year of the study.

TABLE 24. Average family income from farm and other sources—1929, 1930, and 1931.

Item	Income per Farm			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Labor Income	1206	999	—29	725
Interest on Equity	567	466	441	491
Value of Unpaid Family Labor	277	244	172	231
Value of Farm Products Used in Household	248	195	138	194
Rental Value of Home for Year	259	218	221	233
Family Income from Farm	2557	2122	943	1874
Income Other than Farm	309	362	177	283
Family Income from Farm and Other Sources	2866	2484	1120	2157

Variation in Labor Income

In 1929, or the first year of the study, 43 per cent of all producers had a labor income of over \$1000, while in 1931 there were only 7 per cent whose labor income from the farm exceeded \$1000 (Table 25). In this year (1929) 16 per cent of the producers had a minus labor income, while 58 per cent in 1931 had no return whatsoever for their labor. In 1929, 10 per cent of the farmers had a labor income of over \$3000, while several individual poultrymen had a labor return of more than \$10,000 for this year. During 1929

the poultry industry in Utah was profitable; consequently, considerable expansion took place; with the decline in returns, however, some retrenchment has resulted.

TABLE 25. Variation in labor income on poultry farms—1929, 1930, and 1931.

Labor Income	No. of Farms			Percentage		
	1929	1930	1931	1929	1930	1931
Dols.	No.	No.	No.	Prct.	Prct.	Prct.
—1000 or under	2	2	9	2	2	9
— 500 to —1000	5	4	9	4	4	9
0 to — 500	13	24	40	10	24	40
0 to 500	23	16	21	19	16	21
501 to 1000	26	11	14	22	11	14
1001 to 1500	17	19	5	14	19	5
1501 to 2000	8	7	—	7	7	—
2001 to 2500	11	5	1	9	5	1
2501 to 3000	3	3	—	3	3	—
3001 to 3500	4	4	—	4	4	—
Over 3500	7	5	1	6	5	1
Total	119	100	100	100	100	100

Prices of Farm Commodities

Average prices received for farm products sold by cooperating farmers declined from 1929 to 1931 (Table 26). Prices received for contracted crops, such as sugar-beets, tomatoes, and peas, showed less decline during this period than was shown for non-contracted crops and livestock products. The change in prices received from the first to the third year of the study is reflected in the farm income.

TABLE 26. Average prices received by poultry producers for farm commodities sold—1929, 1930, and 1931.

Commodity	Unit	Price per Unit		
		1929	1930	1931
		Dols.	Dols.	Dols.
Alfalfa	Ton	12.40	8.30	10.38
Wheat	Bushel	1.04	0.60	0.52
Oats	Bushel	0.64	0.55	0.29
Barley	Bushel	0.91	0.59	0.49
Peas	Ton	59.60	57.00	45.00
Tomatoes	Ton	11.00	11.50	9.90
Beets	Ton	7.00	7.00	6.00
Potatoes	Bushel	1.27	0.89	0.54
Butterfat	Pound	0.47	0.41	0.26
Eggs	Dozen	0.30	0.29	0.20

Value of Farm Products Used in the Household

The value of farm products used in the household declined from \$248 in 1929 to \$138 in 1931 (Table 27). This was due in large part to the lower prices of farm products. However, these poultry farms supplied a smaller amount of farm products for use in the household than did the average farms in the state, as shown by other studies.⁷ As would be expected from these farms, eggs supplied a higher percentage of the total farm products than on the average farm in the state, while dairy products (meat, fruit, and vegetables) were below average.

⁷Summit County, 1930—\$258 products supplied by the farm.
Utah Farm Accounts, 1931—\$237.
Utah Farm Accounts, 1932—\$246.

TABLE 27. Average value of products supplied by the farm for use in the household—1929, 1930, and 1931.

Item	Value per Farm				Percentage
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Dairy Products	97	67	56	73	37.8
Eggs	67	53	29	50	25.9
Poultry	27	25	21	24	12.5
Beef and Veal	1	2	1	1	0.5
Hogs	8	3	4	5	2.6
Sheep	1	1	—	1	0.5
Fruit	8	9	7	8	4.1
Garden	38	35	20	31	16.1
Other	1	—	—	—	—
Total	248	195	138	193	100.0

ANALYSIS OF THE POULTRY ENTERPRISE

A study of the poultry enterprise, separate from the farm business as a whole, includes all chickens kept (both laying and rearing flocks). The poultry producer is interested in the net returns for the combined flock of hens and young chickens. The analysis which follows shows certain production and cost factors which affect the entire flock as a unit. In later sections of this same bulletin, laying and rearing flocks are considered separately.

Investment in the Poultry Enterprise

The capital investment in the poultry enterprise alone was approximately \$3900 for each of the three years (Table 28). There was a slight decline in value of the poultry flock in 1931 as compared to the other years, but there was an increase in investment in buildings in 1931, which practically offset the decline in investment in poultry. Seventy-four per cent of the total capital was chargeable to the laying flock and 26 per cent to the rearing of young chickens. Of the total investment, buildings represented 45 per cent, while the poultry flock constituted 34 per cent. These two items represented 79 per cent of the total investment in the poultry enterprise.

TABLE 28. Distribution of capital in the poultry enterprise—1929, 1930, and 1931.

Item	Investment per Flock				Percentage
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Laying Flock					
Land	365	240	239	281	7.2
Buildings	1371	1367	1540	1426	36.7
Equipment	148	133	132	138	3.5
Poultry Flock	739	921	879	846	21.8
Feed and Supplies	137	192	204	178	4.6
Total Chargeable to Laying Flock	2760	2853	2994	2869	73.8
Rearing Flock					
Land	123	74	76	91	2.3
Buildings	295	308	360	321	8.3
Equipment	132	91	115	113	2.9
Poultry	593	498	348	480	12.3
Feed and Supplies	4	31	7	14	0.4
Total Chargeable to Rearing Flock	1147	1002	906	1019	26.2
Total Poultry Investment	3907	3855	3900	3888	100.0

Fixed and Operating Capital

Investment in land and buildings, or fixed capital, was 54 per cent of the total poultry investment, while operating capital, or investment in the poultry flock, equipment, feed, and supplies, represented 46 per cent (Table 29 and Figure 7). The fixed capital in the farm business as a whole constituted 76 per cent of the total, with only 24 per cent as operating capital. Poultry requires a lower fixed investment than most types of farm production; it usually has a higher rate of turnover on investment. Returns from the poultry business are often reduced by not having the proper balance between fixed and operating capital. Some poultrymen have made a too-heavy investment in expensive buildings in comparison to the size of the poultry flock, while others have attempted to have a rather high investment in poultry and operating capital but have a small relative amount of capital in buildings with the result that they have not provided adequate space or proper sanitary conditions for the number of poultry kept.

TABLE 29. Investment in fixed and operating capital in the poultry enterprise—1929, 1930, and 1931.

Item	Investment per Flock				Percentage
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Land	488	314	315	372	9.5
Buildings	1666	1675	1900	1747	45.0
Total Fixed Capital	2154	1989	2215	2119	54.5
Poultry Flock	1332	1419	1227	1326	34.1
Equipment	280	224	247	251	6.4
Feed and Supplies	141	223	211	192	5.0
Total Operating Capital	1753	1866	1685	1768	45.5
Total Capital	3907	3855	3900	3888	100.0

DISTRIBUTION OF CAPITAL IN THE POULTRY ENTERPRISE

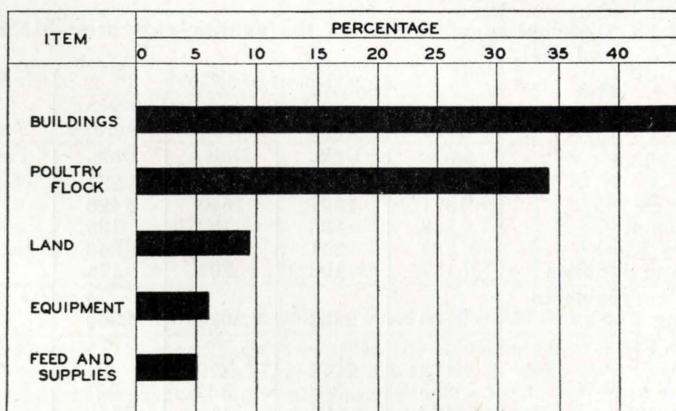


Figure 7.—About one-half of the investment in the poultry enterprise was in buildings and approximately one-third in the poultry flock. These two items represented 79 per cent of the total.

Investment per Hen

As a rule, on October 1, or the beginning of the year for the poultry business, poultrymen have a sufficient number of hens to fill their poultry

houses; however, as the hens die or are sold during the year they are not always replaced. Consequently, buildings and equipment are not used to full capacity during the major part of the year, thereby increasing the investment cost per hen. The number of hens on the farms included in this study at the beginning and at the end of the year for the three years averaged 1349 hens per farm, while the number of hens based on the average number each month was 996 (Table 30). The total investment cost per hen based on the 1349 hens was \$2.88, while the per-hen investment based on the monthly average of 996 was \$3.90, a difference of \$1.02. Since the income is more dependent upon the average number of hens kept throughout the year than upon the number on hand at the beginning of the year, the average of 996 hens should bear the investment costs. It is, therefore, important to operate the poultry plant as near capacity as possible in order to reduce overhead costs per hen.

TABLE 30. Poultry investment per hen in the poultry enterprise—1929, 1930, and 1931.

Item	Investment per Hen when No. of Hens is Expressed as:		Difference
	Monthly Average	Avg. of Opening & Closing Inventory	
Avg. No. of Hens	996	1349	353
	Dols.	Dols.	Dols.
Buildings	1.76	1.29	0.47
Equipment	0.25	0.19	0.06
Poultry Flock	1.33	0.98	0.35
Land	0.37	0.28	0.09
Feed and Supplies	0.19	0.14	0.05
Total Poultry Investment	3.90	2.88	1.02

Receipts from the Poultry Enterprise

The receipts from the poultry enterprise ranged from \$4605 per flock in 1930 to \$3052 in 1931, with a 3-year average of \$4055 (Table 31). The decline in prices of poultry products accounts for the 34 per cent reduction in receipts in 1931 as compared to 1930, there being approximately no change in the size of the business. Eighty-four per cent of the total receipts was from the sale of eggs, while the receipts from sale of cockerels, pullets, and hens represented only 11 per cent of the total.

TABLE 31. Receipts from the poultry enterprise—1929, 1930, and 1931.

Source	Receipts per Flock				Percentage
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Egg Sales	3359	4040	2764	3388	83.6
Poultry Sales					
Cockerels	261	185	170	205	5.1
Pullets	32	57	49	46	1.1
Hens	258	190	161	203	5.0
Other Receipts	7	18	23	16	0.4
Total Cash Receipts	3917	4490	3167	3858	95.2
Increased Inventory*					
Poultry	497	37	-165	123	3.0
Credits for:					
Eggs Used in Household	67	53	29	50	1.2
Poultry Used in Household	27	25	21	24	0.6
Total Poultry Receipts	4508	4605	3052	4055	100.0

*Decrease in inventory value of \$165 (1931).

Expenses on Poultry Enterprise

The total expense for the poultry business ranged from \$3170 in 1930 to \$2375 in 1931, with a 3-year average of \$2836 (Table 32). The average operating costs for these three years represented 79.4 per cent of the total. Feed cost was the principal item of total expense, constituting 68 per cent. Depreciation of buildings and equipment was 3.8 per cent, while allowance for unpaid family labor (other than the operator) was 5.1 per cent. This item was included as an expense in order to determine the total cost of the poultry enterprise other than the labor of the operator.

TABLE 32. Distribution of expense for poultry enterprise—1929, 1930, and 1931.

Distribution of Expense	Expense per Flock				Percentage
	1929	1930	1931	3-year Average	3-year Average
	Dols.	Dols.	Dols.	Dols.	Per cent
Operating Costs					
Feed Grains (purchased and grown)	2048	2183	1556	1929	68.0
Hired Labor	49	74	99	74	2.6
Taxes and Insurance	42	48	52	47	1.7
Repairs to Buildings and Equipment	39	36	21	32	1.1
Auto and Truck Exp.	53	49	55	52	1.8
Straw (purchased and grown)	49	65	36	50	1.8
Fuel	19	12	12	14	0.5
Light	12	13	13	13	0.5
Veterinary & Medicine	10	14	15	13	0.5
Hauling Eggs	16	20	26	21	0.7
Miscellaneous	6	7	5	6	0.2
Total Operating Costs	2343	2521	1890	2251	79.4
Poultry Purchases	360	384	255	333	11.7
Total Operating Costs & Poultry Purchases	2703	2905	2145	2584	91.1
Depreciation on Buildings and Equipment	106	103	113	108	3.8
Unpaid Family Labor	154	162	117	144	5.1
Total Expense (Exclusive of Operator's Labor)	2963	3170	2375	2836	100.0

Returns from Poultry Enterprise

The income per flock from the poultry enterprise, including the combined flock of hens and young chickens, ranged from \$1545 in 1929 to \$677 in 1931, with a 3-year average of \$1219 (Table 33). After allowing interest on the capital invested in the poultry enterprise there remained as operator's labor income from the poultry enterprise \$1350 for 1929, \$1212 for 1930, and \$482 for 1931, with a 3-year average of \$1025. The return for labor for the poultry enterprise was considerably higher than for the farm business as a whole. This indicates that during these years the poultry business on these farms paid better than did some other farm enterprises.

TABLE 33. Receipts, expense, and income from the poultry enterprise—1929, 1930, and 1931.

Item	Returns and Expenses per Flock			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Total Poultry Receipts	4508	4605	3052	4055
Total Poultry Expense*	2963	3170	2375	2836
Income from Poultry Enterprise	1545	1435	677	1219
Interest on Capital at 5%	195	193	195	194
Labor Income from Poultry Enterprise	1350	1212	482	1025

*Exclusive of operator's labor.

Return on Investment

The total return on the investment in the poultry enterprise ranged from \$974 in 1929 to \$246 in 1931, with an average for three years of \$703 (Table 34). In order to determine the return on investment in the poultry enterprise, the value of the operator's labor was deducted from the net income. The return on investment varied from 24.9 per cent in 1929 to 6.3 per cent in 1931, with 18.1 per cent as a 3-year average.

TABLE 34. Return on investment from poultry enterprise—1929, 1930, and 1931.

Item	Return on Investment			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Income	1545	1435	677	1219
Value of Operator's Labor	571	547	431	516
Return on Investment	974	888	246	703
Percentage Return on Investment	24.9	23.0	6.3	18.1

Income per Hen from Poultry Enterprise

The total poultry income from all sources averaged \$5.11 per hen in 1929 and \$2.79 in 1931, with an average for the three years of \$4.07 (Table 35). The total poultry expense per hen ranged from \$3.36 in 1929 to \$2.17 in 1931, with a 3-year average of \$2.85. The return for labor of the operator ranged from \$1.75 per hen in 1929 to \$0.62 in 1931, with a 3-year average of \$1.22.

TABLE 35. Income per hen from poultry enterprise—1929, 1930, and 1931.

Item	Income per Hen			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Total Receipts from Poultry	5.11	4.55	2.79	4.07
Total Poultry Expense	3.36	3.14	2.17	2.85
Income from Poultry	1.75	1.42	0.62	1.22

Man Labor on Poultry

In studying those cost factors which relate to the poultry enterprise it was found that there was more variation in the cost of labor with different sized flocks than for other items of cost. The total labor for both laying and rearing flocks was 286 hours for each 100 hens for the group, averaging 373 hens per flock, in the group averaging 2586 hens the total for each hundred hens was only 151 hours (Table 36). On a per-hen basis, the time spent varied from 2.9 hours for the group with the smallest number of hens to 1.5 hours per hen for the larger flocks. On the basis of 10 hours per day, the man-work days per 100 hens ranged from 28.6 days for the small flocks to 15.1 days per 100 hens for the larger flocks, with an average of 19.5 days for all flocks included in the study.

TABLE 36. Man labor on poultry according to size of flock.

(Average for 3 years—1929, 1930, and 1931)

Size of Flock	No. of Hens	Man Labor*			
		Total	Per 100 Hens	Per Hen	Per 100 Hens
No. of Hens	No.	Hrs.	Hrs.	Hrs.	Days
0-500	373	1067	286	2.9	28.6
501-1000	714	1652	231	2.3	23.1
1001-1500	1226	2308	188	1.9	18.8
Over 1500	2586	3907	151	1.5	15.1
All Flocks	996	1938	195	2.0	19.5

*Labor of children reduced to man-hour equivalent.

LABOR ON POULTRY ACCORDING TO SIZE OF FLOCK

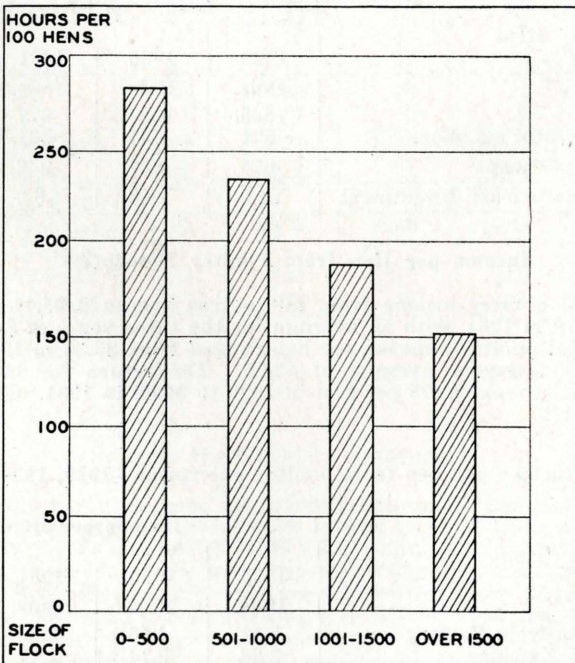


Figure 8.—Increasing the size of the flock reduced the labor requirement per 100 hens.

Due to the nature of many of the operations in caring for poultry, labor can be used more efficiently on larger flocks, or until an economic unit is reached. According to the average labor requirements for the larger flocks, it would take the time of one man to care for between 2000 and 2500 hens, including the care of the pullets for replacement.

Using the average labor of 195 hours per hundred hens for all flocks as equaling 100, the percentage change in hours of labor required for different sized flocks for the various years was determined. The index, or change in terms of percentage, for the flocks with less than 500 hens was 147 per cent, or 47 per cent above the average which represented approximately 1000 hens, while the average for the flocks of over 1500 hens was 75 per cent, or 25 per cent below the average (Table 37 and Figure 8). In other words, the amount of labor required for each 100 hens for the larger flocks was approximately one-half of that for the smaller flocks.

The majority of the poultrymen who kept small flocks were operating other farm enterprises in addition to poultry, and in most cases family labor was used in the care of the poultry flock. In this respect the extra labor requirements for the small flocks does not have as much economic significance as would appear, because of surplus family labor which was available on most of these farms.

The index of labor for the larger flocks remained fairly constant for the three years of the study, but there was a considerable reduction in the amount of labor used on smaller flocks from 1929 to 1931. The improvements in housing and equipment and the increased experience and efficiency of the poultrymen in caring for both the laying flock and in rearing pullets, undoubtedly was the principal reason for this reduction in labor from the first to the third year of the study.

TABLE 37. Labor index according to size of flock, 1929, 1930, and 1931.

(3-year average 195 hours' labor per 100 hens=100)

Size of Flock	Labor Index			
	1929	1930	1931	3-year Average
No. of Hens	Per cent	Per cent	Per cent	Per cent
0-500	165	147	131	147
501-1000	139	118	100	119
1001-1500	92	110	88	97
Over 1500	74	79	73	75
All Flocks	106	104	91	100

There was a rather wide range in the number of hens handled per man. In some cases the individual poultryman was spending all of his time with 1000 hens and less, while other poultrymen were doing all of the work in caring for more than three times the number. Three thousand hens per man is considered an economic unit for an efficient poultryman, provided some additional labor is available during the brooding season.

Hired and Family Labor

On the farms with small poultry units, the operator's wife and children did approximately 40 per cent of the work in caring for the poultry, while for the larger flocks family labor represented only 12 per cent of the total (Table 38). On farms where poultry was not a major enterprise most of the work performed by the operator's wife and family was done during cropping seasons when the operator was busy with other farm work. The fact that this family labor can thus be employed is one of the principal reasons why a poultry unit added to the farm business on the average small farm in Utah has been profitable. Of the labor on the larger flocks, approximately one-fourth was hired, decreasing in proportion to the smaller number of hens kept.

TABLE 38. Family and hired labor on poultry enterprise according to size of flock.

(Average for 3 years—1929, 1930, and 1931)

Individual	Labor Requirements per 100 Hens									
	0-500		501-1000		1001-1500		Over 1500		All Flocks	
	Hrs.	Prct.	Hrs.	Prct.	Hrs.	Prct.	Hrs.	Prct.	Hrs.	Prct.
Hired	2	0.7	9	3.9	15	8.0	36	23.8	21	10.6
Operator	165	57.7	167	72.3	146	77.6	96	63.6	133	68.4
Operator's Wife	89	31.1	43	18.6	15	8.0	8	5.3	27	13.7
Children	24	8.4	9	3.9	12	6.4	10	6.6	12	6.3
Other	6	2.1	3	3.1	....	....	1	0.7	2	1.0
Total Labor	286	100.0	231	100.0	188	100.0	151	100.0	195	100.0

Quantity and Value of Feed

The total mash and scratch feed per hen fed to the laying flock was 78.4 pounds and 26.6 pounds per pullet raised fed to the rearing flock (Table 39). This was the 3-year average for all poultrymen included in this study and represented a total of 315,577 hens. If there were the same number of pullets raised for replacement as there were hens kept, the total annual mash and scratch requirement was 105 pounds per hen and pullet. This quantity of feed was based upon the average number of hens per farm (996) with an average number of pullets raised per farm (960). To feed this average poultry flock of hens and pullets during the year required 103,622 pounds of feed.

TABLE 39. Quantity and value of feed fed per hen and per pullet raised.

(Average for 3 years—1929, 1930, and 1931)

Item	Laying Flock		Rearing Flock	
	Amt.	Value	Amt.	Value
Avg. No. Hens and Pullets Raised	996		960	
	Lbs.	Dols.	Lbs.	Dols.
Scratch				
Wheat	26.1	0.399	8.7	0.147
Corn	8.9	0.175	3.5	0.070
Oats	0.5	0.008	0.3	0.005
Barley	3.3	0.044	0.7	0.009
Total Scratch	38.8	0.626	13.2	0.231
Total Mash	39.6	0.842	13.4	0.292
Total Mash and Scratch	78.4	1.468	26.6	0.523
Other		0.050		0.016
Total All Feed		1.518		0.539

EGG-PRODUCTION COSTS AND RETURNS

In order to determine cost and returns from producing eggs, detailed information on the expenses for the laying flock, exclusive of the rearing flock, were secured from cooperating poultrymen. Total egg-production costs and costs per hen and per dozen eggs, together with factors affecting such costs, have been studied for the three years. In addition to the cost analysis, various factors influencing costs and returns are shown in the tables which follow. This analysis is based on the average number of hens in the laying flock each month and not on the average of opening and closing inventory. The income included in this part of the report on egg production costs and returns includes only the sale value of eggs, the income from sale of hens being credited under depreciation, thus reducing that item by the amount of the sale value of hens. Expenses covered all costs including labor cost for the operator and family.⁵

⁵The income and expense in this section of the bulletin differs from that shown under "Poultry Enterprise" since that section covers the combined laying and rearing flock.

Factors Influencing Egg Production Costs and Returns

The principal factors influencing egg production costs and returns were found to be (1) average number of hens kept, (2) production per hen, (3) prices received per dozen eggs, (4) percentage in Extra grade, and (5) percentage of death loss.

The average number of hens kept by the poultrymen included in this study varied from 883 in 1929 to 1094 in 1931, with an average of 996 for the three years (Table 40). The average production per hen varied from 152 eggs in 1929 to 165 in 1930, with a 3-year average of 157 eggs. The greatest factor influencing returns was the change in prices received per dozen eggs from 1929 to 1931. In 1929 the average price received by all poultrymen was 29.9 cents and in 1931 it was 19.8 cents, a drop of 10.1 cents per dozen from 1929 to 1931. The percentage death loss increased from 16 to 22 per cent from the first to the third year of the study.

TABLE 40. Factors influencing egg production costs and returns—1929, 1930, and 1931.

Item	1929			1930			1931			3-year Average
Average No. Hens	883			1011			1094			996
Production per Hen	152			165			154			157
Average Value per Dozen Eggs	\$0.299			\$0.287			\$0.198			\$0.261
Percentage Death Loss	16.6			21.3			22.0			20.0
Percentage in Extra Grade	49.1			41.0			51.0			47.0

Egg Production

The average egg production per flock for the three years was 13,068 dozen, representing 157 eggs per hen, with a total value of \$3379 (Table 41). The eggs produced per farm varied from 11,164 dozen in 1929 to 14,071 dozen in 1930. The total value of eggs for 1930 was \$4037. This was \$1272 more than the value of eggs produced in 1931.

TABLE 41. Total egg production and value per flock—1929, 1930, and 1931.

Item	No. and Value of Eggs							
	1929		1930		1931		3-year Average	
	Doz.	Dols.	Doz.	Dols.	Doz.	Dols.	Doz.	Dols.
Egg Sales	10,938	3266	13,886	3984	13,815	2734	12,880	3328
Eggs Used	226	68	185	53	154	31	188	51
Total Sold and Used	11,164	3334	14,071	4037	13,969	2765	13,068	3379

Egg production during early fall months has a direct bearing on the income for the year (Table 42). Those flocks with a relatively high egg production during the fall months continued with a high production during the year; on the average, those flocks with a low egg production remained lower throughout the year.

The average production during October, November, and December for the most profitable flocks was 36 per cent, while for the least profitable flocks for these months the production averaged 20 per cent, a difference of 16 per cent in production between the two groups. The percentage production for the most profitable flocks for the year was 47.5, while the least profitable flocks had an average production of 36.8 per cent, with an average production for all flocks of 43.1 per cent.

TABLE 42. Percentage egg production by months.

(Average for 3 years—1929, 1930, and 1931)

Month	Percentage Production		
	Most Profitable Flocks	Least Profitable Flocks	All Flocks
	Per cent	Per cent	Per cent
October	27.7	16.2	23.5
November	35.8	18.7	28.7
December	44.7	25.1	36.4
January	48.2	32.1	41.2
February	55.0	45.0	50.1
March	61.3	52.1	57.5
April	61.2	55.1	58.4
May	58.5	51.9	55.6
June	55.7	46.8	52.2
July	48.3	41.3	45.5
August	41.1	34.0	38.6
September	36.5	31.8	35.2
Year	47.5	36.8	43.1

Production per Hen

A wide range in production per hen between individual producers is included in this study. In 1929 the average production per hen of individual flocks ranged from 229 to 79 eggs (Figure 9 and Appendix Table 4). In 1930 the variation in number of eggs per hen for the different flocks was from 219 to 102 eggs. The range in production for 1931 was from 211 to 87 eggs.

POULTRY FARMS RANKED ACCORDING TO EGG PRODUCTION PER HEN

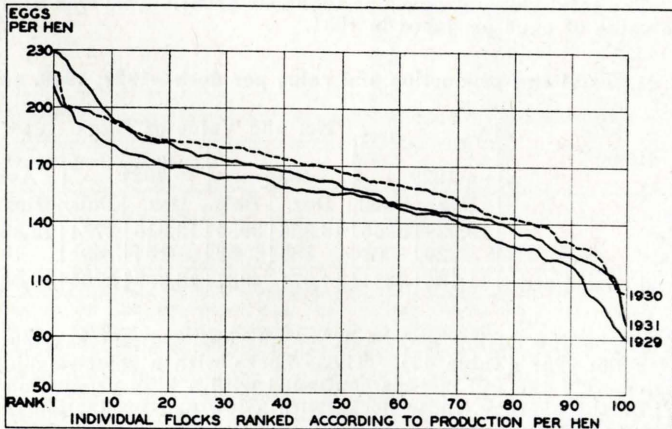


Figure 9.—During the three years 1929 to 1931, inclusive, approximately 30 per cent of the producers had a production above 170 eggs per hen, while 70 per cent had a production above 140 eggs.

Production per hen has a direct bearing on net profits. However, some individual producers with high per-hen production had correspondingly high expenses, resulting in low net returns.

Egg Production Costs

Over a period of three years the poultry farms included in this study had an average expenditure on the laying flock of \$3155 (Table 43 and Figure 10). The operating expense was 52 per cent of the total, depreciation on hens represented 21, labor 18, and overhead costs only 9 per cent of the total. The total operating costs, which are usually considered as cash costs, averaged \$1646 for the three years. Of this amount, feed constituted \$1498 which was 90 per cent of operating expense, or 48 per cent of total expense. The cost remained fairly uniform for the various years, declining somewhat in 1931 from the two previous years. It was difficult for poultrymen in 1931 to adjust their expenses to the sudden decline in price of eggs.

DISTRIBUTION OF COSTS OF EGG PRODUCTION

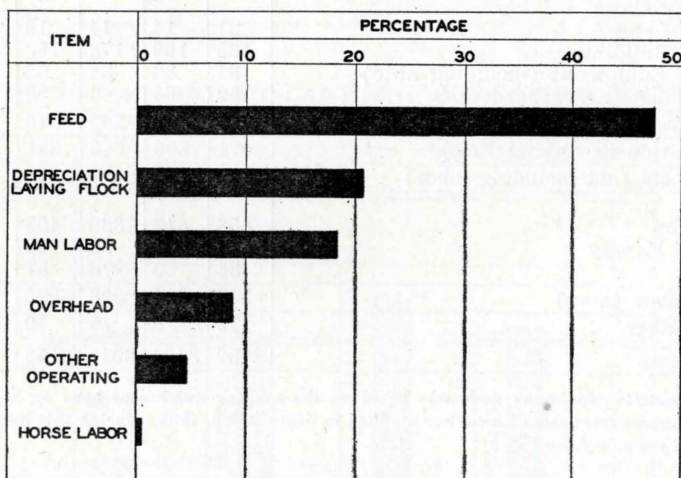


Figure 10.—Feed was the largest single item of cost in egg production, making up nearly 50 per cent of the total. Depreciation on the laying flock and man labor each accounted for about 20 per cent of the total.

Flock Depreciation Charge

The investment in chickens at the opening inventory plus the number purchased gave a 3-year average of \$1279 per farm (Table 44). At the closing inventory the value of these chickens was \$417, with sales amounting to \$211, making a total value for these two items of \$628. The difference between this figure and the value of chickens at the beginning of the year was \$651. This \$651 was accounted for either in chickens that died, the difference in prices of hens sold as culls and their inventory value, or the lower value of hens retained.

The depreciation charge was highest in 1930 because of high opening inventory values, high death rates, low sales prices of culls, and low values of chickens retained. The number of chickens at the beginning of the year was larger than at the end of the year, or than the average for the year. Few chickens were purchased to replace those that died or were culled. Depreciation due to death loss was greater than that due to any other factor, although the three sources of depreciation accounted for about equal proportions of the total.

TABLE 43. Egg production costs for laying flock—1929, 1930, and 1931.

Item	Costs per Flock				Prcgtg.
	1929	1930	1931	3-yr. Avg.	3-yr. Avg.
Avg. No. of Hens	883	1011	1094	996	
	Dols.	Dols.	Dols.	Dols.	Percent
General Operating Expense					
Feed	1478	1648	1367	1498	47.5
Straw	38	47	55	47	1.5
Light	12	13	13	13	0.4
Hauling Eggs	16	20	25	20	0.6
Auto Operations Chargeable to Poultry	51	47	50	49	1.6
Miscellaneous Operating Expense	14	22	22	19	0.6
Total General Operating Expense	1609	1797	1532	1646	52.2
Overhead Costs					
Use of Land	21	14	14	16	0.5
Use of Buildings	168	166	173	169	5.4
Use of Equipment (including auto)	31	33	32	32	1.0
Miscellaneous Overhead	50	64	63	59	1.9
Total Overhead Costs	270	277	282	276	8.8
Depreciation in Laying Flock*	471	800	683	651	20.6
Total Costs (not including labor)	2350	2874	2497	2573	81.6
Labor					
Operator	456	417	336	403	12.8
Unpaid Family	107	135	92	112	3.5
Hired	34	60	78	57	1.8
Total Labor (man)	597	612	506	572	18.1
Horse Labor	12	8	9	10	0.3
Total Costs	2959	3494	3012	3155	100.0

*Depreciation in laying flock was based on the average number of hens on hand each month. Income from sale of hens was credited in depreciation, thus reducing this item by the amount of the sale value.

TABLE 44. Flock composition, disposal of chickens, and source of flock depreciation charge—1929, 1930, and 1931.

Item	1929		1930		1931		3-yr. Avg.	
	No.	Val.	No.	Val.	No.	Val.	No.	Val.
Opening Inventory	No.	Dols.	No.	Dols.	No.	Dols.	No.	Dols.
Pullets	651	778	874	1092	897	937	807	935
Hens—1 year	357	289	355	289	434	304	382	294
Hens—Over 1 year	27	20	39	31	95	62	54	38
Total	1035	1087	1268	1412	1426	1303	1243	1267
Purchases of Mature Chickens	26	22	11	9	12	6	16	12
Closing Inventory								
Hens—1 year	371	300	484	338	494	328	450	322
Hens—Over 1 year	108	83	126	78	201	125	145	95
Total	479	383	610	416	695	453	595	417
Chickens Sold and Eaten	405	255	397	205	423	173	408	211
Chickens Died	177		272		320		256	
Depreciation Charge		471		800		683		651

Income from Laying Flock

The average receipts from the poultry farms studied for the three years was \$3379, with the expenses per farm of \$3155, leaving the income from the laying flock of \$224 (Table 45 and Figure 11). The net income ranged from \$543 in 1930 to minus \$247 in 1931. In 1931 receipts declined more than did expenses.

TABLE 45. Receipts, expenses, and income for the laying flock—1929, 1930, and 1931.

Item	Receipts and Expenses per Farm			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Receipts	3334	4037	2765	3379
Expenses	2959	3494	3012	3155
Income from Laying Flock	375	543	-247	224

RECEIPTS FROM EGGS AND THE COST OF PRODUCTION

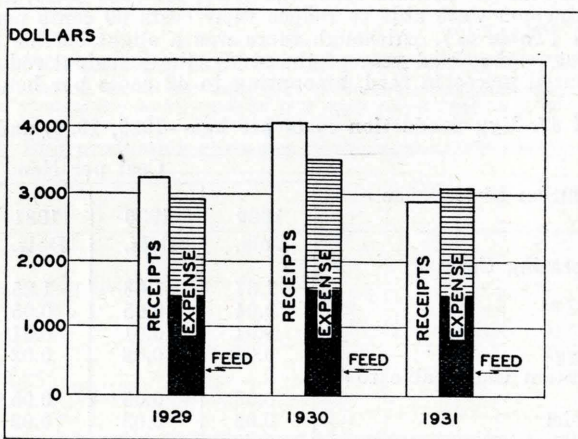


Figure 11.—In 1929 and 1930 the receipts from egg sales more than paid the cost of egg production, including wages for the operator and his family. In 1931, receipts were not sufficient to pay the costs.

Egg Production Costs According to Size of Flock

The total cost per hen for the group with less than 500 hens was \$3.40, while the average cost for the group with over 1500 hens was \$3.08 per hen, a difference of 32 cents (Table 46). The average operation costs were practically the same for the different-sized flocks. There was, however, a higher overhead expense with the smaller flocks but a lower cost for depreciation of the laying flock. The explanation, of course, was that there was a certain amount of overhead that must be maintained regardless of size of flock. On the other hand, as size of flock increased, depreciation increased as a result of higher death loss and more severe culling. The greatest difference in costs between the different-sized flocks was in the cost of labor, varying 31 cents per hen between the larger and smaller flocks. Labor cost per hen was greatly reduced as the size of flock increased.

TABLE 46. Egg production costs per hen, according to size of flock.

(Average for 3 years—1929, 1930, and 1931)

Item	Cost per Hen According to Size of Flock				
	0-500	501-1000	1001-1500	Over 1500	Average All Flocks
	Dols.	Dols.	Dols.	Dols.	Dols.
Feed Cost	1.50	1.54	1.51	1.52	1.51
Other Operating Costs	0.17	0.17	0.14	0.14	0.15
Operating Costs	1.67	1.71	1.65	1.64	1.66
Overhead Costs	0.33	0.28	0.27	0.27	0.28
Depreciation on Laying Flock	0.58	0.60	0.65	0.69	0.65
Costs (not including labor)	2.58	2.59	2.57	2.60	2.59
Labor Cost (man)	0.81	0.68	0.56	0.47	0.58
Horse Labor	0.01	0.01	0.01	0.01	0.01
Total Costs	3.40	3.28	3.14	3.08	3.18

Egg Production Costs by Years

The total cost per hen for 1929 was \$3.35, for 1930 \$3.45, and for 1931 \$2.75. Poultrymen were able to reduce their costs 60 cents per hen from 1929 to 1931 (Table 47). Although there was a slight decline in all costs from the first to the third year of the study, the principal reduction came through reduced prices in feed, amounting to 42 cents per hen.

TABLE 47. Egg production costs per hen—1929, 1930, and 1931.

Distribution of Expense	Cost per Hen			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
General Operating Costs				
Feed	1.67	1.63	1.25	1.51
Straw	0.04	0.05	0.05	0.05
Light	0.01	0.01	0.01	0.01
Hauling Eggs	0.02	0.02	0.02	0.02
Auto Operation Chargeable to Poultry	0.06	0.05	0.05	0.05
Miscellaneous	0.02	0.02	0.02	0.02
Total General Operation Costs	1.82	1.78	1.41	1.66
Overhead Costs				
Use of Land	0.02	0.01	0.01	0.02
Use of Buildings Chargeable to Poultry	0.19	0.16	0.16	0.17
Use of Equipment (including auto)	0.04	0.04	0.03	0.03
Miscellaneous Overhead	0.06	0.06	0.06	0.06
Total Overhead Costs	0.31	0.27	0.26	0.28
Depreciation on Laying Flock	0.53	0.79	0.62	0.65
Costs (not including labor)	2.67	2.85	2.29	2.60
Labor Costs				
Operator	0.52	0.41	0.31	0.41
Unpaid Family	0.12	0.13	0.08	0.11
Hired	0.04	0.06	0.07	0.06
Total Labor Costs (man)	0.68	0.60	0.46	0.58
Horse Labor	0.01	0.01	0.01	0.01
Total Costs	3.35	3.45	2.75	3.18

Cost per Dozen Eggs

POULTRY FARMS RANKED ACCORDING TO COST OF PRODUCING EGGS

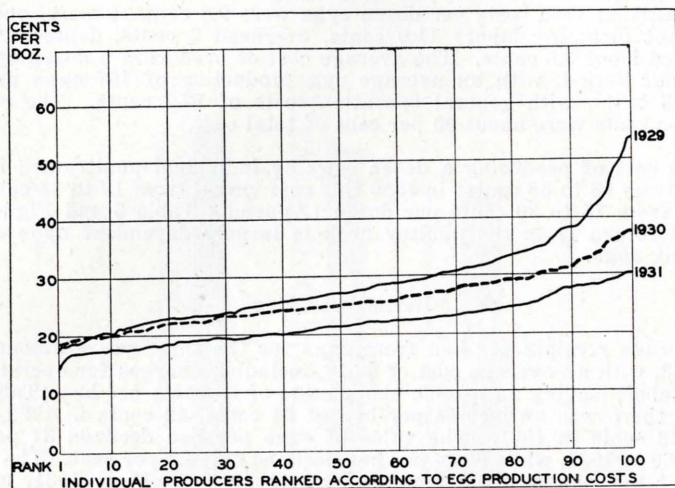


Figure 12.—In 1929 the cost of producing eggs by the individual poultrymen ranged from 18 to 36 cents per dozen, while in 1931 costs varied from 15 to 30 cents per dozen.

TABLE 48. Egg production costs per dozen eggs—1929, 1930, and 1931.

Distribution of Expense	Costs per Dozen			
	1929	1930	1931	3-year Average
	Cents	Cents	Cents	Cents
General Operation Costs				
Feed	13.2	11.7	9.8	11.6
Straw	0.3	0.3	0.4	0.3
Light	0.1	0.1	0.1	0.1
Hauling Eggs	0.2	0.1	0.2	0.2
Auto Operation Chargeable to Poultry	0.5	0.3	0.3	0.4
Miscellaneous	0.1	0.1	0.2	0.1
Total General Operation Costs	14.4	12.6	11.0	12.7
Overhead Costs				
Use of Land	0.2	0.1	0.1	0.1
Use of Buildings Chargeable to Poultry	1.5	1.2	1.2	1.3
Use of Equipment (including auto)	0.2	0.2	0.2	0.2
Miscellaneous	0.5	0.5	0.5	0.5
Total Overhead Costs	2.4	2.0	2.0	2.1
Depreciation on Laying Flock	4.2	5.7	4.9	4.9
Costs (not including labor)	21.0	20.3	17.9	19.7
Labor Costs				
Operator	4.2	3.0	2.4	3.2
Unpaid Family	0.9	1.0	0.7	0.9
Hired	0.3	0.4	0.5	0.4
Total Man Labor	5.4	4.4	3.6	4.5
Horse Labor	0.1	0.1	0.1	0.1
Total Costs	26.5	24.8	21.6	24.3

In 1929 the total cost per dozen eggs (including operation, overhead, depreciation, and labor, based on an average egg production per hen of 152 eggs) was 26.5 cents (Table 48). For 1931, with an average production of 154 eggs per hen, the cost per dozen eggs for these items declined to 21.6 cents. In 1931 feed costs per dozen eggs were 9.8 cents, general operation costs (not including labor) 11.0 cents, overhead 2 cents, depreciation 4.9 cents, and labor 3.6 cents. The average cost of producing a dozen eggs for the 3-year period, with an average egg production of 157 eggs per hen, was 24.3 cents, with general operation costs of 12.7 cents. The average operation costs were about 50 per cent of total cost.

The cost of producing a dozen eggs by individual poultrymen in 1929 ranged from 18 to 56 cents; in 1930 this cost varied from 19 to 38 cents and in 1931 from 15 to 30 cents per dozen (Appendix Table 5 and Figure 12). The net return from the poultry flock is largely dependent upon cost of producing eggs.

Income per Hen

Average receipts per hen from eggs for the three years amounted to but \$3.43, with an average cost of \$3.18, including charges for operator and family labor, leaving an income above costs of 25 cents per hen (Table 49). In 1930 there was an income per hen of 54 cents, 42 cents in 1929, and a minus 22 cents in 1931. The value of eggs per hen declined 37 per cent from 1930 to 1931, while costs per hen declined only 20 per cent. The return for labor per hen declined from \$1.06 in 1929 to \$0.17 in 1931, with an average for the three years of \$0.77.

The return for labor per hen for the individual producers in 1929 showed a variation from \$2.75 to minus \$1.01; in 1930 from \$2.88 to minus 23 cents; and in 1931 from \$1.20 to minus 96 cents (Appendix Table 6 and Figure 13; see cover cut).

In 1931, 34 of the 100 cooperating poultrymen received a minus return for labor of operator and family, while in 1929 only 12 of the operators had a minus return for labor on egg production.

TABLE 49. Receipts, costs, and income per hen from egg production—1929, 1930, and 1931.

Item	Income and Cost per Hen			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Receipts	3.77	3.99	2.53	3.43
Costs	3.35	3.45	2.75	3.18
Income from Egg Production	0.42	0.54	-0.22	0.25
Value of Operator and Family Labor	0.64	0.54	0.39	0.52
Returns for Labor from Egg Production	1.06	1.08	0.17	0.77

Net Income per Dozen Eggs

The receipts per dozen eggs varied from 29.9 cents in 1929 to 19.8 cents in 1931 (Table 50 and Figure 14). The average receipts per dozen for the three years was 26.1 cents. The total cost of producing a dozen eggs ranged from 26.6 cents in 1929 to 21.5 cents in 1931, with a 3-year average cost of 24.3 cents. The highest net return per dozen eggs was secured in 1930, amounting to 3.9 cents per dozen, with a loss of 1.7 cents for 1931 and an average income for the three years of 1.8 cents per dozen.

AVERAGE PRICE OF EGGS AND THE COST OF PRODUCTION

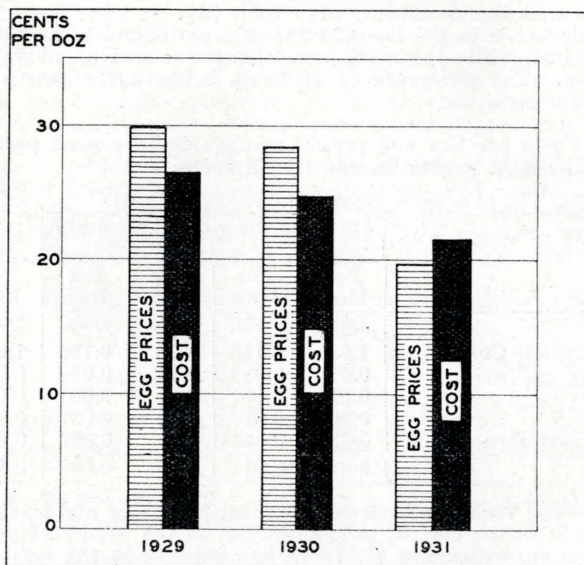


Figure 14.—In 1929 and 1930, egg prices exceeded cost of production, but in 1931 the cost per dozen eggs was above the average price of eggs.

In order to secure the total costs of egg production per dozen eggs, the value of operator and family labor was included. The cost per dozen for this labor ranged from 5.1 cents in 1929 to 3.1 cents in 1931, with an average for the three years of 4.1 cents per dozen. The decline in costs of labor from 1929 to 1931 was the result of change in rate for labor and of the increased efficiency in use of labor. Adding the value of this family labor to the net returns gave, as return for the labor of the operator and his family, 8.4 cents per dozen eggs in 1929 and 1.4 cents in 1931, with an average of 5.9 cents for the three years.

TABLE 50. Receipts, costs, and income per dozen eggs—1929, 1930, and 1931.

Item	Income and Cost per Dozen Eggs			
	1929	1930	1931	3-year Average
	Cents	Cents	Cents	Cents
Receipts	29.9	28.7	19.8	26.1
Costs	26.6	24.8	21.5	24.3
Income per Dozen Eggs	3.3	3.9	-1.7	1.8
Value of Labor of Operator and Family	5.1	4.0	3.1	4.1
Return for Labor per Dozen Eggs	8.4	7.9	1.4	5.9

Costs and Returns for Most and Least Profitable Flocks

The foregoing analysis on egg production shows the average costs and returns for poultry production for all flocks during the period covered by this study. In order to compare incomes from egg production for the average the least profitable, and the most profitable producers, a division of the

records into three classes was made: (1) Flocks with the highest income per hen above all costs, including labor, (2) those with average incomes, and (3) those with the lowest incomes (Table 51).

The producers with the lowest incomes from eggs had an average cost of \$3.40 per hen, while the most profitable flocks had an average cost of \$3.07 per hen. The difference of 33 cents between the two groups was mainly in labor cost.

TABLE 51. Costs per hen and per dozen eggs for the most profitable, for the least profitable, and for all flocks.

(Average for 3 years—1929, 1930, and 1931)

	Most Profitable Flocks		Least Profitable Flocks		All Flocks	
	Per Hen	Per Doz.	Per Hen	Per Doz.	Per Hen	Per Doz.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
General Operation Costs	1.68	0.115	1.66	0.150	1.67	0.127
Man Labor	0.47	0.033	0.74	0.068	0.58	0.045
Horse Labor	0.01	0.001	0.01	0.001	0.01	0.001
Overhead	0.28	0.019	0.30	0.027	0.28	0.021
Depreciation per Hen	0.63	0.043	0.69	0.062	0.64	0.049
Total Costs	3.07	0.211	3.40	0.308	3.18	0.243

The principal variation between the most profitable and least profitable groups was not in the cost of production but in the total receipts per hen, the highest group averaging \$1.17 per hen more than the least profitable (Table 52). These higher receipts were due to a greater average production of 41 eggs per hen and to a higher average price of 1.8 cents per dozen eggs. This difference gave an income for the most profitable flocks of 86 cents per hen, while the least profitable had a minus income of 64 cents per hen. The income for the most profitable flocks, plus the value of the labor of the operator and family, gave a return to the family of \$1.28 per hen; the return for labor for the least profitable group was but 7 cents per hen.

TABLE 52. Returns per hen and per dozen eggs from egg production for most profitable, for least profitable, and for all flocks.

(Average for 3 years—1929, 1930, and 1931)

	Most Profitable Flocks		Least Profitable Flocks		All Flocks	
	Per Hen	Per Doz.	Per Hen	Per Doz.	Per Hen	Per Doz.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
Receipts from Eggs	3.93	0.268	2.76	0.250	3.45	0.261
Cost of Production	3.07	0.211	3.40	0.308	3.18	0.243
Income from Eggs	0.86	0.057	-0.64	-0.058	0.27	0.018
Value of Operator and Family Labor	0.42	0.027	0.71	0.059	0.50	0.035
Return for Labor	1.28	0.084	0.07	0.001	0.77	0.053

The total cost of producing a dozen eggs ranged from 21.1 cents for the most profitable to 30.8 cents for the least profitable flocks, with an average for all flocks of 24.3 cents a dozen eggs (Table 52).

Producers with the higher net income from eggs were able to pay all costs, including their own labor and that of the family with eggs at 21.1 cents a dozen. On the other hand, in order to pay all costs, it was necessary for poultrymen in the low-income group to receive 20.8 cents a dozen for their eggs. Three factors responsible for placing these producers in the higher net income group were: (1) Production per hen was high, (2) costs were comparatively low, and (3) a high-quality product was produced. A

consequent higher price was received for eggs as the result of producing a better quality at the season of the year when the price per dozen was high. It is significant that, because of grade and season of production, sales made through the same market and for the same price per dozen for the different grades vary as much as 7 cents in the average yearly price.

The average producer in the high-income group secured 174 eggs per hen, while the average poultryman in the low-income group secured only 133 eggs per hen (Table 53). The latter averaged 42 per cent in Extra grade, while the former averaged 50 per cent.

Producers with low net income averaged nearly 23 per cent death loss of hens, while those with high net incomes averaged but 18 per cent death loss. The final result was that the most profitable group received \$1.28 per hen as return for their own labor and that of the members of their family, while the low net income group received but 7 cents per hen.

TABLE 53. Various factors affecting income per hen for different groups.

(Average for 3 years—1929, 1930, and 1931)

Item	Most Profitable Flocks	Least Profitable Flocks	All Flocks
Average No. of Hens	1251	745	996
Production per Hen	174	133	157
Percentage Death Loss Hens	17.9	22.7	20.0
Percentage Death Loss Chicks	15.0	18.9	17.0
Percentage in Extra Grade	50.0	42.4	47.1
Average Value per Dozen Eggs	\$ 0.268	\$ 0.250	\$ 0.261
Receipts per Hen	3.93	2.76	3.43
Cost of Production per Hen	3.07	3.40	3.18
Income per Hen	0.86	-0.64	0.25
Returns per Hen for Operator and Family Labor	1.28	0.07	0.77
Labor Cost per Hen	0.46	0.75	0.58

Man Labor on Laying Flock

To care for the laying flock alone, exclusive of the rearing flock, the total labor for the year for the average-sized flock of 996 hens was 1499 man hours, or 150 days' work. This represents 15 man work days for each 100 hens (Table 54). The man work days for each 100 hens varied from 22 days with flocks of less than 500 hens to 12 days with flocks over 1500.

Labor for the flocks averaging 373 hens took about one-fourth of one man's time for the year; the time required for flocks averaging 1226 hens was about one-half of one man's time, while labor on flocks averaging 2586 hens took one man's time working about 25 days each month at ten hours a day.

TABLE 54. Man labor on laying flock.

(Average for 3 years—1929, 1930, and 1931)

Size of Flock	No. of Hens per Flock	Man Labor*				
		Total	Total	Per 100 Hens	Per 100 Hens	Per Hen
No. of Hens		Hrs.	Days	Days	Hrs.	Hrs.
0-500	373	814	81.4	21.8	218	2.2
501-1000	714	1266	126.6	17.7	177	1.8
1001-1500	1226	1790	179.0	14.6	146	1.5
Over 1500	2586	3090	309.0	11.9	119	1.2
All Flocks	996	1499	149.9	15.1	151	1.5

*Labor of children equated to man hours.

Egg Prices in Relation to Feed Prices

As has been reported in this bulletin, the cost of poultry feeds was 90 per cent of operating costs and 48 per cent of the total cost of producing eggs. Relationship between prices received for eggs and cost of poultry feeds has a marked influence on the poultry business. In order to compare the prices of feeds with the prices of egg, a determination was made of the average price of the poultry ration, as used by the producers included in this study, based on the percentage of each kind of feed in the ration. The monthly prices paid producers in Utah for wheat, corn, barley, and oats, and the average price of laying mash at the plants of the Utah Poultry Producers Association located in various parts of the state were used to secure the 5-year average price of the poultry ration (Appendix Table 7).

Prices of eggs used in this analysis were the average monthly prices paid producers in Utah, as reported by the United States Department of Agriculture.

The period from 1928 to 1932 was one of declining prices of both eggs and poultry feed. There were certain months during this period when there was considerable disparity between the prices of the two.

The cost of 100 pounds of poultry ration declined from \$2.49 in May, 1929, to \$1.04 in November, 1932 (Table 55). Poultry feeds averaged only 54 per cent as high in 1932 as in 1928. There was some decline from 1928 to 1929, when egg prices were increasing.

TABLE 55. Monthly prices of poultry ration in Utah, 1928 to 1932.*

Year	(Dollars per 100 pounds)												Yearly Avg.
	Price by Months												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928	2.25	2.24	2.26	2.31	2.49	2.45	2.37	2.19	2.12	2.10	2.07	2.09	2.24
1929	2.10	2.13	2.13	2.12	2.10	2.09	2.09	2.15	2.11	2.10	2.04	1.99	2.10
1930	2.02	2.02	1.99	1.96	1.94	1.97	1.87	1.73	1.68	1.65	1.62	1.60	1.84
1931	1.55	1.52	1.52	1.45	1.45	1.38	1.28	1.20	1.19	1.20	1.32	1.36	1.37
1932	1.33	1.31	1.32	1.31	1.33	1.30	1.21	1.11	1.08	1.07	1.04	1.04	1.20
Avg.	1.85	1.84	1.84	1.83	1.86	1.84	1.76	1.68	1.63	1.63	1.62	1.62	1.75

*Poultry ration composed of 50.5% laying mash, 33.3%wheat, 11.4%corn, 0.6% oats, and 4.2% barley. Average price of Utah Poultry Producers Association mash and Utah farm price of grains used (from Appendix Table 7).

The index numbers of poultry feeds, based on the average price for the period 1928 to 1932 as equaling 100, declined from a peak of 142 in May, 1928, to a low point of 59 in November, 1932 (Table 56). Poultry feeds are usually cheaper in the late summer and fall months than during the winter and spring months, because grain prices are lower at harvest time than after the grain has been stored for a period of time.

TABLE 56. Index numbers of prices of poultry ration in Utah, 1928 to 1932.*

Year	(1928 to 1932=100)												Yearly Avg.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928	129	128	129	132	142	140	135	125	121	120	118	119	128
1929	120	122	122	121	120	119	119	123	121	120	117	114	120
1930	115	115	114	112	111	113	107	99	96	94	93	91	105
1931	89	87	87	83	83	79	73	69	68	68	75	78	78
1932	76	75	75	75	76	74	69	63	62	61	59	59	69
Avg.	106	105	105	105	106	105	101	96	93	93	93	92	100

*From Table 55.

Egg prices show a marked seasonal change, being highest in the fall and lowest in the spring months. The peak in egg prices was reached in November, 1929, when they averaged 42 cents per dozen and declined to a low point of 10 cents per dozen in April, 1932 (Table 57). Prices of eggs were higher in 1929 than in 1928; by 1932, however, they had declined to 52 per cent of the 1929 price.

TABLE 57. Monthly prices paid producers in Utah for farm eggs for period 1928 to 1932.*

Year	(Cents per dozen eggs)												Yearly Avg.
	Price by Months												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents	cents
1928	34	27	20	19	20	20	23	25	27	34	39	40	27
1929	38	33	28	20	20	23	26	29	32	36	42	41	31
1930	32	29	21	20	19	19	18	20	26	28	30	24	24
1931	18	13	14	14	15	14	15	18	22	25	27	28	19
1932	22	13	12	10	11	12	12	14	16	21	25	26	16
Avg.	29	23	19	17	17	18	19	21	25	29	33	32	23.3

*From Table 9.

In order to study the relative prices of eggs it was necessary to make comparisons with the same month in other years. During the five years from 1928 to 1932 the index number of egg prices in November was 142, as contrasted with 73 in April and May (Table 58). This was 42 per cent above the 5-year average price in November and 27 per cent below the average in April and May. Making allowance for the usual seasonal changes in egg prices, low prices were paid during December, 1930, and January and February, 1931, followed by somewhat higher relative prices later in 1931. During the early months of 1932 prices declined to an extremely low point, even when contrasted with prices during the same months of other years; later in the year, however, they more nearly reached the usual level.

TABLE 58. Index numbers of prices paid producers in Utah for farm eggs for period 1928 to 1932.*

Year	(1928-32=100)												Yearly Avg.
	Price Index by Months												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928	146	116	86	82	86	86	99	107	116	146	167	172	116
1929	163	142	120	86	86	99	112	124	137	155	180	176	133
1930	137	124	90	86	82	82	77	86	112	120	129	103	103
1931	77	56	60	60	64	60	64	77	94	107	116	120	82
1932	94	56	52	43	47	52	52	60	69	90	107	112	69
Avg.	124	99	82	73	73	77	82	90	107	124	142	137	100

*From Table 57.

In calculating the ratio between egg and feed prices, allowance was made for the differences in egg production per hen during various months, as reported by the poultrymen in this study. The increased egg production during the spring months when egg prices were low partially offset the low egg prices. The amount of poultry ration which could be purchased by a month's egg production per hen varied from 12 to 28 pounds (Table 59). Less feed could be purchased from a given production in 1928 than in 1929. Although the purchasing power of eggs in terms of feed prices in 1931 and 1932 was nearly as high as the average of the 5-year period, there was considerable variation between different months.

TABLE 59. Quantity of poultry ration which a month's egg production per hen would purchase in Utah, 1928 to 1932.*

Year	(Pounds of feed per hen per month)												Yearly Avg.
	Price Index by Months												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928	19.0	16.8	15.6	14.3	13.7	12.7	13.5	13.5	13.2	11.5	16.2	21.4	15.1
1929	22.8	21.5	23.1	16.4	16.3	17.1	17.3	15.9	15.8	12.2	17.7	23.1	18.3
1930	20.0	20.0	18.6	17.8	16.7	14.9	13.4	13.6	16.1	12.0	15.9	16.8	16.3
1931	14.6	11.9	16.2	16.8	17.7	15.7	16.3	17.7	19.2	14.8	17.6	23.1	16.3
1932	20.8	13.8	16.0	13.3	14.1	14.3	13.8	14.9	15.4	13.9	20.7	28.0	16.6
Avg.	19.4	16.8	17.9	15.7	15.7	14.9	14.9	15.1	15.9	12.9	17.6	22.5	16.6

*Based on the average monthly egg production for all hens included in this study.

In order to accurately judge the relative purchasing power of eggs in terms of poultry feed, allowance must be made for the fact that in October the value of the month's egg production in terms of feed prices was relatively low and in December relatively high. When allowance was made for usual seasonal price declines (Table 60 and Figure 15), the ratio of egg prices to feed cost reached the lowest level in December, 1930, and in January and February, 1931. For about six months, beginning the latter part of 1930, egg prices were relatively low compared to feed prices, and many poultrymen found it difficult to meet expenses during this period. Although egg prices were extremely low in 1932, feed prices had declined so that the ratio was more favorable to poultrymen than in 1931; during December, 1932, it was more favorable than at any other time during the five years.

TABLE 60. Index numbers of poultry ration which a month's egg production per hen would purchase in Utah, 1928 to 1932.

(1928-1932=100)

Year	Index by Months												Yearly Avg.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928	114	101	94	86	83	77	81	81	80	69	98	129	91
1929	137	130	139	99	98	103	104	96	95	73	107	139	110
1930	120	120	112	107	101	90	81	82	97	72	96	101	98
1931	88	72	98	101	107	95	98	107	116	89	106	139	101
1932	125	83	96	80	85	86	83	90	93	84	125	169	99
Avg.	117	101	108	95	95	90	90	91	96	78	106	135	100

EGG-FEED RATIO

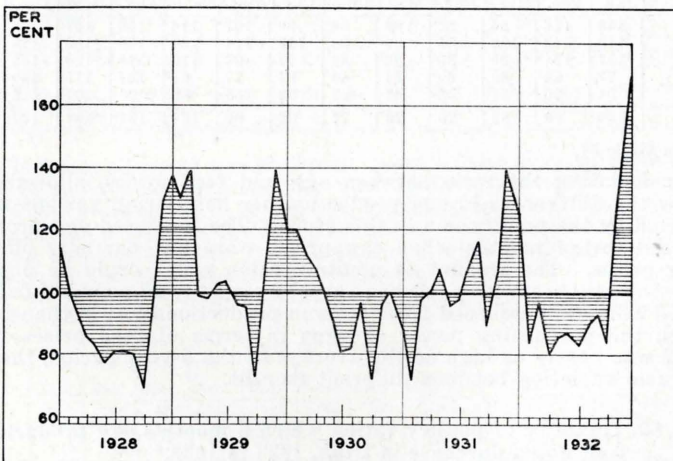


Figure 15.—A larger amount of feed can be purchased by a month's egg production in the fall months than in the spring months, and the average price per dozen of all eggs was increased more by a high percentage Extras in the fall than in the spring.

Quantity and Value of Feed

The quantity of mash and scratch feeds fed per hen, as reported by the poultrymen cooperating in this study, varied from 76.2 pounds in 1929 to

80.1 pounds in 1930, with a 3-year average of 78.4 pounds per hen (Table 61). This was 10.8 pounds of mash and 10.6 pounds of scratch per day for each 100 hens, or a total of 21.4 pounds of mash and scratch.

Of the total mash and scratch fed to the laying flock, scratch feed represented 49 per cent, while mash represented 51 per cent. Of the scratch feed, wheat was 67, corn 23, barley 9, and oats 1 per cent of the total. However, for 1931 with low wheat prices, a greater proportion of this grain was fed, comprising 73 per cent of the scratch feed. The amount of corn in the scratch feed was reduced from 10 pounds per hen in 1929 to 7.7 pounds in 1931.

The total feed cost per hen, including grain and miscellaneous feeds, declined from \$1.67 in 1929 to \$1.25 in 1931, with an average for the three years of \$1.52.

TABLE 61. Quantity and value of feed fed to the laying flock per hen—1929, 1930, and 1931.

Kind of Feed	Quantity and Value of Feed							
	1929		1930		1931		3-year Average	
No. of Flocks	34		44		66		144	
	Lbs.	Dols.	Lbs.	Dols.	Lbs.	Dols.	Lbs.	Dols.
Scratch								
Corn	10.0	0.217	8.9	0.183	7.7	0.126	8.9	0.175
Wheat	25.7	0.456	23.9	0.402	28.8	0.337	26.1	0.399
Oats	0.6	0.010	0.8	0.012	0.2	0.002	0.5	0.008
Barley	3.2	0.046	4.0	0.057	2.7	0.030	3.3	0.044
Total Scratch	39.5	0.729	37.6	0.654	39.4	0.495	38.8	0.626
Total Mash	36.7	0.868	42.5	0.935	39.6	0.723	39.6	0.842
Scratch and Mash	76.2	1.597	80.1	1.589	79.0	1.218	78.4	1.468
Miscellaneous Feed								
Calcite and Oyster Shell		0.018		0.017		0.014		0.016
Codliver Oil		0.015		0.012		0.002		0.010
Skim milk		0.018		0.001		0.002		0.007
Other		0.022		0.015		0.014		0.017
Total Miscellaneous		0.073		0.045		0.032		0.050
Total All Feed		1.670		1.634		1.250		1.518

Cost of Feed per Dozen Eggs

The cost of feed per dozen eggs, according to egg production and different feed prices, can be ascertained by checking the monthly production with the corresponding price of feed (Table 62). For example: With a monthly production of 15 eggs per hen and poultry feed at \$1.25 per hundred pounds, the cost of feed per dozen eggs was 6.5 cents. In constructing this table, an average quantity of feed (78 pounds per hen for the year) was used. Where the price of feed varies between prices quoted in Table 62, the following formula can be applied to determine the cost of feed per dozen eggs for any price and varying pounds of feed fed:

Formula: Price of feed per 100 pounds divided by number of eggs per hen per month times pounds of feed per hen per year equals cost of feed per dozen eggs.

If the exact amount of feed used per hen per year is not known, the average consumption of approximately 78 pounds may be used.

TABLE 62. Cost of feed for laying flock per dozen eggs, according to egg production and different prices of feed per 100 pounds.*

Monthly Egg Production Per Hen	Price of Grain per 100 Pounds							
	\$0.75	\$1.00	\$1.25	\$1.50	\$1.75	\$2.00	\$2.25	\$2.50
No. Eggs	Cost of Feed per Dozen Eggs with Feed at Varying Prices							
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
1	0.590	0.780	0.970	1.170	1.360	1.560	1.755	1.950
2	0.295	0.390	0.485	0.585	0.680	0.780	0.877	0.975
3	0.197	0.260	0.323	0.390	0.453	0.520	0.585	0.650
4	0.148	0.195	0.242	0.292	0.340	0.390	0.439	0.488
5	0.118	0.156	0.194	0.234	0.272	0.312	0.351	0.390
6	0.098	0.130	0.162	0.195	0.227	0.260	0.292	0.325
7	0.084	0.111	0.139	0.167	0.194	0.223	0.251	0.279
8	0.074	0.098	0.121	0.146	0.170	0.195	0.219	0.244
9	0.066	0.087	0.108	0.130	0.151	0.173	0.195	0.218
10	0.059	0.078	0.097	0.117	0.136	0.156	0.176	0.195
11	0.054	0.071	0.088	0.106	0.124	0.142	0.160	0.177
12	0.049	0.065	0.081	0.098	0.113	0.130	0.146	0.162
13	0.045	0.060	0.075	0.090	0.105	0.120	0.135	0.150
14	0.042	0.056	0.069	0.084	0.097	0.111	0.125	0.139
15	0.039	0.052	0.065	0.078	0.091	0.104	0.117	0.130
16	0.037	0.049	0.061	0.073	0.085	0.098	0.110	0.121
17	0.035	0.046	0.057	0.069	0.080	0.092	0.103	0.115
18	0.033	0.043	0.054	0.065	0.076	0.087	0.098	0.108
19	0.031	0.041	0.051	0.062	0.072	0.082	0.092	0.103
20	0.030	0.039	0.048	0.058	0.068	0.078	0.088	0.098
21	0.029	0.037	0.046	0.056	0.065	0.074	0.084	0.093
22	0.027	0.035	0.044	0.053	0.062	0.071	0.080	0.089
23	0.026	0.034	0.042	0.051	0.059	0.068	0.076	0.085
24	0.025	0.032	0.040	0.049	0.057	0.065	0.073	0.081
25	0.024	0.031	0.039	0.047	0.054	0.062	0.070	0.078

*Figured on yearly quantity of feed fed per hen of 78 pounds and on a 30-day month.

Percentage Production Required to Pay for Feed with Varying Prices of Eggs
TABLE 63. Percentage egg production required to pay for feed for laying flock with varying prices of eggs and feed.*

Price of Eggs	Price of Feed per 100 Pounds							
	\$0.75	\$1.00	\$1.25	\$1.50	\$1.75	\$2.00	\$2.25	\$2.50
Cent	Percentage Production per Month Required to Pay for Feed							
	Prct.	Prct.	Prct.	Prct.	Prct.	Prct.	Prct.	Prct.
10	19.3	26.0	32.7	39.0	45.3	52.0	58.7	65.0
11	17.7	23.7	29.7	35.3	41.3	47.3	53.3	59.0
12	16.3	21.7	27.0	32.7	38.0	43.3	48.7	54.0
13	15.0	20.0	25.0	30.0	35.0	40.0	45.0	46.7
14	14.0	18.7	23.3	28.0	32.7	37.0	41.7	46.3
15	13.0	17.3	21.7	26.0	30.3	34.7	39.0	43.3
16	12.3	16.3	20.3	24.3	28.3	32.7	36.7	40.7
17	11.3	15.3	19.0	23.0	26.7	30.7	34.3	38.3
18	10.7	14.3	18.0	21.7	25.3	29.0	32.7	36.0
19	10.3	13.7	17.0	20.7	24.0	27.3	30.7	34.3
20	9.7	13.0	16.3	19.3	22.7	26.0	29.3	32.7
21	9.3	12.3	15.3	18.7	21.7	24.7	28.0	31.0
22	9.0	11.7	14.7	17.7	20.7	23.7	26.7	29.7
23	8.3	11.3	14.0	17.0	19.7	22.7	25.3	28.3
24	8.0	10.7	13.7	16.3	19.0	21.7	24.3	27.0
25	7.7	10.3	13.0	15.7	18.3	20.7	23.3	26.0
26	7.3	10.0	12.7	15.0	17.3	20.0	22.7	25.0
27	7.3	9.7	12.0	14.3	17.0	19.3	21.7	24.0
28	7.0	9.3	11.7	14.0	16.3	18.7	21.0	23.3
29	6.7	9.0	11.3	13.3	16.0	18.0	20.3	22.3
30	6.7	8.7	10.7	13.0	15.3	17.3	19.3	21.7

*Based on yearly quantity of feed per hen of 78 pounds and on a 30-day month.

By consulting Table 63, or by using the formula submitted, poultrymen can determine the percentage production required to pay for the feed at varying prices of eggs and feed, assuming feed consumption of 78 pounds per hen. For example: If a poultryman were receiving 20 cents per dozen for eggs and his feed costs were \$1.25 per hundred pounds, to pay for the feed, the production from his flock should be 16.3.

Formula:⁹ Price of Feed per 100 pounds divided by price of eggs per dozen times pounds of feed per year divided by days in months (30) equals percentage production required to pay for feed.

COST OF REARING PULLETS

With the rapid development of the poultry industry in this state, there arose the need for detailed information on cost of producing pullets and factors influencing such costs. To analyze this part of the poultry enterprise, detailed records on rearing pullets were secured from 108 poultrymen in 1929, 80 in 1930, and 79 in 1931. All cooperating poultrymen were not rearing pullets during these years. It was the custom for some of them to either purchase pullets for replacement or to rear pullets only every other year.

Commercial poultry production consists of two divisions: (1) Producing eggs and (2) rearing pullets for replacement. Poultrymen who are efficient in one of these lines may not be in the other, but in order to secure the highest income both must be efficiently carried on. The proportion of pullets included in the laying flock is an important factor in financial success in the poultry business.

The analysis of cost of rearing pullets included such factors as cost of chicks, operation costs, overhead and labor, death loss of young chickens, and quantities of feed and other supplies used in rearing pullets, together with income from the sale of cockerels and pullets.

Number of Pullets Raised

The number of chicks purchased per farm varied from 2839 in 1930 to 2200 in 1931, with an average for the three years of 2468 (Table 64). Of the 3-year average number of chicks purchased (2468), the poultrymen reared 960 pullets for replacement, or, on an average, they purchased 2.6 chicks for each pullet placed in the laying pen. The difference between the number purchased and the number of pullets raised included the cockerels sold and eaten and the death loss of baby chicks, cockerels, and pullets. The death loss ranged from 16.2 per cent in 1931 to 18.4 in 1930, with an average of 17 per cent for the three years.

TABLE 64. Number of chicks purchased compared to number of pullets raised—1929, 1930, and 1931.

Item	No. per Farm			
	1929	1930	1931	Total and 3-yr. Avg.
No. of Poultry Farms Rearing Chicks	108	80	79	267
No. of Chicks Purchased	2366	2839	2200	2468
No. of Pullets Raised	958	1035	887	960
Ratio of Chicks Purchased to Pullets Raised	2.5	2.7	2.5	2.6
Percentage Death Loss Chicks	16.5	18.4	16.2	17.0

⁹This method of determining relationship of cost of feed to production and price of eggs is not original with the authors.

Cost of Rearing Pullets

The average 3-year cost to rear 960 pullets was \$1182 (Table 65). After crediting the flock with sales of cockerels to the amount of \$312, there remained as a net cost per farm \$870. Of this total cost, feed represented 44 per cent and the cost of chicks 27 per cent, these two items constituting 71 per cent of the total cost. Overhead was only 9 per cent and labor represented 17 per cent of the total. The rearing of pullets over a period of about three to six months (or until cockerels are sold and pullets come into production) involves a cash outlay.

TABLE 65. Cost of rearing pullets per farm—1929, 1930, and 1931.*

Distribution of Expense	Cost per Farm				Pctg.
	1929	1930	1931	3-yr. Avg.	3-yr. Avg.
	Dols.	Dols.	Dols.	Dols.	Per cent
Cost of Chicks	330	368	254	317	26.8
General Operating					
Feed	569	637	364	524	44.3
Straw	10	16	14	13	1.1
Fuel	18	14	17	17	1.4
Auto Operation	2	2	6	3	0.3
Miscellaneous	4	11	10	8	0.7
Total General Operating Costs	603	680	411	565	47.8
Overhead					
Use of Land	7	5	5	6	0.5
Use of Buildings	34	45	46	42	3.5
Use of Equipment	24	21	29	25	2.1
Miscellaneous Overhead	35	33	24	31	2.6
Total Overhead	100	104	104	103	8.7
Costs (not including labor)	1033	1152	769	985	83.3
Labor					
Operator	152	159	117	143	12.1
Unpaid Family	43	42	31	39	3.3
Hired	8	14	25	16	1.3
Total Labor	203	215	173	197	16.7
Total Costs	1236	1367	942	1182	100.0
Total Credits for Sales Consumed	308	359	269	312	26.4
Net Cost of Pullets	928	1008	673	870	73.6

*Including only pullets purchased as baby chicks.

Cost of Chicks

The average cost per chick purchased declined from 13.9 cents in 1929 to 11.5 cents in 1931, or a 17 per cent decline (Table 66). Since it was necessary to purchase 2.6 chicks for each pullet raised, the cost of chicks purchased per pullet raised was 2.6 times the average price per chick of 12.8 cents, or 33 cents for the 3-year average.

TABLE 66. Cost of chicks purchased per chick and per pullet raised—1929, 1930, and 1931.

Item	No. and Cost of Chicks per Farm			
	1929	1930	1931	3-year Average
Average No. Chicks Purchased	2366	2839	2200	2468
Average No. Pullets Raised	958	1035	887	960
Cost per Chick Purchased	\$0.139	\$0.130	\$0.115	\$0.128
Cost of Chicks per Pullet Raised	\$0.35	\$0.35	\$0.29	\$0.33

Cost per Pullet Raised

The 3-year average net cost of rearing a pullet to the age when it was placed in the laying pen was 90 cents (Table 67). This net cost per pullet ranged from 76 cents in 1931 to 97 cents for both 1929 and 1930.

The total cost, based on per pullet raised, for rearing pullets and cockerels was \$1.22. The sale of cockerels and pullets and the value of those eaten by the family averaged 32 cents, resulting in a net cost of 90 cents per pullet raised.

The 3-year per-pullet average feed cost was 54 cents, cost of chicks based on pullets raised 33 cents, overhead 11 cents, and labor 20 cents. The credits for cockerels sold and eaten were slightly less than the cost of the chicks. The cash costs per pullet raised, after deducting the value of sales, was approximately 60 cents, for the 3-year average; it was approximately 45 cents in 1931.

TABLE 67. Cost of rearing pullets based on number of pullets raised—1929, 1930, and 1931.*

Item	Cost per Pullet Raised			
	1929	1930	1931	3-year Average
Average No. Pullets Raised	958	1035	887	960
	Dols.	Dols.	Dols.	Dols.
Cost of Chicks (per pullet raised)	0.35	0.35	0.29	0.33
Cost of Feed	0.59	0.62	0.41	0.54
Other Operating Costs	0.04	0.04	0.05	0.04
Total General Operating Costs	0.63	0.66	0.46	0.58
Overhead	0.11	0.10	0.12	0.11
Cost (not including labor)	1.08	1.11	0.87	1.02
Labor	0.20	0.21	0.19	0.20
Total Costs	1.29	1.32	1.06	1.22
Credit for Sales	0.32	0.35	0.30	0.32
Net Cost of Pullets	0.97	0.97	0.76	0.90

*Including only pullets purchased as baby chicks. All cost items computed by dividing total costs by number of pullets raised to age when they were placed in laying pen.

Feed Fed to Rearing Flock

TABLE 68. Quantity and value of feed fed to flock per pullet raised—1929, 1930, and 1931.

Kind of Feed	Quantity and Value of Feed per Pullet Raised							
	1929		1930		1931		3-year Average	
No. of Records	31		31		62		124	
	Lbs.	Dols.	Lbs.	Dols.	Lbs.	Dols.	Lbs.	Dols.
Scratch								
Corn	3.9	0.087	3.3	0.071	3.4	0.051	3.5	0.070
Wheat	6.8	0.170	10.6	0.178	8.5	0.094	8.7	0.147
Oats	0.9	0.016	....	....	....	....	0.3	0.005
Barley	0.9	0.012	0.9	0.012	0.3	0.002	0.7	0.009
Total Scratch	12.5	0.285	14.8	0.261	12.2	0.147	13.2	0.231
Total Mash	11.8	0.290	14.1	0.336	14.4	0.251	13.4	0.292
Scratch and Mash	24.3	0.575	28.9	0.597	26.6	0.398	26.6	0.523
Other Feeds								
Calcite and Shell		0.002		0.003		0.004		0.003
Codliver Oil		0.006		0.005				0.004
Skim milk		0.006		....				0.002
Other Feeds		0.005		0.010		0.008		0.007
Total Other Feeds		0.019		0.018		0.012		0.016
Total All Feeds		0.594		0.615		0.410		0.539

On an average, 27 pounds of feed was fed to produce each pullet; this included the feed required for the cockerels before they were sold (Table 68). Approximately half of the feed used was mash, wheat comprising most of the scratch feed, although some corn was fed. The cost of feed varied from approximately 60 cents per pullet in 1929 and in 1930 to 41 cents in 1931. During the three years, feed comprised 44 per cent of the total cost of raising pullets.

Labor Used for Rearing Flock

Approximately one-half hour of labor was required to raise each pullet, varying only slightly from year to year (Table 69). The labor on the rearing flock was about 25 per cent of the entire amount of time spent on the combined laying and rearing flock. A large part of the labor on the rearing flock came during a relatively short season, following the date when the chicks were secured. The amount of labor per pullet raised declined rapidly as the number of pullets increased. Large flocks of young chickens require only a little more time than smaller flocks and require attention no more frequently.

TABLE 69. Man labor on rearing flock—1929, 1930, and 1931.*

Item	1929	1930	1931	Total and 3-yr. Avg.
No. of Poultry Farms Rearing Chicks	108	80	79	267
Total Labor on Rearing Flock (hours)†	483	557	503	514
Labor on Rearing Flock (hours per 100 pullets raised)	51	54	57	54
Man Work Days per 100 Pullets Raised	5.1	5.4	5.7	5.4

*Includes only flocks where pullets were purchased as baby chicks.

†Labor of children equated to man hours.

FACTORS INFLUENCING COSTS AND RETURNS

The records secured from the poultrymen cooperating in this study have been analyzed in preceding pages according to: (1) The farm business as a unit, (2) the poultry enterprise, (3) the cost of producing eggs, and (4) the cost of rearing pullets. The investment, costs and returns, and the relationship of the various factors entering into egg production on these representative farms, have been presented in this report. These data apply to the average of all farms, or to specialized groups, according to the size of the flock or the efficiency of production. Another phase of this study which follows gives the relationship or influences of certain factors, as they relate to the production costs and returns of individual poultrymen. In addition to comparing the analysis of his business with the various group averages, the poultryman may be able to apply to his own business some of the methods and practices which have resulted in higher egg production and greater net income for some of the producers included in this study.

What Determines Profit?

In general, two factors determine the amount of profit from the poultry enterprise on any farm: (1) The size of business and (2) the margin between cost and returns. The first of these, the size of business or number of hens kept, may react adversely if the net income per hen is not sufficiently high. In other words, more chickens means more profits or more losses, depending on the efficiency with which the business is conducted as well as price and cost factors which are beyond the control of the operator. The second general factor affecting net income is the margin between costs and income. It is here that differences in efficiency result in larger or smaller margin of

returns. The poultryman may either increase his income per unit without increasing his cost or he may increase it by a less than proportionate amount. He may even decrease his expenses without proportionately reducing his income. In any event, the margin between costs and expenses would be increased.

How Gross Income Can Be Increased

One way in which the gross income can be increased is by securing a better price for the eggs sold. Since nearly all the poultrymen in Utah sell through the same agency, it might be expected that all poultrymen would receive the same average price per dozen. However, all eggs do not grade equally high, and since eggs are purchased according to grade some poultrymen secure higher prices than others. Although there are several grades, "Extra"¹⁰ averages nearly half of all the eggs sold, and the percentage in this grade is the best measure of the quality of the eggs.

RELATIONSHIP BETWEEN GRADE OF EGGS SOLD AND MARGIN ABOVE OR BELOW PRICE OF EGGS GRADING 40 PER CENT "EXTRAS"

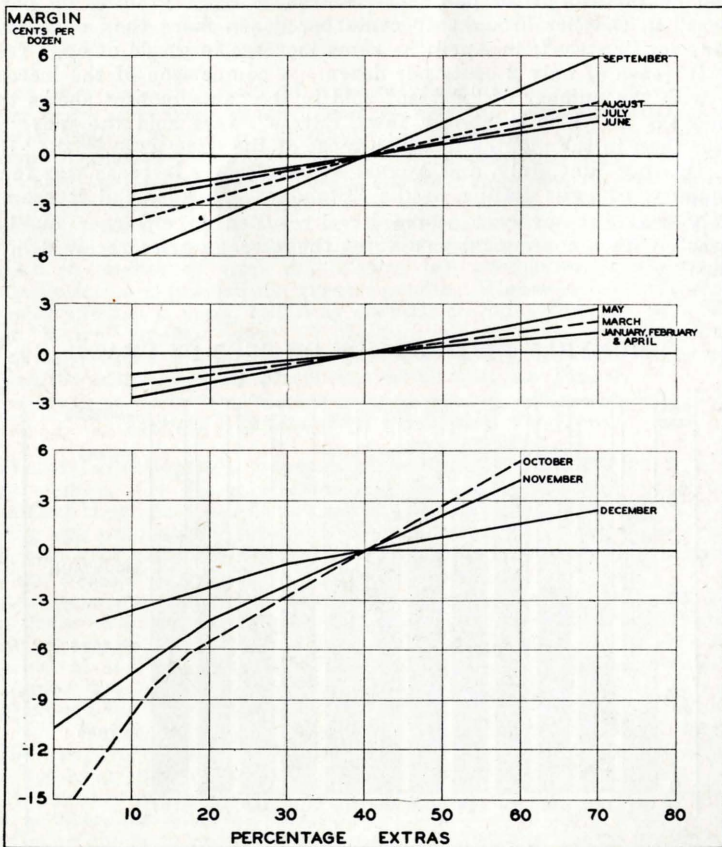


Figure 16.—A greater premium was paid for eggs of high quality in the fall months than in the spring months, and the average price per dozen of all eggs was increased more by a high percentage of "Extras" in the fall than in the spring.

¹⁰Using the grade designation of the Utah Poultry Producers Cooperative Association.

A detailed study of the prices received by cooperating poultrymen shows that increasing the grade of eggs brought higher average prices per dozen in all months of the year, but that the amount of increase secured was greater in some months than in others. In Figure 16 it is obvious that an increase in percentage of "Extras" from less than 10 per cent to more than 50 per cent in "Extra" grade resulted in an increase in the average price of from 2 to 3 cents per dozen during the spring and early summer months. The same increase in grade resulted in an increase in the average price of 10 cents in September and 15 cents in October. This indicates that it pays poultrymen to give particular attention to the production and care of their eggs during the seasons of the year when the largest premiums are paid for quality eggs.

The percentage of eggs sold in different grades by producers included in this study and the variation in prices received according to grade of eggs is shown in Figures 17 and 18. This comparison between different months is also brought out where the increase in average price per dozen for all eggs is shown for each month when the quality was increased so that they graded 60 instead of 20 per cent "Extras". Eggs grading 60 per cent "Extras" in October brought 10 cents per dozen more than eggs grading 20 per cent "Extras"; in April the same increase in grade of eggs resulted in an increase of only 2 cents per dozen. A comparison of the increase in price with the number of "Extras" sold in the same months shows that in the months in which relatively few "Extras" were sold the margin was greater than in the months in which most of the eggs were in the "Extra" class. During June, July, and August a considerable increase was found in the number of eggs falling in the "Standard"¹¹ grade, and it seems not unlikely that greater care would have resulted in a larger number of "Extras", with a consequent raising of the average price received in those months.

MONTHLY DISTRIBUTION OF EGGS BY GRADE

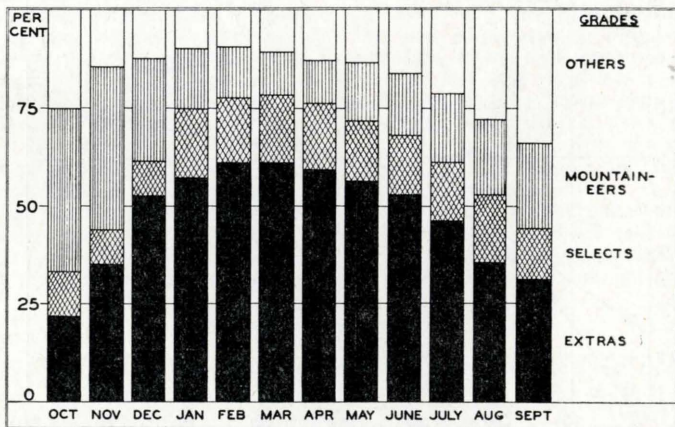


Figure 17.—The percentage of eggs grading as "Extras" ranged from 21 per cent in October to 61 per cent in February.

¹¹See Footnote 10.

THE INFLUENCE OF SEASONAL PRODUCTION OF EXTRA QUALITY OF EGGS ON THE AVERAGE PRICE RECEIVED

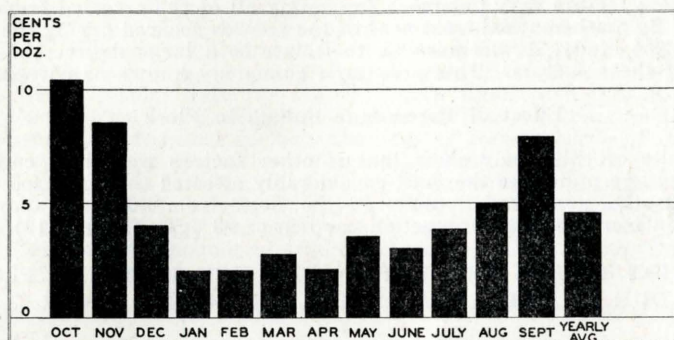


Figure 18.—The premium paid for eggs of better quality was closely related to the relative number of “Extras” sold each month.

Not only does the effect of different proportions of “Extras” on the average price vary from month to month, but the proportion of the year’s egg production sold in a given month varies greatly from one individual producer to another. Poultrymen who sold a relatively larger number of eggs during the fall months averaged higher egg prices for the year than those who sold relatively few eggs during these months. Producers receiving the highest average yearly price for eggs sold received 7 cents per dozen more than did producers receiving the lowest yearly average prices. Greater attention to quality of eggs and higher fall production would result in increased prices and probably in greater profits. Higher prices were received for better grades of eggs, but it is difficult to determine the cost of producing “Extra” quality eggs. If chickens are of good breeding and lay eggs of large size, the feeding of the chickens and the care taken of the eggs largely determines the grade into which they are placed.

Factors Affecting Egg Production per Hen

Factors affecting egg production per hen can be divided into three general classes: (1) Those affecting egg production per hen, but of such a nature that they could not be accurately measured in this study; (2) those affecting egg production whose effects were measurable; (3) those practices which were used so uniformly by the producers in this study that their effect upon egg production per hen could not be measured.

An important example of the first group is the individuality of the poultryman. The efficiency in poultry management between different producers varied widely. Another factor in this group is the degree of development of the pullets at the time they were placed in the laying pens. This factor was not given consideration in this study.

Factors which are found to affect egg production to the greatest extent were: (1) Percentage pullets in the flock, (2) total pounds of feed fed, and (3) the percentage of mash in the feed. Measurements of the effect of these factors on production are shown in the analysis which follows.

There were other factors which might have affected egg production (such as breed of chickens, quality of stock, use of light, kind of house, confining of chickens to laying pens, and climate), but due to uniformity of practice among the producers included in this study the effect of these factors on egg production was difficult to measure.

It is known that pullets generally lay more eggs than do old hens; however, egg production varies widely in both pullet and hen flocks. Among cooperating poultrymen there was a wide difference in the methods of

management of the poultry flocks. Some fed larger quantities of feed than did others and some fed larger proportions of mash.

The problem was further complicated by the fact that not only did one of these factors vary but more frequently all of them varied from flock to flock. By mathematical treatment of the records secured during the three years of the study, it was possible to isolate to a large degree the effect of any of these factors. This process is commonly known as correlation.¹²

Effect of Percentage Pullets in Flock

Results of this study show that if other factors were held constant, the percentage pullets in the flock considerably affected the egg production. Increasing the percentage pullets in the flock from 40 to 80 per cent resulted in increased egg production per hen of 23 eggs (Figure 19).

VARIATION IN EGG PRODUCTION PER HEN IN MIXED FLOCKS DUE TO PERCENTAGE PULLETS IN THE FLOCK

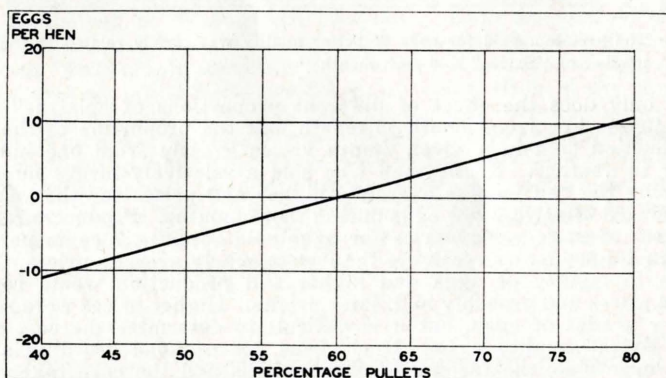


Figure 19.—When allowance was made for difference in feeding, an increase of 10 per cent in the number of pullets in the flock increased the average egg production per hen 5.7 eggs.

This increased egg production for pullet flocks may be partly offset by decrease in the sale value of eggs due to smaller size, which affects grade, and to pullet flocks compared to old hens.

Effect of Quantity of Feed Fed

Another factor influencing the number of eggs laid by either hens or pullets is the amount of feed received. The effect of quantity of feed fed on egg production is often obscured by the influence of other practices and factors which also influence egg production. When the effect of these practices is eliminated or is held constant, the effect of quantity of feed on production can be measured. The analysis shows that increasing the amount

¹²Correlating the percentage pullets in the flock, the total quantity of feed fed, and the percentage mash in the feed with the egg production per hen gave a multiple correlation coefficient of 0.742 in the case of the mixed flocks and 0.610 in the case of the pullet flocks (after adjusting for the number of variables). (See Methods of Correlation Analysis, Mordecai Ezekiel, John Wiley and Sons, 1930). The regression equations were:

Mixed Flocks:

$$\text{Eggs per hen} = (1.308 \times \text{lbs. feed per hen}) + (0.360 \times \% \text{ mash}) + (0.572 \times \% \text{ pullets in flock}) - (2.020).$$

Pullet Flocks:

$$\text{Eggs per hen} = (1.154 \times \text{lbs. feed per hen}) + (0.787 \times \% \text{ mash}) + 43.680.$$

The use of a logarithmic type of equation, which might be justified because of the law of diminishing returns, gave a multiple correlation coefficient of 0.730 for the mixed flocks.

of feed fed to pullets increased the number of eggs laid by 1.15 eggs for each pound of feed (Figure 20). For mixed flocks the increase was 1.31 eggs for each pound of feed fed. These relationships held true when more than 65 pounds or less than 95 pounds of feed per hen were fed, which represented the lower and upper limits of feed per hen for the records secured. These relationships may not hold below 65 pounds or above 95 pounds. Old hens were somewhat more responsive to larger quantities of feed than were pullets. These results were for the year as a whole, and it is a matter of common knowledge that different seasons of the year require different feeding practices. It is not unlikely that during some seasons of the year the response to feed might have been considerably different from that shown for the year as a whole. As long as 10.4 pounds of all feeds cost less than the value of a dozen eggs it pays to feed pullets as heavily as they can utilize the feed. Old hens will respond profitably to the same feeding program, provided 9.2 pounds of feed costs no more than a dozen eggs are worth.

NET RELATIONSHIP OF FEED FED TO EGG PRODUCTION PER HEN

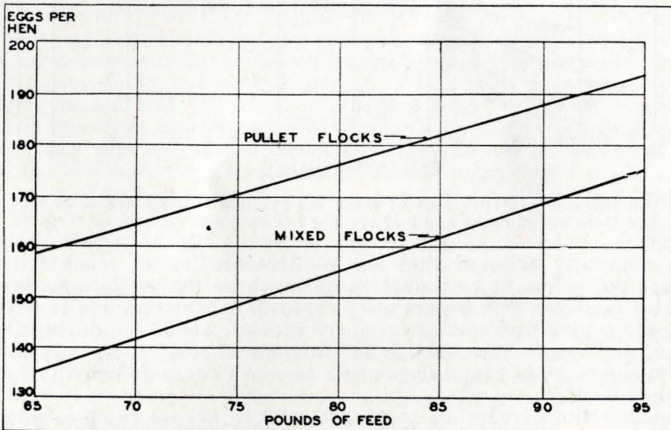


Figure 20.—After allowing for the influence of other factors, the amount of feed fed exerted a marked influence on egg production per hen. Each additional pound of feed fed per hen increased production 1.31 eggs in mixed flocks and 1.15 in pullet flocks.

These figures assume that the individual poultryman can secure as good response to different feeding systems as could the average poultryman included in this study. Poultrymen ordinarily feel that exceptionally heavy feeding results in considerable waste of feed. Care should be exercised to see that the feed is not wasted, but as long as it is being utilized by the chickens it is profitable to feed abundantly. The average amount of feed fed per year to the chickens included in this study was 78.4 pounds per hen.

Effect of Composition of Feed

The analysis of increased egg production as a result of increased quantities of feed disregarded the composition or kind of feed used. When the feed and production records were studied in an effort to determine the effect of varying kinds of feed on egg production, it was found that the percentage mash fed had a direct relationship to production. For the records studied, the percentage of mash fed to chickens varied from 35 to 65 per cent of the total ration. With the same quantity of feed, an increase of 1 per cent in the mash content of the feed increased egg production 0.36 egg per hen in the mixed flocks and 0.79 egg per hen in the pullet flocks

(Figure 21). Old hens were more responsive to total quantities of feed but less to the percentage mash in the feed than were pullets. These were the average results for the year; it is probable that a comparison of seasonal differences of mash fed and egg production would have shown some variation from this yearly average result.

NET RELATIONSHIP OF PERCENTAGE MASH IN FEED TO EGG PRODUCTION PER HEN

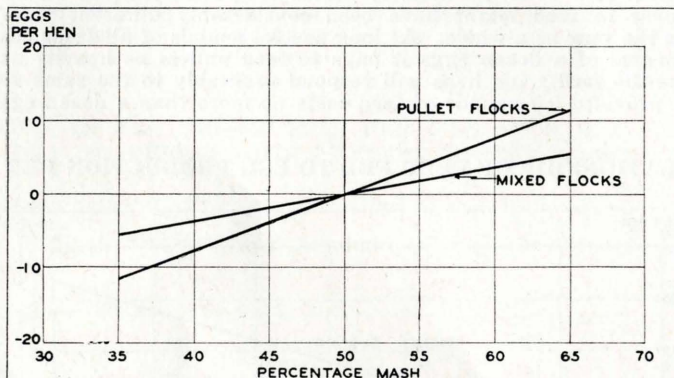


Figure 21.—An increase of 1 per cent of mash fed resulted in an increase of 0.36 egg per hen from mixed flocks and 0.79 egg per hen in pullet flocks.

It is generally believed that the relative amount of mash fed in the spring does not affect egg production as much as during late summer and early winter months. For a part of the records it was possible to determine the effect of varying amounts of mash fed on egg production during October, November, and December. The result of this part of the study indicated that pullet flocks were more responsive to mash feeds fed in the fall than were old-hen flocks.

Increasing the percentage mash from 35 to 68 per cent, or 26 pounds of mash instead of the same quantity of scratch, increased egg production per hen approximately one dozen eggs for old-hen flocks. With pullet flocks an increase in the percentage mash from 50 to 65 per cent, or 12 pounds of mash instead of the same quantity of scratch, resulted in an increase of one dozen eggs per bird. If the difference in cost of these quantities of mash, as contrasted with the same amounts of scratch feed is less than the average value of a dozen eggs, it apparently pays to feed mash in as large quantities as can be utilized. These figures show clearly that the response from larger amounts of mash is much greater in the case of pullets than in the case of old hens.

Few of the producers, whose records were used in the determination of the relationship of the percentage pullets and the quantity and composition of the feed to egg production, fed less than 65 pounds or more than 95 pounds of feed nor less than 35 per cent or more than 65 per cent mash. From these data it is impossible to determine what the relationship would have been outside of these limits, but it is fairly certain that there would have been a considerable difference. There is a limit to the quantity of feed which chickens will consume. To try to force them beyond this point would not increase egg production in the same proportion. Egg production would undoubtedly be greatly reduced if less than 65 pounds of feed or less than 35 per cent mash were fed.

The results of this study clearly indicate that if egg production is profitable with any quantity of feed fed between the limits of 65 and 95 pounds per hen and with any percentage of mash fed between the limits

of 35 and 65 per cent, it would be more profitable to feed these maximum amounts of each of these kinds of feed, assuming that the individual producer can secure average or better response from his chickens. The conclusion, if strictly interpreted, is that the most profitable amount of feed to give chickens is the maximum amount they will utilize. Caution should be exercised in feeding larger amounts of scratch and mash than were fed on the average, but this study indicates clearly that it is never profitable to feed chickens a short ration of either scratch or mash.

Factors other than percentage pullets in the flock and amount and composition of feed affect egg production. One such factor is the hatching date of baby chicks from which pullets in the flock were raised. Pullets raised from chicks hatched in May or later averaged about 10 eggs less per hen than those raised from chicks hatched in March or April. Practically all poultrymen included in this study secured chicks in March, April, and May.

Egg production varied from year to year. During the 1929-30 production year, poultrymen included in this study secured 13 eggs per hen more than in 1928-29 and 11 eggs more per hen than in 1930-31. After making allowances for differences in quantity and composition of feed fed and in percentage pullets in the flock, the difference due to other conditions in that year was approximately 10 eggs per hen.

Certain additional factors also influence egg production; however, these factors were so uniformly practised by the majority of cooperating poultrymen that they could not be measured. Lights were so commonly used in the laying house and the kind of chickens and quality of stock was so nearly uniform that no difference in production could be attributed to these factors. This was true also of the type of the houses as well as the length of time the chickens were confined within the laying pens.

It can be said with confidence that for the records included in this study, 50 per cent of the total variation in egg production per hen was accounted for by the factors of percentage pullets in the flock and the amount and kind of feed fed. If one-half of the differences in production are unexplained, it might appear that relatively little importance could be attached to the results, because the unexplained 50 per cent might completely offset the explained half. This was not true in this case, however, because the unexplained variation falls equally above and below the expected production. Unexplained variations may add or subtract from these average results, but the chances of securing the expected production are greater than the chances of securing any other production.

A qualification of these conclusions must be made. Those flocks which were known to have had a serious outbreak of disease, accompanied by a drastic decline in egg production, were not included in the computation of the effect of the various factors on egg production. Results as given cannot be applied to any flock which does have such an outbreak of disease or any serious accident during the year. Such unusual happenings occur infrequently, and the strength of their effect on egg production cannot be estimated with any confidence. The results presented here may be expected if nothing unforeseen and unusual occurs.

Seasonal Production Related to Yearly Production

High yearly egg production per hen is usually associated with a high rate of production during the fall months (Table 42). Production during spring and summer months does not vary greatly between flocks of high and low yearly production (Figures 22, 23). Flocks with a high fall egg production usually continue at a high rate during the rest of the year. The relationship between fall and yearly production is especially marked in the case of pullet flocks. Pullet flocks with high yearly production averaged 35 per cent in October as contrasted with 13 per cent in flocks of low yearly production, while in April the two flocks were practically equal in production. Flocks with low yearly production declined much more rapidly from April to September than did flocks with high yearly production. For mixed flocks containing 60 per cent pullets, production from October to

January averaged considerably below that for flocks consisting entirely of pullets. There was less variation in monthly production between high and low production groups in the case of mixed than of pullet flocks. There was a direct relationship between egg production during the early fall months and production throughout the year.

MONTHLY EGG PRODUCTION FROM PULLET FLOCKS WITH HIGH AND LOW YEARLY PRODUCTION

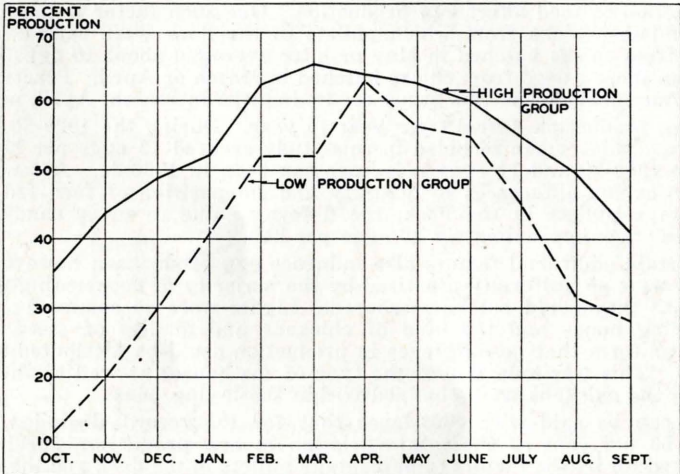


Figure 22.—Pullet flocks with high production during the fall months had a higher yearly production than did flocks with low production in the fall and declined more slowly from the peak.

MONTHLY EGG PRODUCTION FROM MIXED FLOCKS WITH HIGH AND LOW YEARLY PRODUCTION

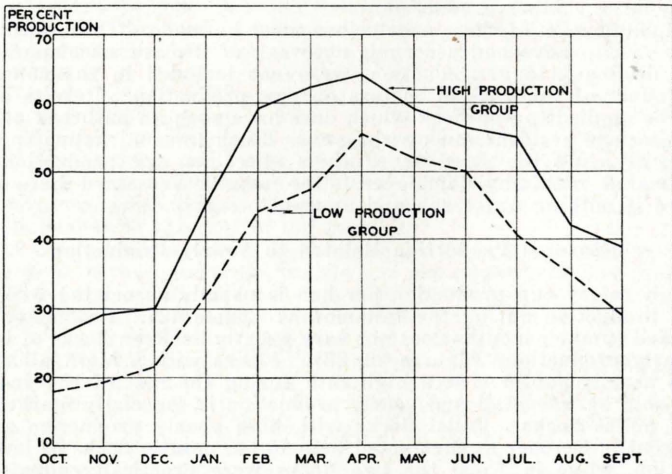


Figure 23.—Mixed flocks, containing 60 per cent pullets and with a high yearly production, produced more eggs during the fall months than did flocks with a low yearly production. This relationship held throughout the year.

Factors Affecting Depreciation Costs per Hen

As shown in this study, depreciation on laying flock was one of the major expenses of egg production. The cost of this item averaged 65 cents per hen for the three years (Table 46). This charge was computed as follows: At the beginning of the production season the poultryman had a certain investment in the poultry flock, varying according to the numbers and market values. These chickens were either sold or eaten, kept over for another year, or died during the year. Those which died were, of course, an entire loss. Cull hens were sold at a value much below that placed upon them at the beginning of the year, this difference becoming a charge against egg production for that year. Moreover, those which were kept over a second year were ordinarily not as valuable as they had been a year earlier.

The amount of depreciation per hen was divided into three parts, as suggested: (1) That which was due to death loss, (2) that which was due to selling of cull hens for lower prices than their inventory value, and (3) that which was due to keeping older hens over at a lower value than their value at the beginning of the year (Table 70). To illustrate: If a pullet, worth \$1.25 on the opening inventory should die, the resulting loss would be \$1.25; if she were sold for 50 cents, the resulting charge would be 75 cents; if kept over another year with a value of 75 cents, the charge would be 50 cents. The amount of depreciation must be charged against the laying flock. In each case the depreciation charge would change by altering any of these factors: Relative numbers died, culled, or retained, and the value attached to these.

TABLE 70. Flock depreciation charge due to death loss, culling, and keeping hens over—1929, 1930, and 1931.*

Depreciation Charge	Depreciation Charge per Flock			
	1929	1930	1931	3-year Average
	Dols.	Dols.	Dols.	Dols.
Due to Death Loss	185	302	291	259
Due to Culling	168	236	212	205
Due to Keeping Hens Over	118	262	180	187
Total	471	800	683	651

*From Table 44.

Depreciation Charge Due to Death Loss

The effect on depreciation per hen due to increasing death rates and to increasing rates of culling or of keeping hens over another year is shown in Figure 24. These charges were based on an average value of \$1 per hen on the opening inventory, an average margin between inventory value and sales price of 50 cents per hen, and an average margin between opening and closing inventory values of 30 cents per hen. This figure shows depreciation charges due to death loss ranging from zero to 50 per cent loss. A 10 per cent death loss resulted in a charge of approximately 12 cents per hen, while a death loss of 40 per cent gave a depreciation of 57 cents per hen, due to this cause. These costs were based on the weighted average number of hens in the flock for the year, as were all costs in this study, and not on the number on the opening inventory. The use of this method naturally results in a higher depreciation per hen than if the number on the opening inventory were used as a basis.

DEPRECIATION OF LAYING FLOCK DUE TO DEATH LOSS, CULLING, AND KEEPING HENS OVER

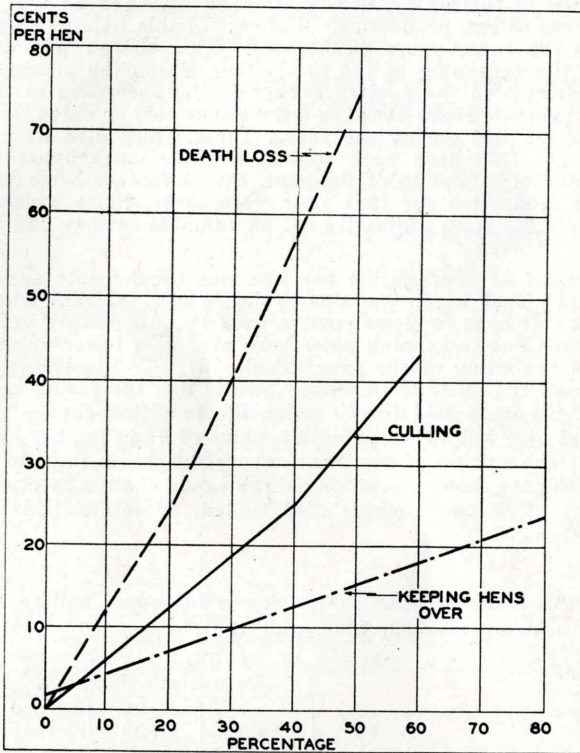


Figure 24.—The depreciation charge per hen varied according to the percentage death loss, culled and kept over for another year.

Depreciation Charge Due to Culling

The relative number of chickens culled affects depreciation per hen, as does also the difference between the inventory value and the price for which they were sold. With an average difference of 50 cents per hen between the opening inventory value and the sales price, the depreciation per hen chargeable to this culling practice increases as the percentage sold increases. An increase from 10 to 60 per cent of the original number sold will increase depreciation from approximately 6 to 42 cents per hen. The margin between the opening inventory value and the sales price will affect these depreciation charges considerably, the adjustment depending on the differences in this margin. To illustrate, if the margin were only 25 cents, the costs as given would be cut in half; on the other hand, if the margin were increased, the costs would also be increased.

In the margin between the opening inventory value and the sale price of culls, considerable difference existed between the three years of the study and between hens and pullets (Table 71). In 1929 the prices of chickens for layers and the prices of culls were both relatively high. In 1930, the sale price of culls fell rapidly, widening the margin. In spite of the extremely low price of culls, in 1931, the margin was reduced to 30 cents for hens and 61 cents for pullets, because the average inventory values were much lower. In the first and third years of the study, when conditions were more nearly normal than in the second year, the margin between the opening inventory value and the sale price was about 30 cents per hen greater in the

case of pullets than in the case of old hens. Pullets were generally valued higher than were old hens, yet the price as culls was about the same.

TABLE 71. Difference in value of hens and pullets between opening inventory and sales price as culls—1929, 1930, and 1931.

Item	Value per Hen			
	1929	1930	1931	3-year Average
Old Hens	Dols.	Dols.	Dols.	Dols.
Inventory Value per Hen	0.80	0.81	0.69	0.77
Sales Price per Hen	0.60	0.46	0.39	0.49
Difference	0.20	0.35	0.30	0.28
Pullets				
Inventory Value per Bird	1.19	1.25	1.04	1.16
Sales Price per Bird	0.64	0.51	0.43	0.53
Difference	0.55	0.74	0.61	0.63

The term "charge due to culling" should not be confused with the idea of a lowered net income. While the depreciation due to culling was an investment loss, net income as a result of efficient culling may offset the loss sustained from this depreciation. Culled chickens were ordinarily poor producers and would not have laid as many eggs as the better hens. By culling to the extent that only the highest producing hens are kept, the average production per hen for the flock can be greatly increased. The general practice among poultrymen was that hens culled were not usually replaced during the year. Selling relatively large numbers of hens, especially early in the year, results in high charges and lowers the volume of production, so that although egg production per hen may be increased for the hens which are kept, total receipts will be lowered and net income may be less.

Depreciation Due to Keeping Hens Over

Hens kept over as layers ordinarily were valued at a lower price at the end than at the beginning of the year. Even though they were better hens, yet they were not valued at a price much higher than were culls. Due to a higher value for pullet flocks on the opening inventory, depreciation due to keeping over another year was greater than for old-hen flocks.

The margin in value between the opening and closing inventories for old hens and pullets varied from year to year (Table 72). Due to declining prices during the second year of the study, depreciation per hen was higher than in either of the other two years. The 3-year average loss in value of the pullet between the beginning of her first year of production and the end of the year was 44 cents. This was 34 cents per bird greater than in the case of the old hens. Poultrymen, generally, during the three years of this study, valued old hens for layers to be kept over another year at 10 cents less, while the difference between opening inventory value and sale price of cull hens was 28 cents.

TABLE 72. Difference in inventory value between the beginning and end of the year for old hens and pullets—1929, 1930, and 1931.

Item	Value per Bird			
	1929	1930	1931	3-year Average
Old Hens	Dols.	Dols.	Dols.	Dols.
Opening Inventory Value	0.80	0.81	0.69	0.77
Closing Inventory Value	0.77	0.62	0.62	0.67
Difference	0.03	0.19	0.07	0.10
Pullets				
Opening Inventory Value	1.19	1.25	1.04	1.16
Closing Inventory Value	0.81	0.70	0.66	0.72
Difference	0.38	0.55	0.38	0.44

When there was an average difference of 30 cents per hen in value between all chickens on hand at the beginning and at the end of the year, the amount of depreciation was proportionate to the numbers kept over (Figure 21). An increase in the number kept over from 20 to 80 per cent of the original number would increase the charge from 8 to 28 cents. If the margin between the values on the opening and closing inventory had been other than 30 cents, the charge due to keeping hens over would have to be adjusted accordingly.

In calculating the depreciation per hen from Figure 21, the percentage which died, which were culled, and which were retained for another year must account for all chickens on hand at the beginning of the year, or equal to 100 per cent. Having estimated the percentage of chickens which died, which were culled, or which were retained, the depreciation charge due to each of these causes can be calculated for chickens of average value or when there was an average margin in values. These charges can then be adjusted for the values or margins that actually existed. Depreciation per hen as calculated from each line in the chart is only a part, and the three amounts must be combined to give the total depreciation charge. These charges would differ with varying prices, or with varying percentages which died, which were culled, or which were retained.

Depreciation charges per hen differ with pullet and old-hen flocks. An illustration of the loss due to depreciation with a 100 per cent pullet flock and with a 60 per cent pullet flock, assuming a death loss of 20 per cent with varying costs of pullets and sale prices of old hens, is shown in Table 73. With differences in percentage death loss, inventory value of old hens, different percentage of pullets in the flock or other variables, the relationship in depreciation would vary accordingly. The cost of raising pullets varied greatly from farm to farm, as did the value of hens sold from one year to the next. In a flock containing 60 per cent pullets, the depreciation cost per hen would be lower than in all pullet flocks, with the same cost of pullets, death loss, and value of hens sold in each case, the amount of this difference depending on the cost of the pullets.

TABLE 73. Depreciation per bird with varying costs of pullets and varying prices of hens sold.*

Sale Price of Hens Dols.	Depreciation per Bird when the Cost per Pullet Was:						
	\$0.65 Dols.	\$0.75 Dols.	\$0.85 Dols.	\$0.95 Dols.	\$1.05 Dols.	\$1.15 Dols.	\$1.25 Dols.
I—Flock Containing 100% Pullets							
0.20	0.69	0.83	0.97	1.11	1.25	1.39	1.53
0.30	0.57	0.71	0.85	0.99	1.13	1.27	1.41
0.40	0.46	0.60	0.74	0.88	1.02	1.16	1.30
0.50	0.35	0.49	0.63	0.77	0.91	1.05	1.19
0.60	0.24	0.38	0.52	0.66	0.80	0.94	1.08
0.70	0.13	0.27	0.41	0.55	0.69	0.83	0.97
II—Flock Containing 60% Pullets and 40% Old Hens							
0.20	0.44	0.52	0.60	0.69	0.77	0.86	0.94
0.30	0.38	0.46	0.54	0.63	0.71	0.80	0.88
0.40	0.33	0.41	0.49	0.58	0.66	0.75	0.83
0.50	0.27	0.35	0.43	0.52	0.60	0.69	0.77
0.60	0.21	0.29	0.37	0.46	0.54	0.63	0.71
0.70	0.16	0.24	0.32	0.41	0.49	0.58	0.66

*Assuming 20 per cent death loss, 124 chickens on hand at the beginning of the year for each 100 average for the year and the same inventory values at the beginning and at the end of the year for old hens.

There are certain factors, in addition to costs and returns, which should be considered in determining the most profitable organization of the poultry business. All pullet flocks involve somewhat higher risks than do old-hen flocks, partially offsetting a higher estimated income. This greater risk is due in part to the fact that occasionally the pullets raised from a lot of baby chicks are of poor quality or perhaps some disease strikes the growing pullets and lowers their production capacity. Although the average production of pullets can be estimated under given conditions, variation in production was much greater than in the case of old hens. If a flock of pullets has given good results, it is almost certain that old hens kept over from this flock will also be satisfactory. Hens which have had certain diseases are more immune to these same diseases than are pullets. If an entire pullet flock is maintained from year to year, considerably more brooder space is required to raise these pullets than would be the case if some old hens were kept over. These brooder houses either stand empty during a part of the year or the laying hens in them must be culled and sold in the middle of the productive year.

On the other hand, too large a percentage of old hens in the flock usually raises other problems. It is impossible to maintain a flock largely or wholly made up of old hens unless the hens are purchased from other poultrymen. This practice is one which is likely to lead to outbreaks of disease and consequent high death losses. Moreover, it is difficult and expensive to secure good quality laying stock in this way. Retaining all hens a subsequent year and securing no pullets is a program which tends to unbalance the financial organization of the farm. It throws onto the succeeding year an unusually heavy burden for replacing a larger than average number of pullets. With an old-hen flock receipts are greatly reduced during the molting period and may not be sufficient to pay the necessary expenses. In any event, the poultryman must have reserves of either cash or credit to carry him over these periods. If a flock were partly composed of pullets, the income from the eggs produced from them would probably offset the expenses for the entire flock during the molting period of old hens.

The Poultry Industry in Various Parts of Utah

Although a large percentage of all poultry producers in Utah market through the same sales agency and the state as a whole is a region of surplus grain production, there are some parts of the state which receive lower prices for their eggs or which pay more for their feed grains than do others. Small differences in egg prices and feed costs may result in large differences in net income from the poultry production.

For the period 1928 to 1932, differences of more than 2 cents per dozen existed in the yearly average price for all eggs between the various egg-receiving stations of the Utah Poultry Producers Cooperative Association (Table 12). An average yearly production per hen of 13 dozen eggs resulted in producers on an average in the areas securing the lowest prices receiving about 30 cents per hen less for their labor than producers in the areas receiving the highest prices. In 1931 the average return for labor of the operator and his family for all producers in the study was only 17 cents per hen, or less than this difference in price between one area and another.

This egg price lower in some parts of the state than in others may be due to differences in quality of eggs produced. One factor which tends to cause lower egg quality is that of small flocks, from which the eggs are not marketed as frequently or cared for as well as they should be to secure the best grading. In those parts of the state in which most of the flocks are of small size the average price of eggs may be relatively low, and yet producers who care for their eggs properly may secure as good prices as they could in the areas where the average price is higher.

In some parts of Utah a large part of the poultry feed must be shipped in, resulting in a higher feed cost than in those areas of surplus feed production. For instance, feed prices paid by the producers included in this study were considerably higher in Summit, Sanpete, and Sevier Counties

than in Salt Lake and Utah Counties. Those counties which have relatively low egg prices are to some extent the ones that have relatively high feed prices. Those areas of the state which do not have surplus grain production, which must ship in a large part of their feed, and which have not built up a large volume of egg production in commercial flocks, cannot secure as high a net return from poultry production as the more fortunately located areas. If returns from poultry production are relatively high, producers in the less profitable areas may be able to secure moderate returns; if returns on the average are low, however, producers in these areas may find it difficult to secure any return above expenses.

SUMMARY

Capital invested in the farm business for the 319 farms studied averaged \$11,663 per farm for the three years. There was a decline in capital investment of approximately \$3000 from the first to the third year of the study. Fixed capital comprised 76 per cent of total, with 24 per cent invested in operating capital.

Total farm receipts for these farms ranged from \$5593 in 1929 to \$3356 in 1931. Receipts from poultry represented more than 75 per cent of the total receipts.

Total expense for these farms averaged from \$3820 in 1929 to \$2944 in 1931, a decline of only 23 per cent as compared to 40 per cent reduction in income over the same period.

Labor income from farm business was \$1206 for the first year, which lacked \$29 of paying any return for labor for 1931, with a 3-year average of \$725. The return on equity was 7 per cent for the first year, 6.4 per cent for the second year, and minus 2.4 per cent for the third year, with an average for the three years of 3.9 per cent return.

In 1929, 43 per cent of the producers had a labor income of over \$1000 from the farm business, while in 1931 only 7 per cent had a labor income exceeding \$1000. In 1929 only 16 per cent of the producers had a minus labor income, while in 1931, 58 per cent had no return for their labor.

Average capital invested per farm for the poultry enterprise alone was \$3888, 54 per cent of which was in fixed capital and 46 per cent in operating capital. The principal investment represented buildings and poultry flock, which constituted 79 per cent of the total. The investment per hen based on the average number of hens kept (996) per farm was \$3.90.

Of the expense on the laying flock, or the cost of producing eggs, 52 per cent was represented in general operating cost, 21 per cent in depreciation on chickens, 18 per cent in labor costs, and 9 per cent in overhead. Feed costs alone were 48 per cent of the total cost of producing eggs and 90 per cent of the operation costs.

Total cost per hen for the laying flock ranged from \$3.45 in 1930 to \$2.75 in 1931, with a 3-year average of \$3.18. Egg production cost per dozen varied from 26.5 cents in 1929 to 21.6 cents in 1931, with an average of 24.3 cents for the 3-year period. For all cooperating poultrymen during the three years, the lowest cost of producing a dozen eggs was 14.9 cents and the highest 56 cents. General operation costs were 12.7 cents, or approximately 50 per cent of the total cost.

Net income per hen ranged from 54 cents in 1930 to minus 22 cents in 1931. The profit and return for labor from the laying flock, however, was 17 cents per hen for 1931, \$1.08 for 1930, and \$1.06 for 1929. Cooperating poultrymen had a net return per dozen eggs above cost, including the labor of the operator and family, of 3.3 cents in 1929, of 3.9 cents for 1930, and of minus 1.7 cents for 1931.

The most profitable laying flocks gave a return for labor to the operator and family of \$1.28 per hen, while the return for the least profitable group was but 7 cents per hen. The total cost of producing a dozen eggs ranged from 21 cents for the most profitable flocks to 31 cents for the least profitable. The average producer in the high net return group secured

174 eggs per hen, while the average poultryman in the low net return group secured 133 eggs per hen. The lower group averaged 42 per cent in "Extra" grade, while the most profitable group averaged 50 per cent.

Producers who secured the highest net returns had a high production per hen, costs were comparatively low, and they produced a high-quality product.

Man labor per hen for the year for the flocks with less than 500 hens was 2.2 hours, while for the flocks with over 1500 hens the labor per hen was only 1.2 hours, or approximately one-half that required per hen in the smaller flocks.

The average pounds of mash and scratch fed to laying flock per year by the commercial poultrymen averaged 78.4 pounds per hen. These feeds were fed in about equal proportions.

The net cost of producing pullets until the time they were placed in the laying pen for 1931 was 76 cents per pullet raised and 97 cents for each of the other two years, with a 3-year average of 90 cents. The cost of the chicks and feed and other operation costs averaged 58 cents.

Correlation analysis in this study showed that by increasing the quantity of feed fed to pullets the number of eggs laid was increased by 1.15 eggs for each pound of feed; for the mixed flocks it was 1.3 eggs for each pound of feed fed. This relationship held true when more than 65 pounds or less than 95 pounds of feed per hen were fed.

With the same quantity of feed fed, an increase of 1 per cent in the mash content of the feed increased the egg production per year 0.36 egg per hen in the mixed flocks and 0.79 egg per pullet in the pullet flocks. These data indicate that the old hens were more responsive to total quantities of feed but less to the percentage mash in the feed than were pullets.

Flocks with relatively high fall egg production continued at a high production rate during the rest of the year. The relationship between fall production and total yearly production was especially marked in the case of pullet flocks.

Percentage death loss exerts more influence on depreciation charges than does variation in inventory values, loss by culling hens, and loss by keeping hens over for another year.

Difference in value of hens between the opening inventory value and sales price of these hens as culls averaged 28 cents, while differences for the pullets between value at opening inventory and sale price as culls was 63 cents. Difference in inventory value between the beginning and end of the year averaged 10 cents for hens and 44 cents for pullets. The total depreciation per hen in pullet flocks was more than four times that in the old-hen flocks.

The general high prices paid for eggs from 1924 to 1929 has resulted in considerable expansion in egg production in Utah. Since 1931 some retrenchment has followed as a result of extremely low prices received for eggs. Low feed prices during this period, however, have greatly assisted in carrying the poultry industry over the period of low-egg prices.

During periods when egg prices were high there was a much greater spread between the better and poorer grades than was the case during years and seasons when prices were low. During the fall months the difference in prices between the "Extra" grade and the "Standard" grade averaged 18 to 25 cents per dozen eggs, while the spread in prices between these grades during the summer months averaged approximately 4 cents per dozen.

The growth of the poultry industry during the past decade was due to a combination of factors: (1) Egg prices were relatively high because the consumer, especially in the large eastern cities to which most of Utah's eggs were shipped, had a high purchasing power; (2) feed prices were relatively low in Utah as the result of the low-feed prices throughout the country and the surplus wheat produced in Utah and in southeastern Idaho; and (3) due to the small acreage of the average irrigated farm in Utah,

there was a surplus of family labor. The addition of a poultry unit to the other farm enterprises utilized this labor, thus increasing the farm income.

The poultrymen of Utah have produced a high-quality product which has found a ready market for special trade in New York City. In the main, the marketing of the products has been efficiently conducted through cooperative associations and other agencies.

The success of the poultry industry in Utah will be dependent upon such economic factors as cheapness of feed supply, efficient production and marketing, purchasing power of the consumer, and competition from other poultry areas.

DEFINITIONS OF TERMS USED

Farm Business—Includes all farm enterprises or the entire farm business as a whole.

Poultry Enterprise—Combined laying and rearing flocks.

Laying Flock—Includes the laying flock separate from the rearing flock.

Rearing Flock—Includes the rearing flock separate from the laying flock.

Capital—

Total: Value of all real estate, machinery, livestock, and other property used to carry on the year's business. Includes the value of the farm dwelling, since this is definitely a part of the farm business. The average of the values at beginning and end of year is considered to be the capital invested in the business.

Fixed Capital: Investment in land, buildings, fences, and water-supply.

Operating Capital: Investment in equipment, livestock, and farm supplies.

Farmer's Equity—Total capital less indebtedness on the farm business. The cash interest on indebtedness has been charged as a farm expense.

Income—

Total Farm Receipts: Include (1) amount received from all crops plus the value of crops held for sale and increase in inventory value of crops; (2) the receipts from livestock and livestock products sold or held for sale and the increase in inventory value of livestock; and (3) receipts from miscellaneous sources such as custom work, sale of sacks, fertilizer, etc., and rent of buildings or machinery. Any increase in inventory value of feed and supplies was also considered as a receipt.

Total Receipts: Includes, in addition to farm receipts, income from other capital, salaries, etc.

Expenses—

Total Farm Expense: Includes (1) all expenses incurred in the operation of the farm business; (2) livestock purchases; (3) value of unpaid family labor other than that of the operator; (4) depreciation in the value of livestock, buildings, equipment, and feed and supplies.

Farm Income—Farm receipts less the farm expense. This is what the operator has as a return for his labor and the use of his capital.

Labor Income—Farm income less 5 per cent on equity in farm business. This represents what the farmer received in return for his year's work, in addition to the use of the farm home and the farm products used in the household.

Family Income from Farm—Represents labor income of the operator, interest on equity, value of unpaid family labor, value of farm products used in the household, and the rental value of the home.

Family Income from Farm and Other Sources—Includes the income of the operator other than from the farm, as well as the family income from the farm.

APPENDIX

APPENDIX TABLE 1. Chickens on farms, farms reporting chickens, chickens per farm reporting, and eggs produced, by counties (1930).*

County	April 1, 1930			Eggs
	Chickens on Farms	Farms Reporting Chickens	Chickens per Farm Rptg.	Produced in 1929
	No.	No.	No.	Doz.
Beaver	9,555	284	34	76,552
Boxelder	165,749	1,293	128	1,505,486
Cache	169,869	1,515	112	1,414,700
Carbon	9,970	162	62	80,962
Daggett	1,326	44	30	8,092
Davis	93,234	936	100	717,735
Duchesne	24,819	736	34	187,497
Emery	34,398	595	58	321,332
Garfield	9,594	356	27	78,351
Grand	3,701	75	49	31,996
Iron	12,535	317	40	103,703
Juab	25,722	268	96	209,282
Kane	2,765	108	26	25,229
Millard	49,498	870	57	400,482
Morgan	31,920	181	176	283,277
Piute	5,725	183	31	45,651
Rich	9,690	176	55	88,963
Salt Lake	531,883	1,997	266	4,994,712
San Juan	4,868	137	36	46,460
Sanpete	76,073	1,205	63	667,813
Sevier	67,416	669	101	585,077
Summit	38,644	350	110	343,737
Tooele	21,500	308	70	202,103
Uintah	29,053	847	34	235,317
Utah	482,480	2,275	212	4,222,399
Wasatch	30,179	272	111	265,941
Washington	13,289	499	27	110,125
Wayne	6,091	216	28	55,854
Weber	134,177	1,290	104	1,153,687
State Total	2,095,723	18,164	115	18,462,515

*United States Bureau of Census Report, 1930.

APPENDIX TABLE 2. Number of farms reporting chickens on hand, by specified groups (1930).*

County	Total	49 and Under	50 to 99	100 to 199	200 to 399	400 to 699	700 to 999	1000 to 2499	2500 and Over
Beaver	284	240	30	6	7	1	....	....	....
Boxelder	1293	571	239	220	164	72	15	12	....
Cache	1515	810	245	191	159	78	18	14	....
Carbon	162	98	51	8	3	1	....	1	....
Daggett	44	38	6	....	....	....	....	....	....
Davis	936	561	149	90	82	34	11	9	....
Duchesne	736	584	131	19	1	1	....	....	....
Emery	595	345	165	61	20	2	1	1	....
Garfield	356	322	24	5	5	....	....	....	....
Grand	75	55	13	5	1	1	....	....	....
Iron	317	252	47	10	5	3	....	....	....
Juab	268	148	60	27	15	15	2	1	....
Kane	108	99	6	2	1	....	....	....	....
Millard	870	592	149	81	38	8	2	....	....
Morgan	181	68	29	24	38	17	1	4	....
Piute	183	154	24	3	1	1	....	....	....
Rich	176	105	41	24	6	....	....	....	....
Salt Lake	1997	797	265	199	292	224	94	109	17
San Juan	137	108	23	5	1	....	....	....	....
Sanpete	1205	768	262	104	54	13	2	1	1
Sevier	669	390	102	72	73	20	8	3	1
Summit	350	182	61	49	37	16	2	2	1
Tooele	308	185	77	27	13	3	2	1	....
Uintah	847	693	129	20	4	....	....	1	....
Utah	2275	1029	322	240	303	202	90	77	12
Wasatch	272	155	55	31	21	5	1	2	2
Washington	499	448	38	5	8	....	....	....	....
Wayne	216	192	21	3	....	....	....	....	....
Weber	1290	665	254	193	116	47	7	5	3
State Total	18,164	10,654	3,018	1,724	1,468	764	256	243	37

*Based on a special tabulation made by the United States Bureau of Census.

APPENDIX TABLE 3. Paying prices of Utah Poultry Producers Cooperative Association for eggs, by grade (1923 to 1932).*

Year and Grade	Average Monthly Price												Weighted Yearly Avg.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1923													
All Eggs				26	26	24	24	28	34	41	44	36	29.0
Extras			26	28	27	26	26	33	44	50	54	44	
Selects			23	24	24	23	24	29	38	47	49	39	
Standards			23	22	20	20	21	25	30	36	39	34	
Pullets			23	24	24	22	22	26	32	37	39	36	
1924													
All Eggs	32	26	23	22	22	26	27	30	34	38	46	47	27.5
Extras	35	30	26	26	26	30	32	38	45	56	66	61	
Selects	32	27	23	23	23	28	29	33	38	46	54	53	
Standards	29	25	19	19	19	24	25	28	30	37	44	43	
Moun- taineers									33	40	42	43	
Pullets	30	25	19	19	19	24	25	28	29	35	39	35	
1925													
All Eggs	46	34	27	27	28	31	34	34	37	41	44	38	32.7
Extras	54	38	31	32	32	35	38	40	46	60	64	52	
Selects	50	36	27	27	28	31	35	36	40	50	54	46	
Standards	43	31	25	26	27	30	33	34	37	39	38	37	
Moun- taineers	43	32	25	26	27	30	33	35	38	42	39	37	
Pullets	38	29	24	25	26	29	32	32	35	36	35	33	
1926													
All Eggs	26	27	25	25	26	28	29	33	38	40	42	39	30.0
Extras	34	32	30	30	30	33	33	37	48	58	67	53	
Selects	30	28	26	26	26	28	28	31	40	46	52	44	
Standards	26	25	22	24	24	25	26	29	35	38	36	35	
Moun- taineers	27	25	23	24	24	25	26	29	36	40	36	35	
Pullets	24	22	20	21	21	22	22	26	31	34	34	31	
1927													
All Eggs	32	26	24	23	22	21	24	28	34	39	42	38	28.3
Extras	39	30	27	27	26	25	30	35	47	58	63	45	
Selects	34	27	24	23	23	22	23	29	37	44	49	42	
Standards	31	24	22	21	20	18	20	25	29	34	37	36	
Moun- taineers	32	24	22	21	21	18	20	25	30	36	38	35	
Pullets	28	22	20	19	18	17	19	23	27	30	33	32	

(Continued)

*Quotations are "paying prices" for eggs purchased by Utah Poultry Producers Cooperative Association. Deductions for local plant costs have not been made from prices quoted. Monthly averages computed from weekly quotations.

APPENDIX TABLE NO. 3—(Continued)

Year and Grade	Average Monthly Price												Weighted Yearly Avg.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1928													
All Eggs	35	27	26	27	27	27	28	31	36	39	42	37	30.7
Extras	39	30	30	31	31	32	33	39	48	60	61	42	
Selects	36	27	26	27	27	28	28	31	38	42	47	39	
Standards	32	25	22	23	22	23	24	26	32	34	35	34	
Moun- taineers	32	25	23	24	23	24	26	28	36	36	36	35	
Pullets	29	24	21	20	19	18	22	23	28	31	31	30	
1929													
All Eggs	36	32	29	26	28	30	34	36	37	40	42	45	33.8
Extras	40	35	32	30	31	34	40	44	52	60	58	51	
Selects	35	32	29	26	28	30	35	39	45	54	52	48	
Standards	31	29	25	23	24	26	30	33	34	40	39	39	
Moun- taineers	31	29	26	24	24	26	31	35	38	40	39	42	
Pullets	28	26	23	22	22	23	26	29	28	29	28	32	
1930													
All Eggs	34	29	26	25	24	23	23	28	28	31	29	22	26.4
Extras	36	32	29	29	28	28	31	39	42	49	41	27	
Selects	34	30	26	26	24	24	26	34	36	45	38	23	
Standards	31	28	23	22	21	21	21	24	28	32	30	21	
Moun- taineers	32	27	24	24	21	21	21	26	26	28	26	18	
Pullets	26	24	19	19	18	18	16	17	19	19	20	15	
1931													
All Eggs	17	18	20	19	18	18	21	24	29	30	29	25	20.7
Extras	20	20	23	20	20	21	24	29	38	39	37	28	
Selects	17	16	19	17	17	18	21	25	33	35	33	25	
Standards	16	14	17	16	16	16	18	20	21	22	24	23	
Moun- taineers	15	14	17	16	16	16	18	21	24	26	22	21	
Pullets	13	12	12	11	11	11	12	14	16	17	17	18	
1932													
All Eggs	15	16	14	14	14	15	16	18	24	25	28	26	17.1
Extras	16	16	16	16	17	17	18	22	30	33	35	28	
Selects	14	14	13	13	13	14	15	18	26	28	32	26	
Standards	12	12	12	12	11	12	12	15	20	22	26	25	
Moun- taineers	12	12	12	12	12	12	12	16	20	22	24	24	
Pullets	11	9	9	9	9	10	9	12	15	16	22	21	

(Concluded)

APPENDIX TABLE 4. Individual producers ranked according to egg production per hen (1929, 1930, and 1931).*

Rank of Record	1929		1930		1931	
	Record No.	Eggs per Hen	Record No.	Eggs per Hen	Record No.	Eggs per Hen
1	56	229	62	219	171	211
2	119	227	130	218	172	201
3	74	224	8	201	173	199
4	78	219	54	200	174	198
5	44	216	131	200	175	190
6	11	215	132	199	176	190
7	102	213	133	199	177	189
8	18	210	108	196	178	187
9	84	207	134	196	179	182
10	15	201	135	195	138	181
11	35	197	78	193	131	180
12	48	193	136	191	62	179
13	129	192	137	190	48	176
14	28	192	138	189	98	175
15	53	191	139	187	180	174
16	54	187	27	186	39	174
17	3	187	87	185	181	173
18	62	185	140	184	182	172
19	111	183	141	183	119	170
20	65	182	142	183	183	169
21	5	182	9	182	99	168
22	43	181	144	182	27	168
23	57	181	143	181	8	168
24	73	181	145	181	184	167
25	117	181	146	181	185	166
26	60	179	43	181	135	165
27	23	177	58	180	186	164
28	112	177	63	180	155	163
29	96	176	11	180	141	163
30	68	175	85	179	25	162
31	47	174	147	178	87	162
32	101	174	48	178	187	162
33	34	174	39	178	188	162
34	7	173	96	178	128	162
35	85	172	148	177	37	162
36	66	172	89	176	189	162
37	27	171	23	176	102	162
38	22	171	149	175	151	161
39	67	170	150	174	101	160
40	104	169	44	174	190	158
41	8	169	151	172	191	157
42	29	169	25	172	117	157
43	128	168	103	171	192	156
44	127	167	33	170	193	156
45	24	167	117	169	140	155
46	58	167	152	169	78	155
47	126	166	47	169	194	155
48	64	166	75	168	96	155
49	33	165	153	168	42	154
50	42	165	3	166	3	154
51	95	164	154	165	59	154
52	93	163	155	165	195	154

(Continued)

*For this tabulation individual poultrymen were given the same record number in successive years as was assigned to the 1929 records, and new numbers were given records of poultrymen who were not cooperators in 1929. Nineteen more records were secured in 1929 than in 1930 and 1931.

APPENDIX TABLE NO. 4—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Eggs per Hen	Record No.	Eggs per Hen	Record No.	Eggs per Hen
53	40	162	6	164	35	154
54	94	162	74	164	97	153
55	30	162	98	162	116	153
56	59	160	5	160	196	152
57	116	160	156	160	110	151
58	75	160	157	160	154	150
59	87	160	59	159	58	149
60	98	159	52	159	34	149
61	106	157	67	158	67	148
62	77	156	68	158	84	148
63	1	156	158	157	85	147
64	110	155	60	157	145	146
65	103	154	24	156	166	146
66	107	154	159	156	159	146
67	61	154	80	154	54	145
68	39	154	38	154	103	144
69	45	153	45	153	197	144
70	108	148	99	151	198	144
71	37	148	160	151	199	143
72	90	147	29	148	77	142
73	97	146	84	148	120	142
74	81	146	161	148	19	142
75	99	145	162	146	50	141
76	26	144	119	144	47	141
77	109	144	41	144	200	141
78	46	144	104	142	38	138
79	25	144	163	141	52	138
80	31	144	34	141	68	136
81	38	143	164	141	44	135
82	92	143	37	140	23	133
83	17	143	76	139	130	133
84	2	141	165	139	201	133
85	82	139	166	137	202	130
86	6	138	120	137	158	130
87	120	138	122	136	90	127
88	52	137	51	133	76	126
89	50	136	77	129	122	123
90	86	136	40	129	203	123
91	41	135	167	128	41	123
92	20	130	55	126	168	121
93	88	129	61	126	204	120
94	32	129	97	125	137	119
95	105	127	168	123	55	118
96	79	127	50	120	24	116
97	19	127	169	114	205	113
98	114	126	170	112	167	112
99	4	126	42	112	80	107
100	76	126	112	102	170	87
101	113	125				
102	49	120				
103	51	120				
104	124	120				
105	118	120				
106	9	119				
107	63	118				
108	80	117				
109	125	114				

(Continued)

APPENDIX TABLE NO. 4—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Eggs per Hen	Record No.	Eggs per Hen	Record No.	Eggs per Hen
110	83	112				
111	71	110				
112	10	101				
113	89	100				
114	16	100				
115	122	97				
116	55	92				
117	115	87				
118	69	83				
119	100	79				

(Concluded)

APPENDIX TABLE 5. Individual producers ranked according to cost of producing eggs (1929, 1930, and 1931).*

Rank of Record	1929		1930		1931	
	Record No.	Egg Production Costs	Record No.	Egg Production Costs	Record No.	Egg Production Costs
		Cents		Cents		Cents
1	56	18.5	62	18.7	178	14.9
2	99	18.6	151	19.2	77	16.2
3	48	18.9	131	19.4	173	17.0
4	78	19.0	144	19.5	177	17.1
5	111	19.4	139	19.7	52	17.2
6	66	20.1	48	19.9	141	17.3
7	74	20.2	137	20.0	171	17.3
8	1	20.2	47	20.0	48	17.3
9	49	20.4	108	20.1	78	17.6
10	65	20.6	78	20.1	186	17.8
11	7	20.6	130	20.3	99	17.8
12	8	21.2	99	20.8	196	17.8
13	77	21.6	68	21.2	185	17.9
14	104	21.6	149	21.2	179	17.9
15	58	21.7	155	21.3	3	18.1
16	33	22.0	80	21.4	176	18.3
17	107	22.3	147	21.7	42	18.3
18	28	22.6	23	21.9	180	18.3
19	105	22.6	96	22.2	87	18.4
20	62	22.7	58	22.4	190	18.5
21	85	23.0	134	22.4	38	19.0
22	44	23.1	153	22.5	90	19.0
23	40	23.1	43	22.5	62	19.2
24	52	23.1	9	22.5	183	19.2
25	5	23.2	23	22.6	98	19.3
26	45	23.2	3	22.6	140	19.3
27	67	23.3	54	22.8	50	19.4
28	34	23.4	8	23.3	193	19.4
29	24	23.4	85	23.5	23	19.5
30	53	23.4	135	23.6	131	19.5
31	112	23.5	143	23.7	172	19.6
32	116	23.6	67	23.7	151	19.7
33	3	23.6	156	23.7	155	19.7
34	30	24.0	6	23.7	76	20.0
35	127	24.1	145	23.8	175	20.0
36	106	24.2	132	23.9	116	20.1
37	87	24.2	89	24.1	27	20.2
38	98	24.9	150	24.2	191	20.3
39	43	25.2	24	24.3	174	20.3
40	2	25.2	133	24.3	192	20.3
41	51	25.2	103	24.5	194	20.4
42	110	25.2	27	24.6	182	20.5
43	60	25.3	39	24.8	8	20.7
44	42	25.4	154	24.8	187	20.8
45	95	25.5	44	24.8	58	21.2
46	128	25.8	52	24.9	59	21.3
47	81	25.8	146	25.0	166	21.4
48	126	26.0	159	25.0	23	21.5
49	61	26.1	87	25.2	198	21.6
50	32	26.2	140	25.3	201	21.6

(Continued)

*For this tabulation individual poultrymen were given the same record number in successive years, as was assigned to the 1929 records, and new numbers were given records of poultrymen who were not cooperators in 1929. Nineteen more records were secured in 1929 than in 1930 and 1931.

APPENDIX TABLE NO. 5—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Egg Production Costs	Record No.	Egg Production Costs	Record No.	Egg Production Costs
		Cents		Cents		Cents
51	129	26.3	98	25.4	97	21.7
52	25	26.5	41	25.4	103	21.7
53	54	26.6	33	25.5	188	21.9
54	86	26.8	152	25.9	96	22.0
55	80	27.0	45	25.9	184	22.1
56	57	27.0	104	25.9	128	22.1
57	6	27.1	166	25.9	135	22.1
58	31	27.2	161	25.9	110	22.4
59	27	27.2	141	26.0	195	22.4
60	68	27.3	63	26.5	197	22.6
61	93	27.4	117	26.9	54	22.6
62	119	27.7	77	26.9	181	22.6
63	9	27.9	142	27.0	44	22.7
64	64	28.1	75	27.1	145	22.7
65	117	28.2	74	27.2	159	22.9
66	71	28.6	5	27.4	68	23.0
67	125	28.6	168	27.5	154	23.1
68	102	28.6	11	27.5	137	23.1
69	90	28.7	122	27.8	119	23.2
70	41	28.9	38	28.3	102	23.2
71	101	29.2	164	28.4	37	23.4
72	11	29.4	76	28.4	189	23.7
73	46	29.4	148	28.5	101	24.0
74	94	29.4	120	28.8	84	24.1
75	20	29.5	50	28.8	117	24.3
76	26	29.6	167	28.9	39	24.3
77	96	29.9	40	29.1	67	24.4
78	75	30.1	136	29.3	120	24.4
79	50	30.3	60	29.4	168	24.7
80	82	30.7	165	29.6	202	24.9
81	73	30.7	158	29.7	200	25.2
82	29	30.8	34	29.7	34	25.4
83	79	31.1	59	30.0	47	25.6
84	59	31.3	51	30.5	199	25.8
85	19	31.3	55	30.8	41	26.5
86	83	31.7	84	30.9	122	26.8
87	23	31.8	157	31.2	80	27.5
88	108	31.8	61	31.4	55	27.7
89	118	32.1	170	31.4	24	27.7
90	84	32.7	42	31.8	85	28.2
91	4	32.9	138	32.7	19	28.2
92	38	33.0	169	33.0	130	28.3
93	39	33.2	119	33.2	204	28.4
94	47	33.7	162	34.2	203	28.5
95	122	33.9	112	33.7	158	28.8
96	10	34.2	97	35.7	170	29.0
97	76	34.4	163	36.3	167	29.6
98	120	34.6	37	36.5	35	30.1
99	103	34.9	29	37.4	205	30.3
100	17	35.3	160	37.6	138	30.4
101	113	35.3				
102	37	36.2				
103	35	37.0				
104	15	37.2				

(Continued)

APPENDIX TABLE NO. 5—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Egg Production Costs	Record No.	Egg Production Costs	Record No.	Egg Production Costs
		Cents				
105	115	38.0				
106	22	38.2				
107	92	38.5				
108	114	38.5				
109	63	39.8				
110	18	40.1				
111	97	41.9				
112	109	42.9				
113	69	43.5				
114	16	45.7				
115	89	48.9				
116	88	49.8				
117	100	53.8				
118	124	54.2				
119	55	56.0				

(Concluded)

APPENDIX TABLE 6. Individual producers ranked according to return for operator and family labor from egg production (1929, 1930, and 1931).*

Rank of Record	1929		1930		1931	
	Record No.	Return for Labor	Record No.	Return for Labor	Record No.	Return for Labor
		Dols.		Dols.		Dols.
1	11	2.75	130	2.88	171	1.20
2	56	2.46	62	2.58	179	1.00
3	78	2.44	8	2.20	176	0.82
4	74	2.32	144	2.19	42	0.78
5	44	2.20	131	2.01	48	0.73
6	66	2.14	54	1.85	173	0.73
7	49	2.11	47	1.84	23	0.73
8	48	2.10	48	1.81	62	0.70
9	28	2.08	154	1.73	186	0.70
10	5	2.04	139	1.69	178	0.70
11	62	1.97	9	1.69	38	0.69
12	65	1.94	145	1.68	141	0.69
13	119	1.93	68	1.68	8	0.62
14	8	1.88	135	1.67	77	0.61
15	7	1.85	43	1.60	145	0.59
16	3	1.83	11	1.59	155	0.59
17	40	1.79	134	1.58	177	0.59
18	102	1.77	23	1.56	183	0.56
19	53	1.77	137	1.55	192	0.56
20	24	1.71	140	1.52	180	0.55
21	67	1.70	23	1.52	190	0.53
22	1	1.69	149	1.51	174	0.52
23	127	1.68	27	1.48	27	0.51
24	111	1.67	151	1.47	120	0.45
25	128	1.63	3	1.45	52	0.43
26	43	1.60	87	1.44	185	0.41
27	68	1.54	58	1.37	39	0.40
28	27	1.51	39	1.37	140	0.39
29	58	1.50	78	1.36	87	0.39
30	33	1.49	155	1.34	78	0.38
31	29	1.45	143	1.27	131	0.38
32	54	1.44	132	1.27	135	0.36
33	45	1.43	133	1.24	181	0.36
34	61	1.42	108	1.23	54	0.36
35	129	1.42	96	1.20	103	0.34
36	117	1.40	85	1.20	58	0.31
37	85	1.40	67	1.19	50	0.31
38	87	1.37	136	1.19	197	0.30
39	2	1.36	117	1.18	68	0.29
40	34	1.36	152	1.17	175	0.29
41	112	1.33	24	1.11	151	0.28
42	116	1.33	6	1.08	193	0.27
43	57	1.29	147	1.08	23	0.26
44	60	1.29	52	1.08	130	0.26
45	126	1.28	150	1.06	3	0.26
46	104	1.28	159	1.05	59	0.25
47	95	1.22	153	1.04	99	0.25
48	99	1.22	103	1.03	191	0.24
49	30	1.16	80	1.03	119	0.24
50	25	1.16	156	1.03	196	0.23

(Continued)

*For this tabulation individual poultrymen were given the same record number in successive years, as was assigned to the 1929 record, and new numbers were given records of poultrymen who were not cooperators in 1929. Nineteen more records were secured in 1929 than in 1930 and 1931.

APPENDIX TABLE NO. 6—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Return for Labor	Record No.	Return for Labor	Record No.	Return for Labor
		Dols.		Dols.		Dols.
51	64	1.16	33	1.03	187	0.22
52	52	1.14	44	1.01	128	0.19
53	106	1.13	167	1.00	198	0.17
54	77	1.13	74	0.99	154	0.16
55	26	1.11	45	0.98	194	0.12
56	42	1.07	158	0.97	102	0.10
57	98	1.07	157	0.90	166	0.09
58	31	1.06	5	0.89	202	0.08
59	37	1.05	41	0.87	182	0.05
60	105	1.03	99	0.84	98	0.05
61	84	1.02	38	0.82	90	0.03
62	110	1.02	146	0.81	159	0.03
63	103	0.99	63	0.79	76	0.03
64	51	0.98	89	0.79	110	0.02
65	73	0.94	141	0.74	44	0.02
66	93	0.94	40	0.63	97	0.00
67	107	0.92	59	0.61	137	—0.02
68	92	0.89	160	0.59	188	—0.02
69	46	0.88	164	0.58	24	—0.04
70	22	0.88	148	0.56	67	—0.04
71	6	0.85	75	0.55	116	—0.04
72	19	0.81	138	0.51	195	—0.05
73	81	0.78	60	0.50	172	—0.05
74	41	0.74	51	0.50	47	—0.10
75	86	0.72	77	0.50	37	—0.10
76	125	0.69	76	0.49	189	—0.13
77	9	0.65	104	0.47	19	—0.15
78	32	0.65	168	0.46	117	—0.15
79	38	0.63	163	0.46	80	—0.16
80	94	0.57	59	0.44	184	—0.16
81	101	0.55	165	0.43	84	—0.19
82	80	0.55	166	0.41	201	—0.22
83	20	0.53	122	0.37	168	—0.24
84	96	0.53	142	0.36	96	—0.25
85	59	0.53	34	0.30	200	—0.25
86	39	0.50	169	0.28	204	—0.30
87	118	0.49	37	0.28	35	—0.31
88	23	0.48	120	0.26	158	—0.34
89	4	0.41	84	0.25	34	—0.43
90	90	0.38	50	0.17	167	—0.44
91	47	0.38	161	0.12	122	—0.45
92	50	0.37	162	0.07	170	—0.45
93	109	0.35	97	—0.04	203	—0.46
94	35	0.35	42	—0.06	138	—0.54
95	82	0.35	55	—0.11	101	—0.54
96	71	0.29	61	—0.12	199	—0.57
97	17	0.28	119	—0.14	41	—0.57
98	79	0.26	29	—0.15	55	—0.61
99	18	0.25	170	—0.16	205	—0.62
100	122	0.17	112	—0.23	85	—0.96
101	63	0.16				
102	150	0.15				
103	10	0.13				
104	83	0.11				
105	69	0.06				

(Continued)

APPENDIX TABLE NO. 6—(Continued)

Rank of Record	1929		1930		1931	
	Record No.	Return for Labor	Record No.	Return for Labor	Record No.	Return for Labor
		Cents				
106	76	0.03				
107	108	0.00				
108	113	-0.04				
109	115	-0.11				
110	175	-0.20				
111	124	-0.32				
112	114	-0.44				
113	89	-0.47				
114	15	-0.48				
115	16	-0.60				
116	55	-0.69				
117	88	-0.74				
118	97	-0.80				
119	100	-1.01				

(Concluded)

APPENDIX TABLE 7. Monthly prices of laying mash, grains and poultry rations in Utah (1928 to 1932).

(Dollars per hundred pounds)

Kind of Feed	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Avg.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	
1928													
Mash*	2.61	2.56	2.58	2.58	2.67	2.67	2.63	2.57	2.47	2.47	2.50	2.44	2.56
Wheat†	1.82	1.87	1.90	2.00	2.32	2.22	2.02	1.63	1.58	1.58	1.55	1.65	1.84
Corn‡	2.11	2.11	2.11	2.23	2.41	2.41	2.50	2.41	2.41	2.23	1.96	2.05	2.24
Barley†	1.69	1.81	1.83	1.96	2.17	2.00	1.83	1.62	1.31	1.37	1.46	1.58	1.72
Oats‡	1.94	2.00	2.09	2.12	2.19	2.19	2.25	1.88	1.75	1.59	1.75	1.81	1.96
Avg. all feed‡	2.25	2.24	2.26	2.31	2.49	2.45	2.37	2.19	2.12	2.10	2.07	2.09	2.24
1929													
Mash	2.39	2.39	2.40	2.42	2.39	2.39	2.39	2.39	2.39	2.37	2.29	2.30	2.38
Wheat	1.67	1.73	1.77	1.68	1.63	1.62	1.65	1.77	1.72	1.73	1.68	1.67	1.69
Corn	2.18	2.30	2.21	2.32	2.36	2.30	2.23	2.37	2.20	2.09	2.14	1.79	2.21
Barley	1.62	1.69	1.67	1.71	1.60	1.71	1.67	1.58	1.62	1.60	1.56	1.54	1.63
Oats	1.88	1.94	2.00	2.06	2.06	2.16	2.06	2.09	1.88	1.72	1.81	1.75	1.95
Avg. all feed	2.10	2.13	2.13	2.12	2.10	2.09	2.09	2.15	2.11	2.10	2.04	1.99	2.10
1930													
Mash	2.29	2.28	2.27	2.24	2.24	2.24	2.24	2.11	2.04	2.01	2.00	1.97	2.16
Wheat	1.67	1.67	1.62	1.61	1.60	1.62	1.37	1.17	1.10	1.08	1.07	1.07	1.39
Corn	2.05	2.14	2.05	1.96	1.87	1.89	1.84	1.87	1.96	1.96	1.73	1.75	1.92
Barley	1.46	1.44	1.50	1.48	1.54	1.58	1.46	1.15	1.08	1.04	1.00	0.98	1.31
Oats	1.78	1.72	1.81	1.78	1.72	1.81	1.59	1.31	1.25	1.25	1.16	1.22	1.53
Avg. all feed	2.02	2.02	1.99	1.96	1.94	1.97	1.87	1.73	1.68	1.65	1.62	1.60	1.84
1931													
Mash	1.91	1.87	1.82	1.73	1.70	1.66	1.53	1.50	1.48	1.52	1.60	1.54	1.65
Wheat	1.02	1.03	1.08	1.05	1.05	0.93	0.83	0.70	0.77	0.73	0.95	1.05	0.93
Corn	1.75	1.70	1.61	1.52	1.61	1.54	1.61	1.52	1.25	1.25	1.25	1.52	1.51
Barley	1.00	1.04	1.08	1.17	1.10	1.06	1.06	0.77	0.94	0.90	1.02	1.12	1.02
Oats	1.22	1.25	1.28	1.25	1.25	1.22	1.25	1.06	1.09	1.06	1.22	1.34	1.21
Avg. all feed	1.55	1.52	1.52	1.45	1.45	1.38	1.28	1.20	1.19	1.20	1.32	1.36	1.37
1932													
Mash	1.51	1.51	1.51	1.51	1.54	1.52	1.44	1.41	1.36	1.41	1.35	1.32	1.44
Wheat	1.02	0.98	1.00	0.95	0.98	0.97	0.85	0.70	0.67	0.63	0.63	0.62	0.83
Corn	1.50	1.48	1.45	1.45	1.43	1.36	1.34	1.16	1.16	1.00	0.98	1.02	1.28
Barley	1.08	1.04	1.10	1.15	1.15	1.06	0.96	0.77	0.67	0.65	0.65	0.62	0.91
Oats	1.25	1.31	1.41	1.44	1.44	1.31	1.28	1.09	0.91	0.84	0.81	0.84	1.16
Avg. all feed	1.33	1.31	1.32	1.31	1.33	1.30	1.21	1.11	1.08	1.07	1.04	1.04	1.20

*Five-year average price for various plants of the Utah Poultry Producers Cooperative Association.

†Five-year average prices paid producers in Utah—Utah Agr. Exp. Sta. Bul. 217 (1930).

‡Average price weighted on basis of percentage of various kinds of feed used by poultrymen included in this study.