

THE COMPETITIVE POSITION
OF THE OREGON
MARKET TURKEY PRODUCERS

by

MORTON TULLY ROSENBLUM

A THESIS

submitted to

OREGON STATE COLLEGE

in partial fulfillment of
the requirements for the
degree of

MASTER OF SCIENCE

June 1951

APPROVED:

Redacted for privacy

Professor of Agricultural Economics

In Charge of Major

Redacted for privacy

Head of Department of Agricultural Economics

Redacted for privacy

Chairman of School Graduate Committee

Redacted for privacy

Dean of Graduate School

Date thesis is presented May 5, 1951

Typed by Lucille Berger

TABLE OF CONTENTS

Section	Page
1. Introduction	1
Purpose of Study	1
Procedure.	2
Trends in Turkey Production.	2
2. Cost of Production	19
3. Regional Differences in Important Items of Cost and Price	32
Feed	32
Poults	47
Labor.	49
Other Expenses	53
Rail Rates	54
Price of Turkey.	57
Comparative Advantage.	61
4. The Effect on Net Return to Oregon Turkey Pro- ducers Caused by Varying the Combination of Price and Production Factors	64
5. Conclusion	76
6. Bibliography	82

LIST OF TABLES

No.	Description	Page
1.	Number of Turkeys Raised, United States and Oregon, 1930-1951	5
2.	Ten Leading Turkey Production States, 1936-1951.	10
3.	Summary of Oregon Turkey Production, 1940-1950.	12
4.	Annual Per Capita Consumption of Turkeys. . .	15
5.	Average Liveweight Per Bird Sold, United States and Oregon, 1930-1950.	16
6.	Cost of Raising Market Turkeys in Western Oregon, 1949.	19
7.	Distribution of the Costs of Producing Turkeys Based on Cost Studies in Five States Compared With Oregon	23
8.	Index Numbers of Cost of Production and Price of Turkey, 1948-1950.	26
9.	Factors of Production, Oregon, Illinois and Virginia.	26
10.	Total Cost of Producing Market Turkeys in Oregon, Illinois and Virginia, 1948-1950. . .	29
11.	Value of Production, Oregon, Illinois and Virginia, 1948-1950	30
12.	Net Return Per Pound, Oregon, Illinois and Virginia, 1948-1950	31
13.	Average Local Market Cost of Poultry Ration by Selected States, 1941-1950	34
14.	Average Wholesale Price Per Ton of Protein Supplement, 1941-1950	39

No.	Description	Page
15.	Turkey-Feed Ratio by Geographic Regions, 1941-1950	41
16.	Cost of Feed Per Pound of Turkey, Liveweight, Oregon, Illinois and Virginia, 1948-1950 .	42
17.	Poult Cost Per Turkey Raised, Oregon, Illinois and Virginia, 1948-1950.	47
18.	Turkey Poult Price, Oregon, Illinois and Virginia, 1945-1950	48
19.	Labor Cost Per Turkey, Oregon, Illinois and Virginia, 1948-1950.	49
20.	Farm Wage Rates Per Hour, Selected States and United States, 1948-1950	51
21.	Type of Farming Factors for 89 Oregon Farms Producing Turkeys in 1949.	52
22.	Other Expenses Per Turkey, Oregon, Illinois and Virginia, 1948-1950.	53
23.	Rail Rates Per Pound of Turkey in Carload Lots, 1950	55
24.	Average Price Per Pound Received by Farmers for Turkeys, Liveweight, 1941-1950	58
25.	Dressed Prices Received for Turkeys by Grade, 88 Flocks in Western Oregon, 1949.	60
26.	Equilibrium Prices for Turkeys and Feed, Oregon, 1950	69
27.	The Affect on Net Return to Oregon Turkey Producers Caused by Varying the Combinations of Price and Production Factors. . .	75

LIST OF FIGURES

No.	Description	Page
1.	The trend in turkey production for the United States, the Western Region and Oregon, 1941-1951 (1941 = 100)	7
2.	Differentials in poultry ration costs, Oregon, Illinois and Virginia as compared to Minnesota, 1941-1950.	35
3.	Price received by farmers for wheat and corn, Oregon, Illinois and Virginia, 1946-1950 . .	37
4.	Turkey-feed ratio for Oregon, Illinois and Virginia, 1941-1950.	43
5.	Price per pound of turkey, liveweight, to farmers, Oregon, Illinois and Virginia, 1941-1950	59

THE COMPETITIVE POSITION OF THE OREGON MARKET TURKEY PRODUCERS

Introduction

For several decades Oregon has ranked among the ten leading states in the production of market turkeys. In 1945 Oregon raised a record crop of 3,105,000 birds, and stood fourth among the leading turkey states. Its production was surpassed only by California, Texas and Minnesota. On the basis of the January 1 intentions survey the Bureau of Agricultural Economics estimates that market turkey production in 1951 will total 1,547,000 birds or only 49.8 per cent of 1945 production (19, p.2). In contrast to the decline in Oregon, it is anticipated that production for the country as a whole in 1951 will total 44,773,000 turkeys or a one per cent increase over the 1945 production of 44,221,000 birds.

Purpose of Study

With the presentation of such figures, a question naturally arises as to whether or not Oregon's importance as a major turkey production state is on the wane. The answer to this question, either positive or negative, should be predicated on the careful evaluation of the sundry factors associated with the economics of market turkey production. It will be the purpose of this thesis

to attempt a critical analysis of those economic factors that are basic determinants in the turkey industry so as to arrive at a logical conclusion on the competitive position of the industry in Oregon.

Procedure

The first section of this study shall be concerned with the production trends on a state and regional basis. This will be followed by a discussion of the cost of producing turkeys in three states that will be considered representative of the Eastern, Central and Western regions of the United States. An analysis will then be made of Oregon's competitive position in relation to the items of cost and the price of turkey. On the basis of the data presented in the first three sections, a series of economic models will be developed which will reflect Oregon's competitive position under varying economic conditions. Conclusions will then be made as to the possible future of the Oregon turkey industry.

Trends in Turkey Production

Production statistics indicate that the Oregon turkey industry entered a period of decline in 1946. The record production of the previous year, both within the state and nationwide was a reflection, for the most part, of a shortage of red meat and a consequent strengthening

of turkey prices. Consumer demand in 1945 was at a new high with the per capita annual consumption of turkey totaling 4.3 pounds as compared to 2.1 pounds in 1935. In 1946, producer enthusiasm was dampened by the combination of rising feed prices and a weakening turkey market. National production fell to 92 per cent of the 1945 level or 40,724,000 birds while Oregon producers reduced their flocks by 34 per cent and raised only 2,049,000 turkeys. Thus, the percentage decline in Oregon exceeded by some four times the national decline. During the next two years turkey numbers decreased still further and in 1948, a ten-year production low was reached with only 31,950,000 birds being raised in the United States. While national production decreased 28 per cent from 1945 to 1948, Oregon farmers reduced the number of their birds almost 53 per cent. They raised only 1,475,000 birds in 1948 compared with 3,105,000 in 1945. From these statistics it is apparent that while the turkey industry as a whole was reducing output, the rate of reduction was much greater in Oregon.

A firming of turkey prices and a reduction in the cost of feed grains halted this downward trend in production and in 1949 a national turkey crop of 42,050,000 birds was reported with 1,770,000 of this total representing Oregon's production. This represented a national

increase of 32 per cent compared with a local gain of only 21 per cent over 1948 production. A continuance of similar economic conditions in 1950 resulted in the establishment of a new national production record. On the other hand, the number of turkeys raised in Oregon was once more on the decline. Thus the national output of 44,550,000 birds reflected a 6 per cent increase over 1949 while the Oregon production of 1,628,000 birds was 8 per cent less than the previous year. A projection of this situation is indicated in the intention reports for 1951 (Table 1).

A production trend similar to that evident in Oregon is characteristic of the entire western region.¹ It has been forecast that the number of turkeys to be raised in the eleven Pacific and Mountain states in 1951 will total 11,453,000, which is only 80 per cent of the 1945 production of 14,342,000 birds. The only western state reporting a contemplated increase in production was New Mexico with growers expanding their flocks 5 per cent over 1950. New Mexico, however, is relatively unimportant in the production of turkeys and the total number of birds to be raised there in 1951 is not expected to exceed 115,000.

California will account for over half of the western

¹ Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon and California.

Table 1. NUMBER OF TURKEYS RAISED, UNITED STATES AND OREGON, 1930-1951*

Year	Number of turkeys raised		Year	Number of turkeys raised	
	United States (Thousands)	Oregon (Thousands)		United States (Thousands)	Oregon (Thousands)
1930	17,419	625	1941	32,902	1,726
1931	18,249	650	1942	32,805	1,864
1932	22,333	750	1943	32,309	2,255
1933	23,241	600	1944	35,616	2,300
1934	21,702	750	1945	44,221	3,105
1935	20,821	900	1946	40,724	2,049
1936	27,981	1,166	1947	34,970	1,639
1937	25,755	1,240	1948	31,950	1,475
1938	26,887	1,460	1949	42,050	1,770 ¹
1939	33,587	1,762	1950	44,550 ¹	1,628 ²
1940	34,047	1,709	1951	44,773 ²	1,547 ²

¹ Preliminary

² Estimated

* Bureau of Agricultural Economics, U.S.D.A.

product in the coming season with an intended turkey crop of 6,159,000 birds. This is in contrast to a 1945 crop of 5,762,000 birds which represented 40 per cent of the turkey raised in the West. Although there has been a diminishing production rate in California for the past two years, a 1949 report of 6,824,000 turkeys raised, represented the largest turkey holdings ever reported by an individual state. The estimated number of birds to be raised in 1951 is still 7 per cent greater than the number grown in 1945. It becomes apparent with the presentation of these figures, that the decline in western production has been tempered to some extent by a delayed expansion of the turkey industry in California (Figure 1).

The expansion of the turkey industry on the Pacific Coast climaxed a prolonged westward movement that was characteristic of the industry for 50 years. This migration of the center of turkey production was necessitated by the need for range areas free of the protozoan parasite Histomonas meleagridis. This organism is the cause of blackhead, one of the most destructive of turkey diseases. The inability of the industry to control the prevalence of blackhead precluded the raising of large commercial flocks in any one area over an extended period of time. Turkey production on a commercial scale was not possible until scientific research provided means of

Percent

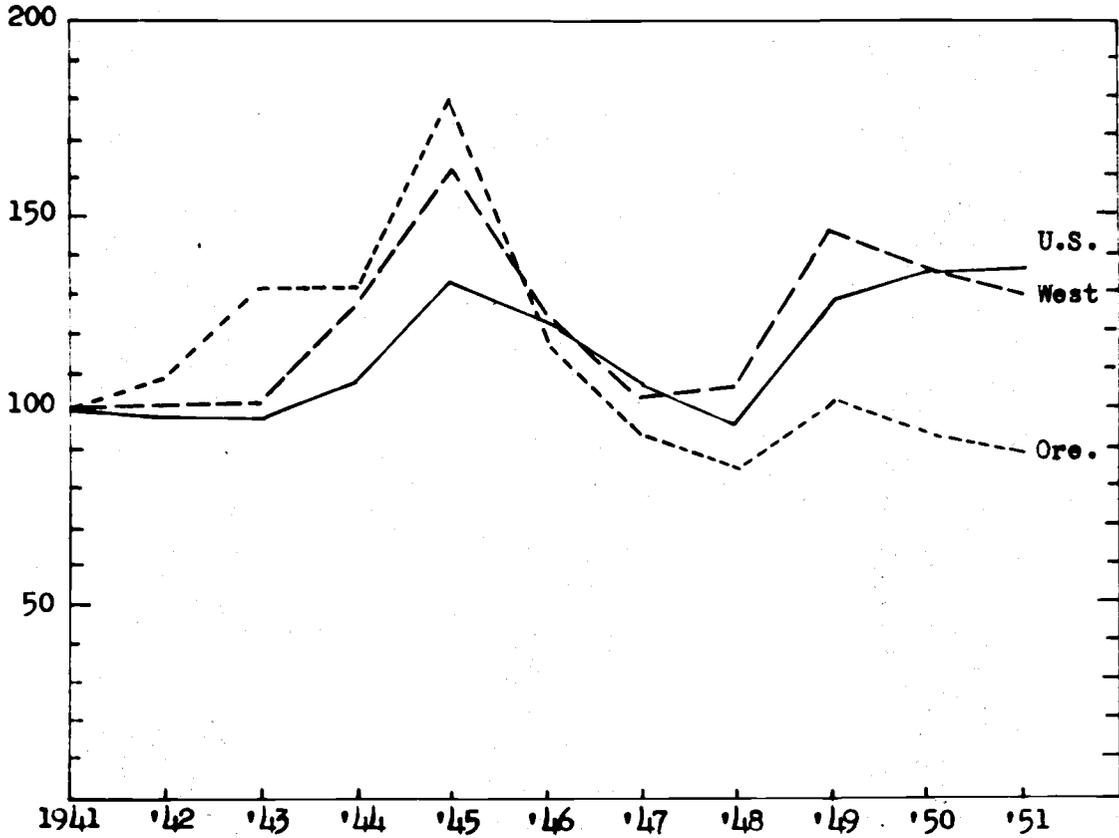


Figure 1. THE TREND IN TURKEY PRODUCTION FOR THE UNITED STATES, THE WESTERN REGION AND OREGON, 1941-1951.* (1941 = 100)

* Bureau of Agricultural Economics, U.S.D.A.

controlling this dread disease. The point has now been reached where losses from blackhead in any area, no matter how long in turkey production, can be kept at such a low rate as to be economically insignificant.

One consequence of this advance in disease control is suggested by production statistics for the last few years which would seem to reveal the possibility of a revival of the turkey industry on a large scale in the Eastern states. In 1951, the only two areas planning substantial increases in production are the North Atlantic and South Atlantic states. These two areas produced 3,583,000 and 5,061,000 birds respectively in 1950, and anticipate an 8 per cent increase in production during the coming year. In 1951, the Eastern states will raise 9,296,000 birds or 22 per cent of the national turkey crop as compared to 2,497,000 birds or 15 per cent of the total crop in 1930. While still a turkey importing area, the Eastern states produced 2.5 pounds of turkey per capita in 1950 or 50 per cent of average per capita consumption. Twenty years previously, Eastern production averaged 0.2 pounds per person or only 20 per cent of the per capita annual consumption.

For the past decade, the leading turkey producing areas have been the Western and West North Central states. On the basis of intention reports for the coming year,

these two regions will raise 23,600,000 birds or 53 per cent of the entire 1951 crop. In 1930, these two sections raised 8,308,000 turkeys or 49 per cent of the total United States production of 17,052,000 birds. It is of interest to note that during the 20-year period in which turkey production increased from 17,052,000 to 44,550,000 birds or 261 per cent, there was relatively little shift in the importance of states and regions in the overall production picture. Six of the ten most important turkey production states during the five-year period 1931-35 are still to be found among the leaders.² The four states no longer included in the first ten in 1951 are North Dakota, Oklahoma, South Dakota and Ohio. Of these four states only Ohio has remained among the leading production states through the 20-year period under consideration.

Texas held its position as the most important turkey raising state until 1944. California has been the leading turkey production state since 1944. With the exception of one year, Minnesota has been firmly entrenched in the position of third ranking state in the production of turkeys since 1935. Shifts in importance have occurred among the other turkey producing states (Table 2).

This brief discussion of production statistics has tended to minimize the important shifts in production that

² Texas, Minnesota, California, North Dakota, Oklahoma, Oregon, Iowa, South Dakota, Virginia and Ohio.

Table 2. TEN LEADING TURKEY PRODUCTION STATES, 1936-1951*

1936-40	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Texas	Texas	Texas	Texas	Calif.							
Calif.	Calif.	Minn.	Calif.	Tex.	Texas						
Minn.	Minn.	Calif.	Minn.								
Okla.	Iowa	<u>Oregon</u>	<u>Oregon</u>	Iowa	<u>Oregon</u>	Iowa	Iowa	Iowa	Iowa	Iowa	Iowa
Iowa	<u>Oregon</u>	Iowa	Iowa	<u>Oregon</u>	Iowa	<u>Oregon</u>	<u>Oregon</u>	<u>Oregon</u>	<u>Oregon</u>	Va.	Va.
N.Dak.	Mo.	Mo.	Utah	Utah	Utah	Mo.	Penn.	Miss.	Utah	Mo.	Mo.
<u>Oregon</u>	N.Dak.	N.Dak.	Mo.	Mo.	Mo.	Utah	Mo.	Penn.	Mo.	<u>Oregon</u>	Penn.
Mo.	Okla.	Nebr.	Wash.	Wash.	Wash.	Penn.	Ohio	Va.	Va.	Utah	<u>Oregon</u>
S.Dak.	S.Dak.	Utah	Nebr.	Penn.	Penn.	Va.	Va.	Wash	Penn.	Penn.	Utah
Kansas	Nebr.	Okla.	Penn.	Nebr.	Nebr.	Wash.	Ill.	Utah	Ind.	Ind.	Ind.

* Bureau of Agricultural Economics, U.S.D.A.

have really occurred in the past two decades. For example, Oregon ranked sixth during the period of 1931-35 and eighth in 1951. On casual observation it might be assumed that the turkey industry in Oregon is on a permanent and healthy economic basis because it has in general matched the expansion of the industry nationally. Such reasoning would seem to be subject to criticism when it is noted that except for 1948, production is at a 12-year low and farm income from market turkeys has been declining. It is the trend of events from 1940 on which would point the need for an evaluation of the economics of turkey production in Oregon (Table 3).

The prominence of Oregon as a major turkey raising state during the past decade was predicated to a large extent on the sweeping acceptance of the Broad Breasted Bronze by the whole turkey trade. This breed was relatively unknown before 1940 and in fact did not have an official name until 1938. For some years prior to 1938 a handful of Pacific Coast breeders had been working with the problem of developing a broad breasted, meat type bird. In 1939 six of these breeders sponsored a joint exhibit of their birds at the World's Poultry Congress in Cleveland. The display was an immediate sensation and by the following year, the demand by growers, for the new breed, far exceeded the supply available.

Table 3. SUMMARY OF OREGON TURKEY PRODUCTION, 1940-50*

Year	Farm income received from market turkeys	Income from turkeys as per cent of total farm income	Turkeys raised		Average price per pound liveweight		Turkey feed ratio	Average live-weight
			Number	Per cent of 1940	Cents per pound	Per cent of 1940		
	(1000)	(Per cent)	(1000)					(Pounds)
1940	\$4,353	3.7	1,709	100	15.0	100		17.0
1941	5,654	3.6	1,726	101	20.2	135	8.8	18.2
1942	9,553	4.5	1,864	109	28.5	190	9.8	18.8
1943	12,374	4.5	2,255	132	33.1	221	11.5	18.2
1944	13,892	4.6	2,300	135	33.2	221	10.4	18.4
1945	19,218	5.7	3,105	182	34.7	231	11.6	18.4
1946	14,116	3.9	2,049	120	31.5	210	9.3	19.4
1947	12,537	3.2	1,639	96	34.8	232	6.7	19.6
1948	11,477	2.8	1,475	86	44.4	296	9.4	19.9
1949	9,929	2.7	1,770	104	31.6	211	8.3	20.1
1950	--	--	1,628	95	--	--	6.7	--

* Bureau of Agricultural Economics, U.S.D.A.

Oregon turkey men were in an excellent position to capitalize on this sudden new market. The advantages offered by the availability of the foundation stock of the original breeders was further enhanced by the immediate establishment of the Oregon Turkey Improvement Association at the outset of the boom in 1940. The creation of such an organization provided for an orderly, progressive program of breed improvement with a most effective disease control program. As a result, Oregon became famous for the production of large broad-breasted turkeys that were free from pullorum disease. Supplementing this man-made advantage was the natural advantage of mild winters and early springs which were ideal for the production of hatching eggs and for starting poults. Thus, while some turkeys are raised in every county of the state, 70 per cent of Oregon production is centered in the Willamette Valley counties of Yamhill, Marion, Clackamas, Linn and Lane. where such favorable climatic conditions prevail.

The production of hatching eggs and market turkeys are complementary enterprises and in 1949, 62 per cent of the market turkey producers in Oregon also maintained breeding flocks. The maintenance of a market for hatching eggs and poults is thus a problem that should not be neglected in concentrating our study on market turkeys.

The popularity of the Broad-Breasted Bronze can be attributed to several factors. From the consumer viewpoint, this breed presented a more attractive appearance than did the straggly, narrow breasted breeds hitherto sold on the market. The turkey man was attracted by the fact that the new breed was the most efficient feed converter that he could raise. It was a straight out economic situation of maximum output for a given input, which meant extra dollars and cents to the producer.

Another contributing influence during the first half of the forties was the large volume of turkey purchases made by the Armed Forces. During the war years, military buying removed about 20 per cent of the entire turkey crop from the market. Purchasing specifications demanding large type birds were an additional incentive to raise Broad-Breasted Bronze. The slump in production immediately following the war may be attributed in part to the cessation of military buying. Subsequent consumption figures indicate that potential civilian demand for turkey on a per capita basis will continue to support a high level of production assuming the maintenance of the present level of economic conditions. Annual per capita consumption has increased from 1.8 pounds in 1930 to 5.0 pounds in 1950 (Table 4).

Table 4. ANNUAL PER CAPITA CONSUMPTION OF TURKEY*

Year	Pounds per capita	Year	Pounds per capita
1930	1.8	1941	3.5
1931	1.7	1942	3.7
1932	2.1	1943	3.3
1933	2.4	1944	3.3
1934	2.2	1945	4.3
1935	2.1	1946	4.5
1936	2.7	1947	4.5
1937	2.7	1948	3.6
1938	3.0	1949	4.1
1939	3.5	1950	5.0
1940	3.5	1951	--

* Bureau of Agricultural Economics, U.S.D.A.

As the current expansion of the nation's military strength progresses the turkey purchases of the armed services may once again exert an important influence on the turkey industry. The demand characteristics engendered by a civilian economy will however form the basis for the subsequent discussion.

For a number of years there has been increasing agitation for a smaller sized turkey. The Broad Breasted Bronze and standard bred Bronze while ideal for meeting military and institutional needs are far from satisfactory from the viewpoint of the average consumer. The average dressed weight of Broad Breasted Bronze hens marketed in Oregon during 1949 was 14 pounds while the toms averaged

24 pounds and Oregon breeders are considering a revision of their standards in order to produce even larger birds (Table 5).

Table 5. AVERAGE LIVEWEIGHT PER BIRD SOLD,
UNITED STATES AND OREGON, 1930-1950*

Year	United States	Oregon	Year	United States	Oregon
	(Pounds)	(Pounds)		(Pounds)	(Pounds)
1930	13.4	14.3	1941	15.9	18.2
1931	13.6	14.5	1942	16.3	18.8
1932	13.8	14.7	1943	16.2	18.2
1933	14.0	14.9	1944	16.8	18.4
1934	14.1	14.2	1945	17.4	18.4
1935	14.5	15.4	1946	17.9	19.4
1936	14.7	15.0	1947	18.1	19.6
1937	14.8	15.5	1948	18.2	19.9
1938	14.9	16.3	1949	18.7	20.1
1939	14.9	16.5	1950	18.6	19.6
1940	15.1	17.0			

* Bureau of Agricultural Economics, U.S.D.A.

This type of bird is too large for the average urban family. Initially, the high purchase price is a deterrent to many would-be-buyers. The problem then arises as to whether or not such a large bird would even fit in the average apartment size oven. Last but not least is the fact that the family will be forced to eat turkey for a number of days before the bones are picked clean. Frozen food lockers and home freezers that make it possible to purchase a large bird and then use only part of it and

freeze the remainder for future use is one solution to this problem. The increasing emphasis being placed on the sale of "turkey by the piece" is another method of encouraging year around consumption of large turkeys.

The popularity of the Broad Breasted Bronze is already being seriously threatened by the Beltsville Small White which have an average dressed weight of 8 pounds for hens and 14 pounds for toms. Unlike the Broad Breasted Bronze, which were developed by private breeders, the Small White is the result of work first started in 1934 at the United States Department of Agriculture research center at Beltsville, Maryland. Although placed on the market as early as 1940, it was not until 10 years later that large scale production of the Beltsville was undertaken. In 1950 approximately 9 per cent of the national production was made up of this breed and it is estimated that production may be doubled in 1951. The rapid rise in popularity of this small bird is reminiscent of a similar demand for Broad Breasted Bronze in 1940.

Virginia's action is an excellent example of the trend away from the large bird. Five years ago, Beltsvilles were almost unheard of, while in 1950 the state's turkey output was about equally divided between the small type bird and the bronze. Intention reports for the coming year indicate that almost 75 per cent of Virginia's

turkey crop will consist of Beltsville Small Whites. In a like manner, it is expected that 2 million Beltsvilles, or one-third of the states total production, will be raised in California during the coming year (12, p.1).

It has been estimated that from 8 to 10 per cent of the 1951 Oregon turkey crop will consist of Beltsville Small Whites. Two years ago this breed was practically non-existent on Oregon farms. Very little work has been done in the field of measuring consumer needs and preferences and so at this time it remains a matter of conjecture as to whether or not the apparent trend to a small type turkey will continue. Competition from the small type turkey will, however, be recognized as a factor to be considered in a discussion of the competitive position of Oregon turkey growers.

Cost of Production

The cost of raising market turkeys in Western Oregon in 1949 has been determined in a study conducted by the Department of Agricultural Economics, Oregon State College. Eighty-nine flocks of Broad-Breasted Bronze turkeys were included in this study. Of this number, 79 flocks were purchased as day-old poults, eight flocks consisted of started or custom brooded poults and two had day old and started poults. A breakdown of the various items of cost as ascertained by this study is given in Table 6. These data will be used in evaluating Oregon's

Table 6. COST OF RAISING MARKET TURKEYS
IN WESTERN OREGON, 1949*

Item	Cost per turkey raised	
	Bought as day old	Started or custom brooded
Number of flocks	79	8
Birds raised per flock	2655	3233
Labor	\$.63	\$.37
Feed	4.79	4.23
Poults98	1.90
Equipment and buildings33	.15
Miscellaneous28	.21
Total cost per bird	\$7.01	\$6.86
Less manure credits06	.06
Net cost per bird	\$6.95	\$6.80
Total returns per bird	6.69	6.68
Net profit per bird	\$-.26	\$-.12

* Hyer, Edgar A. Cost of raising market turkeys in western Oregon, 1949. Corvallis, Oregon State College, 1951. 6 p. (Agricultural experiment station circular of information No. 493) p.1.

competitive position in the turkey industry in relation to other major production areas.

There apparently is no significant difference in the cost of raising turkeys purchased when day-old as compared with started or custom-brooded poults. Production costs mentioned in subsequent sections will therefore be based on the figure obtained from the flocks bought as day-old poults.

Although average costs exceeded returns by 26 cents per bird when all flocks are considered, not all producers raised turkeys at a loss in 1949. In contrast to an average loss of \$1.69 per bird for the ten least profitable flocks, the ten most profitable flocks had an average return of \$1.10 per bird. The results of the 1949 study should therefore not be arbitrarily interpreted as indicating the economic unfeasibility of turkey production in Oregon.

Cost of production data obtained through cost studies should be used with extreme care when analyzing the economics of any agricultural industry. It must be recognized that the information gathered by the usual type of cost study reflects the influence of numerous causal factors which are operative during a limited time interval. While the periods selected for study may have been somewhat

representative of the long-run situation, there is a chance that abnormal situations prevailed at the time of the study.

Variance in the weather, with resultant surpluses or scarcities of grain supplies, will cause sharp fluctuations in feed prices. A sudden storm when the turkeys are on range may result in an unusually high mortality rate. Weather conditions during the growing season will affect the finish of the bird and thus the price to be received by the grower. In recent times government support programs have been factors in determining feed costs and turkey prices. The temporary influence of military purchases, red meat scarcity and local disease problems also contribute to the difficulty of arriving at data which can be considered representative of the industry over a period of time.

After these factors are tested for variations from the norm, it is possible to use the data compiled by cost studies as the basis for further economic analysis. The acceptance of certain basic assumptions will permit the development of economic models from the existing cost studies. This in turn will provide a means of comparing the economics of production in different areas of the country.

The number of market turkey cost studies conducted

within recent years is rather small. Since 1942, the states conducting such studies, together with the number of flocks in each study design, include: Oregon, 89 farms; Washington, 169 flocks; Utah, 68 flocks; Virginia, 50 flocks; New York, 32 flocks; and Illinois, 17 flocks. California has compiled annual cost data on a selective county basis for a period of several years. A search of the literature has not revealed the availability of any other recent cost studies.

It is to be noted that each of the Pacific Coast states does have cost data available. There is no information available at all from the West North Central states. This is unfortunate as this area is now the second leading turkey production area as well as the major feed producing section of the country. It is here that one would expect to find the lowest production costs. The lack of data from Texas, another major production state, also hinders the work of assaying the comparative advantage of the Oregon turkey industry.

This study will compare the cost data from Virginia, Illinois and Oregon. The items of cost have been divided into the four factors of feed, poults, labor and other expenses. These were the main items of cost in studies conducted by six different states (Table 7).

Table 7. DISTRIBUTION OF THE COSTS OF PRODUCING TURKEYS
BASED ON COST STUDIES IN FIVE STATES COMPARED WITH OREGON

Cost	Oregon 1949	Virginia 1948	Illinois 1945	New York 1943	Washington 1942	Utah 1941
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Feed	68	73	64	52	60	58
Poults	14	16	20	15	12	22
Labor	9	5	8	19	20	10
Other	9	6	8	14	8	10
Total	100	100	100	100	100	100

* Hyer, Edgar A. Cost of raising market turkeys in western Oregon, 1949. Corvallis, Oregon State College, 1951. 6 p. (Agricultural experiment station circular of information no. 493).

Plaxico, James S. Market turkeys, an economic survey. Blacksburg, Virginia experiment station, 1950. 35 p. (its bulletin no. 440).

Wilcox, R. H. and H. H. Alp. A study of turkey production costs in Illinois, 1945. Urbana, University of Illinois, 1946. 11 p. (mimeographed).

Misner, E. G. Costs and returns for the turkey enterprise. Ithaca, Cornell University, 1946. 30 p. (Agricultural experiment station bulletin no. 827).

Benyman, Carl N. and Mark T. Buchanan. An economic study of Washington's turkey industry in 1942, part II: The production and sale of market birds. Pullman, State College of Washington, 1944. 42 p. (Agricultural experiment station bulletin no. 453).

Broadbent, Dee A., Thomas W. Preston and George T. Blanch. An economic analysis of turkey production in Utah. Logan, Utah State Agricultural College, 1945. 47 p. (Agricultural experiment station bulletin no. 318).

Feed represents the greatest expenditure in every case. With the exception of Washington and New York, poults require the next largest outlay with labor third in importance. Other expenses include buildings and equipment, maintenance and depreciation, supplies other than feed, interest on investment, tax, insurance fees and all other minor costs.

The average value per bird in the three states will also be considered. The source of income from all flocks included in the three studies is from the sale of mature birds, either for market or for breeding stock. While each study also credited the turkeys with the value of manure produced, this procedure will not be used in the following comparisons.

There now appears to be an additional source of income available through the sale of turkey broilers, especially with the Beltsville Small Whites. It might be well for future cost work with turkeys to bring broiler production within the scope of study.

While the data for each state pertains to different years, adjustments have been made by the use of index numbers. Thus, comparable cost figures have been obtained for the three-year period 1948-1950. Costs particular to each state were used in compiling an index series.

Receipts were adjusted on the basis of the farm price of market turkeys in each state.

The average annual cost of 100 pounds of poultry ration in each state was the basis for the feed cost index used. The poult cost index was determined by using the average annual cost of poults in each of the three states. Local average annual wage rates were used in developing the labor cost index. The national average index number for farm supplies was used in adjusting "other expenses." The price per pound was adjusted for each of three years by means of an index based on the average farm price per pound of turkey liveweight for each state (Table 8). The basic information came from reports compiled by the Bureau of Agricultural Economics.

Certain basic management factors have been held constant. These are pounds of feed consumed per bird, rate of mortality, liveweight of birds sold, and average age of birds sold. Data for each state are presented in Table 9.

While the Oregon and Illinois studies were concerned exclusively with Broad-Breasted Bronze, the Virginia report includes other breeds. Of the 50 flocks in the Virginia sample, there were 27 Broad-Breasted Bronze, 16 Black and 7 Beltsville Small White flocks. The Bronze averaged 18.3 pounds per bird and were produced at a cost of 32.7 cents

Table 8. INDEX NUMBERS OF COST OF PRODUCTION AND PRICE OF TURKEY
1948-1950

Item	Oregon (1949=100)			Illinois (1945=100)			Virginia (1948=100)		
	1948	1949	1950	1948	1949	1950	1948	1949	1950
Feed	110	100	99	153	117	125	100	82	85
Poults	106	100	88	107	117	107	100	100	94
Labor	105	100	101	126	129	129	100	96	100
Other expense	96	100	101	116	120	121	100	104	105
Price	140	100	88	145	119	109	100	76	75

Table 9. FACTORS OF PRODUCTION, OREGON, ILLINOIS AND VIRGINIA*

State	Feed per bird	Feed per lb. gain	Live- weight when sold	Age when sold	Mortality
	Lbs.	Lbs.	Lbs.	Days	Per cent
Oregon	108	5.2	20.9	196	15
Illinois	110	5.8	18.9	--	26
Virginia	87**	5.0	16.6	179	16

* Hyer, Edgar A. Cost of raising market turkeys in western Oregon, 1949. Corvallis, Oregon State College, 1951. 6 p. (Agricultural experiment station circular of information no. 493).

Wilcox, R. H. and H. H. Alp. A study of turkey production costs in Illinois, 1945. Urbana, University of Illinois, 1946. 11 p. (mimeographed).

Flaxico, James S. Market turkeys, an economic survey. Blacksburg, Virginia agricultural experiment station, 1950. 35 p. (its bulletin no. 440). 23

** 37 flocks with complete records; 50 flocks averaged 83 pounds per bird.

per pound. The Black flocks had an average cost of 33.1 cents per pound of turkey produced and the White turkeys were raised at a cost of 36.8 cents per pound. The production factors for the Broad-Breasted Bronze flocks and the average of all flocks in Virginia were so similar, that the average data for the entire study have been used.

While both the Illinois and Virginia cost data were based upon the liveweight of the birds sold, the Oregon figures were based on dressed weights. The Oregon dressed weight average of 18.4 pounds was converted to a liveweight average of 20.9 pounds by assuming a 12 per cent loss in weight due to fasting, bleeding and picking. Illinois did not report the age of the birds when sold.

It is to be noted from Table 9 that the rate of mortality in Illinois is much higher than either Oregon or Virginia. The year 1945 was a high mortality year for the turkey industry as a whole with a mortality rate in the East North Central States of approximately 20 per cent. For the past few years, the mortality rate in this area has fluctuated around 15 per cent. It would seem obvious that to hold the mortality rate of Illinois constant at 26 per cent would be unsound. While this high rate has been used in estimating cost of production for the three-year period 1948-1950, the cost of production is also calculated on the basis of a 15 per cent rate of mortality.

In this case, adjustments were made in the charges for feed and mortality with the other items of cost held constant.

The cost of production, the value of production and the net return for each of the three states in the period 1948-1950 is presented in tabular form in Tables 10, 11, and 12. Virginia is assumed to be representative of the major Eastern production states, while the data for Illinois, when adjusted for the abnormally high rate of mortality, are considered applicable to the East North Central states. Illinois' conditions are somewhat different from those found in the West North Central states in that both price of feed and turkeys are higher in Illinois. However, no cost data are available from this region.

When the data are adjusted to 1950 the Virginia turkey producers realized a net return of 7.0 cents per pound. In Illinois the net return per pound was 3.9 cents at the high mortality rate and 5.3 cents at the normal mortality rate. In contrast, the Oregon producers suffered a net loss of 4.6 cents per pound during the same period.

On a per bird basis, Virginia growers would receive \$1.13 per turkey marketed. The growers in Illinois would receive a net return of \$.72 per bird with a mortality rate of 26 per cent as compared to a net return of \$.98 with a 15 per cent rate of mortality. The net loss to the Oregon grower would total \$.97 per bird.

Table 10. TOTAL COST OF PRODUCING MARKET TURKEYS IN OREGON, ILLINOIS AND VIRGINIA
1948-1950

State	Cost per bird			Cost per pound			Cost differential per pound compared to Oregon		
	1948	1949	1950	1948	1949	1950	1948	1949	1950
	Dol.	Dol.	Dol.	Cents	Cents	Cents	Cents	Cents	Cents
Oregon	7.55	7.01	6.86	36.1	33.5	32.8	--	--	--
Illinois*	7.12	6.05	6.24	37.8	32.0	33.0	+ 1.7	- 1.5	+ 0.2
Illinois*	6.81	5.79	5.98	36.0	30.6	31.6	- 0.1	- 2.9	- 1.2
Virginia	5.48	4.76	4.85	33.0	28.7	29.2	- 3.1	- 4.8	- 3.6

* Feed and mortality costs adjusted to a 15 per cent rate of mortality.

Table 11. VALUE OF PRODUCTION, OREGON, ILLINOIS AND VIRGINIA
1948-1950

State	Total return per bird			Price per pound liveweight			Price differential per pound compared to Oregon		
	1948	1949	1950	1948	1949	1950	1948	1949	1950
	Dol.	Dol.	Dol.	Cents	Cents	Cents	Cents	Cents	Cents
Oregon	9.37	6.69	5.89	44.8	32.0	28.2	--	--	--
Illinois	9.26	7.60	6.96	49.2	40.3	36.9	+ 4.4	+ 8.3	+ 8.7
Virginia	7.97	6.06	5.98	48.2	36.6	36.2	+ 3.4	+ 4.6	+ 8.0

Table 12. NET RETURN PER POUND, OREGON, ILLINOIS AND VIRGINIA
1948-1950

State	Cost per pound			Price per pound			Net return per pound		
	1948	1949	1950	1948	1949	1950	1948	1949	1950
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Oregon	36.1	33.5	32.8	44.8	32.0	28.2	8.7	- 1.5	- 4.6
Illinois	37.8	32.0	33.0	49.2	40.3	36.9	11.4	8.3	3.9
Illinois*	36.0	30.6	31.6	49.2	40.3	36.9	13.2	9.7	5.3
Virginia	33.0	28.7	29.2	48.2	36.6	36.2	15.2	7.9	7.0

* Five Illinois turkey farms with an average rate of mortality of 13 per cent.

Regional Differences in Important Items of Cost and Price

Feed

The most important single cost in the production of market turkeys is feed. Approximately 68 per cent of the total cost of production on Oregon turkey farms was accounted for in the feed consumed by the birds. In Virginia, feed accounted for 73 per cent of the production cost, while in Illinois 64 per cent of the cost was attributed to feed. The variation in the percentage of cost attributed to feed is due to difference in the price of feed, the amount of feed consumed and the cost of the other factors of production.

The consumption of feed per bird will vary according to breed, age of bird when sold, quality of feed used, the general feeding procedure followed and the quality of turkey range available. The low feed consumption per bird in Virginia compared with Illinois and Oregon may be accounted for by (1) the sale of birds at an early age and (2) the availability of good range. Both of these factors contribute to decreased grain consumption.

Thus, the 27 flocks of Broad-Breasted Bronze in the Virginia study consumed 89 pounds of feed per bird and were sold when 180 days old. The average Oregon turkey consumed 108 pounds of feed and was not sold until 196 days

old. In Illinois the average feed consumption per bird was 110 pounds, but no age at time of sale was reported. When adjustment for mortality is made, the feed consumption in Illinois averaged 107 pounds per bird.

Table 13 shows the average local market costs of 100 pounds of poultry ration in certain selected states and for the United States during the ten-year period 1941-1950. As would be expected feed is cheapest in the Midwest area, with Minnesota consistently having the lowest cost per 100 pounds of ration.

It is to be noted that from 1941 through 1948, the ration cost in Oregon was less than in Virginia. In the last two years however, the advantage of cheaper feed has shifted to Virginia. The scope of this shift is illustrated in Figure 2 which shows the differential in poultry ration costs for Oregon, Illinois and Virginia as compared to Minnesota.

Why was the cost of feed in the Pacific Coast so high in relation to other areas in 1949 and 1950? It would seem that this question can be answered by considering two factors: (1) type of feed grain and (2) type of protein supplement used in poultry ration by producers of different areas.

Type of Feed Grown: In contrast to the Mid-West and East

Table 13. AVERAGE LOCAL MARKET COST OF POULTRY RATION BY SELECTED STATES
1941-1950

State	Cost of poultry ration per 100 pounds									
	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.
New York	2.10	2.46	2.91	3.24	3.27	3.89	4.54	4.66	3.83	3.90
Illinois	1.70	2.07	2.47	2.70	2.66	3.19	4.00	4.06	3.11	3.33
Minnesota	1.53	1.90	2.32	2.57	2.52	3.04	3.81	3.87	2.98	3.16
Virginia	2.10	2.46	2.94	3.28	3.23	3.85	4.44	4.57	3.74	3.87
Oregon	1.96	2.37	2.76	3.06	3.08	3.56	4.31	4.54	4.12	4.08
Texas	1.72	2.14	2.67	2.88	2.86	3.45	4.02	4.21	3.49	3.48
United States	1.83	2.21	2.66	2.94	2.91	3.46	4.17	4.29	3.46	3.57

Source: Bureau of Agricultural Economics, U.S.D.A.

Cents Per
Hundred Weight

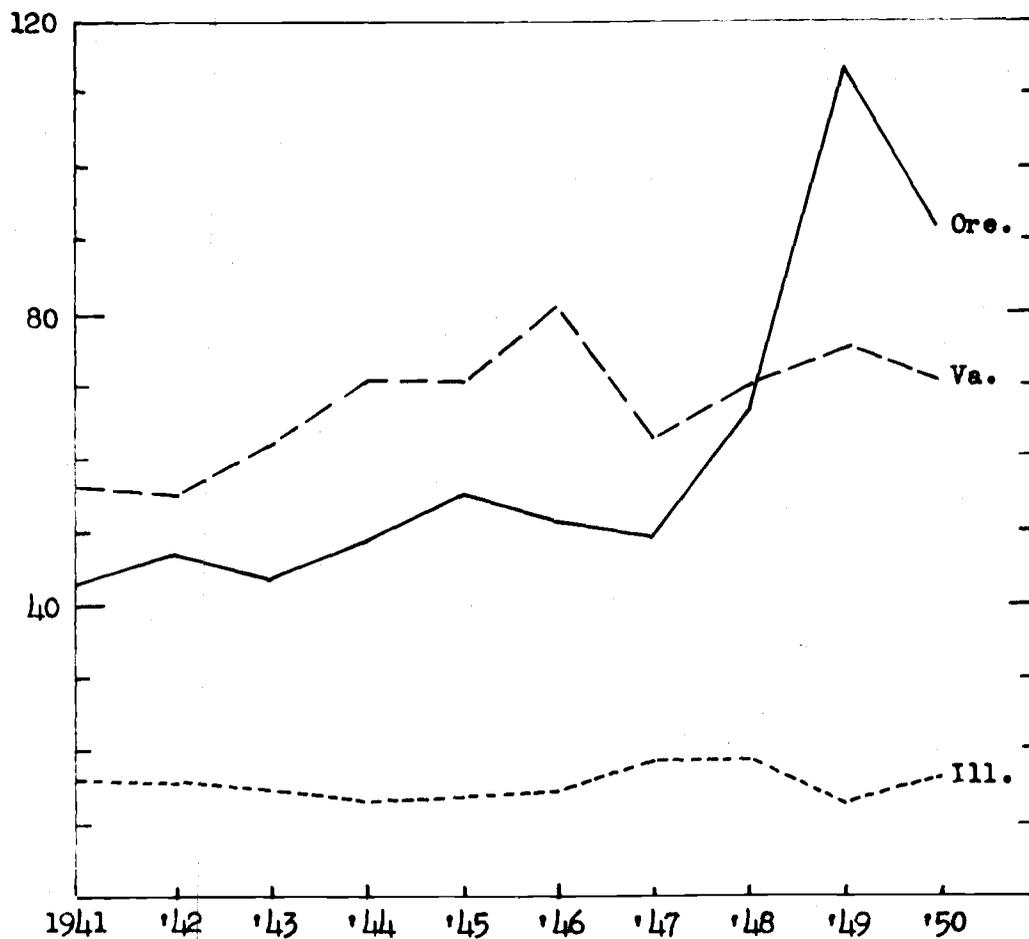


Figure 2. DIFFERENTIAL IN POULTRY RATION COSTS, OREGON, ILLINOIS AND VIRGINIA AS COMPARED TO MINNESOTA, 1941-1950.*

* Bureau of Agricultural Economics, U.S.D.A.

where corn is preferred, the Pacific Coast poultrymen use wheat as the predominant grain in the poultry ration. Until recently it was not profitable for the Western producer to use corn. Western-grown wheat cost less than corn which had to be transported west from the corn belt. In a like manner corn is cheaper than wheat in the Mid-West and East. However, since 1948, the support price for wheat has been so high that corn could be shipped into the Coast states and in spite of transportation charges still undersell wheat. Figure 3 shows the average prices received by farmers for corn and wheat in Oregon, Illinois and Virginia for the five-year period, 1946 to 1950. Although these prices are below those actually paid by turkey producers, the price differentials between the two grains in each state are applicable for prices paid as well as for prices received.

Regardless of the cost, Western turkey producers have continued to use wheat in their scratch mixture. Although, a trend towards the use of corn has developed in the last few years, wheat still is the predominant feed grain. This lag in feed ration adjustment to shifting grain prices may be attributed in part to custom. Growers, who have used very little corn in the past hesitate to change their feeding practices. If the 1949-1950 relationship in the price of corn and wheat is to continue however, then an industry

Dollars per
Hundred Weight

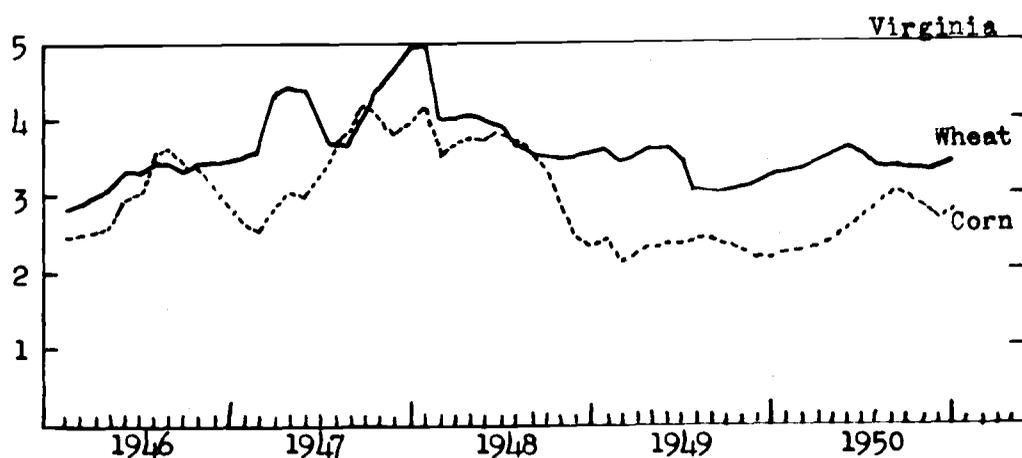
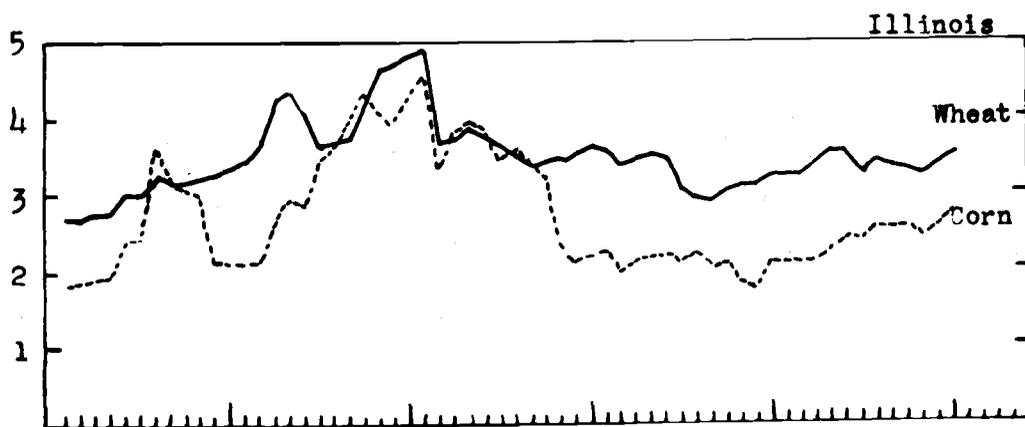
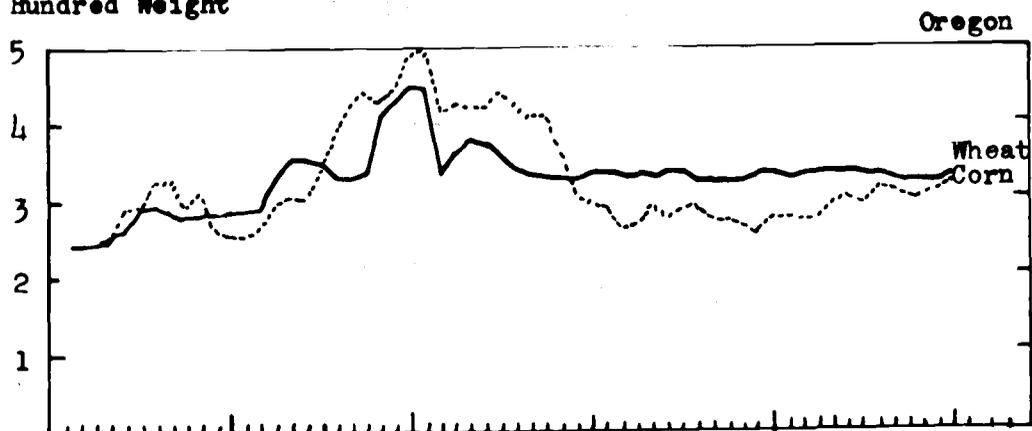


Figure 3. PRICE RECEIVED BY FARMERS FOR WHEAT AND CORN, OREGON, ILLINOIS AND VIRGINIA, 1946-1950*

* Bureau of Agriculture Economics, U.S.D.A.

wide shift to corn would appear inevitable. A two price system for wheat, as advocated by many western wheat growers, would also serve to improve Oregon's comparative advantage. Under this system, wheat used for feeding purposes would be sold at a price below the current support level. Changing economic conditions which would force the price of wheat back into line with the other feed grains would also preclude a shift to the use of corn.

Type of Protein: For years the most inexpensive protein supplements for poultry ration have been those obtained from vegetable sources. However, it was a generally accepted fact that a poultry ration had to contain protein from an animal source if the birds were to thrive. The use of vegetable protein supplements by turkey growers was therefore limited.

Within the past few years, advances in the field of poultry nutrition have been such that now all-vegetable protein rations produce results equal if not superior to those rations containing animal protein. Table 14 presents a comparison of the cost differential between animal and vegetable protein supplements.

The higher cost of a poultry ration on the Pacific Coast as compared to these areas may be due in part to a lag in shifting to the use of vegetable protein supplements. Western turkey growers however, will be forced

Table 14. AVERAGE WHOLESALE PRICE PER TON OF PROTEIN SUPPLEMENT*
(1941-1950)

Year	Soybean meal 41% protein Chicago	Peanut meal 45% protein Southeast	Linseed meal 32-34% protein Minneapolis	Meat scraps 55% protein Chicago	Fish meal 67% protein San Francisco
	Dollars	Dollars	Dollars	Dollars	Dollars
1941	41.85	40.60	37.55	60.60	74.60
1942	42.80	40.55	44.80	83.20	79.50
1943	51.90	53.00	45.50	83.80	79.50
1944	52.90	53.10	45.50	85.60	79.50
1945	52.00	53.00	45.50	85.40	79.50
1946	70.50	68.00	65.55	89.25	103.70
1947	83.75	76.35	82.90	107.75	163.50
1948	86.50	77.00	77.25	105.35	155.70
1949	75.45	64.80	66.00	118.15	200.50
1950	74.75	69.20	67.55	114.20	145.15

* Bureau of Agricultural Economics, U.S.D.A.

into making this shift if the present price relationship continues between animal and vegetable supplements. With the average producer losing money on every pound of turkey raised, production costs must be reduced to a minimum if the industry is to continue at the present scale of operation.

Turkey-Feed Ratio: The position of the Western producer is well illustrated by the turkey-feed ratio. The ratio represents the pounds of feed that a pound of turkey will buy. The variables in this ratio are the price of feed and the price of turkey. Changes in one factor when not offset by a proportionate change in the other factor, in the same direction, will result in a change in the ratio.

Oregon's turkey-feed ratio has been unfavorable for the past few years due to high feed costs and low turkey prices. The fewer the pounds of feed that can be purchased by a pound of turkey, the more unfavorable the ratio. It means that a greater proportion of the receipts from the sale of a bird must be used to pay for the feed consumed. This, of course, reduces the possible net return to the grower. Table 15 shows the average annual turkey-feed ratio by geographic regions. It is to be noted that for the last two years the Pacific Coast has the lowest turkey-feed ratio in the nation. The spread between the turkey-feed ratios in Oregon, Illinois and Virginia is

Table 15. TURKEY-FEED RATIO BY GEOGRAPHIC REGIONS, 1941-1950 *

Region	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
New England	9.5	9.9	10.8	10.0	10.6	9.5	8.3	9.2	10.4	9.2
Middle Atlantic	11.5	11.6	13.1	11.8	12.9	11.0	9.2	10.8	12.8	11.1
East North Central	9.8	10.1	11.8	11.3	11.9	10.3	8.2	10.0	12.2	9.8
West North Central	10.1	10.6	11.8	11.9	12.6	10.8	8.2	10.8	12.7	10.0
South Atlantic	9.2	9.4	10.5	10.1	11.1	9.4	8.1	9.4	10.6	9.4
East South Central	8.0	8.2	9.6	9.4	10.4	9.0	7.8	8.6	10.5	8.9
West South Central	7.2	8.0	9.5	9.6	10.3	8.5	6.6	8.2	9.0	7.4
Mountain	9.8	10.4	11.8	11.6	12.4	10.2	8.3	10.2	10.2	7.9
Pacific	8.8	10.1	11.6	10.4	11.1	8.9	6.7	9.2	8.8	6.9

* Bureau of Agricultural Economics, U.S.D.A.

is presented in Figure 4.

The calculated feed cost per pound of turkey produced for Oregon, Illinois and Virginia during the three-year period 1948-1950 is given in Table 16.

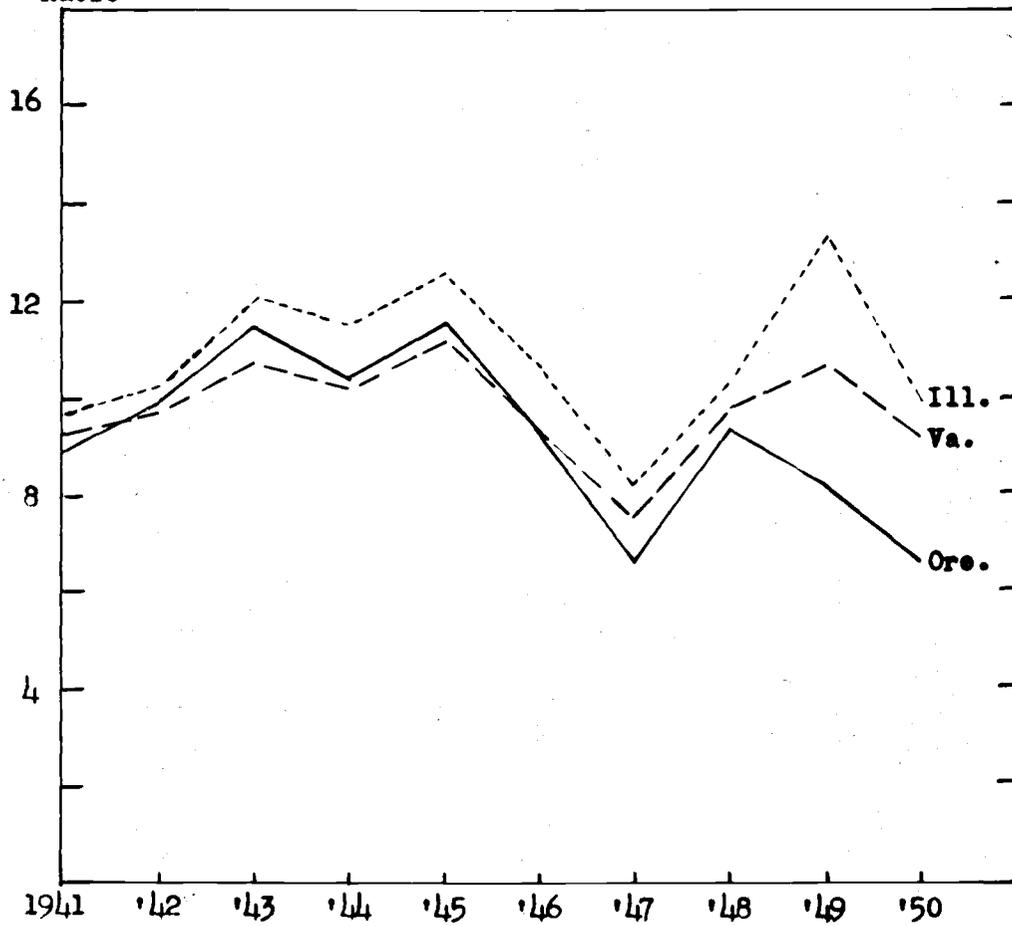
Table 16. COST OF FEED PER POUND OF TURKEY LIVEWEIGHT
OREGON, ILLINOIS, VIRGINIA, 1948-50

State	Pounds of feed per pound of turkey liveweight	Cost of feed per pound of turkey		
		1948	1949	1950
Oregon	5.2	22.7	22.9	25.2
Illinois	5.8	21.7	20.4	26.6
Virginia	5.0	20.3	19.6	23.9

The amount of feed consumed per bird has an important effect on the cost of production. The grower attempts to produce the maximum gain in weight per pound of feed consumed. The less feed needed to raise a bird to maturity, the greater the possible net return. This can best be illustrated by using the feed consumption figures as reported in the Virginia and Oregon studies.

Let it be assumed that the average feed consumption per bird for both states is transposed; that is, assume that the feed consumed per bird in Oregon is the same as that actually consumed in Virginia and conversely, that the feed consumed in Virginia is the same as that actually

**Turkey-Feed
Ratio**



**Figure 4. TURKEY-FEED RATIO FOR OREGON, ILLINOIS AND VIRGINIA
1941-1950***

* Bureau of Agricultural Economics, U.S.D.A.

consumed in Oregon. Under this assumption the average feed consumption per bird would be 87 pounds in Oregon and 108 pounds in Virginia.

On this basis, the feed cost in Virginia would be increased 4.9 cents per pound for a total cost of production of 34.1 cents per pound of turkey. This would reduce the net return per pound from 7.0 cents to 2.1 cents. On the other hand, feed costs in Oregon would be reduced 4.5 cents per pound. The total cost of production, in Oregon, would then be 28.3 cents per pound and the net loss would be reduced to 0.1 cents per pound.

Methods of Reducing Feed Consumption: The question arises as to the possible means of reducing feed consumption. It is a generally accepted fact that a good turkey range will reduce feed consumption from 10 to 20 per cent. Virginia has some good summer range on which to pasture growing turkeys. Thus, growers in that state are in a position to reduce grain consumption to some extent by substituting succulent green feed. However, due to the dry summer, good ranges are not available in the Willamette Valley without irrigation. A consideration of the economic feasibility of irrigated pasture for turkeys is beyond the scope of this study. It is, however, of sufficient merit to warrant further investigation.

Another means of reducing feed consumption is to raise

earlier maturing turkeys. On the basis of the studies in Oregon and Virginia, the eastern producers marketed their birds, on the average, 17 days earlier than did the western growers. This could account for a savings of up to 20 pounds of feed per bird.

The older turkeys become, the less efficient they are in the use of feed. Their feed efficiency begins to decrease rapidly after the 150-day mark is reached. As the birds get older a greater amount of feed is needed for body maintenance with a corresponding decrease in the amount of feed available for gain in body weight. Thus, the earlier the birds are marketed, the greater the feed utilization and the lower the feed cost per pound of gain.

However, the producer cannot dispose of his flock at top market prices until they are properly finished. He is therefore forced to hold late maturing birds until they have fleshed out and are comparatively free of pin feathers. There is not much that the producer can do to hasten maturity. Proper feeding practices will shorten the growing period but the development of an early maturing strain of Broad-Breasted Bronze is essentially a problem for the turkey breeders.

Another factor affecting proper finish, over which the farmer has no control, is the weather. Cool fall weather is considered ideal for the production of full

feathered, properly finished birds.

It would thus appear that the Oregon turkey producer is not in a position to immediately effect a savings in feed consumption either through the use of irrigated pasture or the production of early maturing birds. The only other course of action remaining is to attempt to reduce the price of the turkey ration.

Ways of Reducing Feed Costs: This can be accomplished in some degree by purchasing feedstuffs, both mash and grain, in bulk quantities and storing them on the farm until needed. If the cost of storage facilities can be held to a minimum, the savings, by such purchasing methods, may often be substantial. The purchase of locally-grown grain at harvest time is a practical means of reducing feed costs. The price of grain is usually at its lowest during this time of year.

When a disparity in price exists between feed grains, every effort should be made to use the lower cost feed. Thus in 1949 Oregon turkey growers found it profitable to buy corn by carload lots in the Mid-West and pay the shipping charges rather than buy wheat at the locally quoted prices (Figure 3). A familiarity with current grain prices should be a "must" with every turkey producer. The savings made by purchasing the cheaper grain in any one year might be the difference between a net profit and a net

loss at the end of the year. The Oregon producer should also maximize the use of low cost barley, oats and speltz in place of wheat and corn to the extent that the quality of the ration is not impaired.

The relative merit of home-grown grain as compared to purchased grain would require a separate study on the cost of producing such grain under varying conditions. In a like manner, the economics of home mixing of mash has never been fully explored. However, under existing price situations, it behooves the Oregon turkey producer to examine each and every feed management practice for ways and means of reducing costs.

Poults

The cost of poults is the second largest expense in the production of market turkeys. Table 17 gives the adjusted costs for the three states from 1948 to 1950.

Table 17. POULT COST PER TURKEY RAISED,
OREGON, ILLINOIS AND VIRGINIA
(1948-50)

State	Poult cost per turkey raised		
	1948	1949	1950
	Dollars	Dollars	Dollars
Oregon	1.04	.98	.86
Illinois	1.11	1.21	1.11
Illinois*	1.00	1.09	1.00
Virginia	.85	.85	.80

* Adjusted for 15 per cent rate of mortality.

The price of poults per bird sold accounted for 14 per cent of the total cost of production in Oregon, 20 per cent in Illinois and 16 per cent in Virginia. The cost per turkey raised is obtained by dividing the cost of poults purchased by the number of birds marketed. In this manner the cost of mortality is included in the charge for poults.

It should be recognized that the price of the poult is not the only loss sustained when a bird dies. Depending on the age of the bird, losses are also incurred in the feed consumed, the labor expended, and the other expenses of production. A reduction in the possible earning power of the producer must also be considered as a loss.

The price of poults is determined by the cost of producing hatching eggs and by the demand for poults and will vary according to breed. The grower himself can do little to reduce the cost of poults beyond holding mortality to a minimum. A comparison of the price of poults in the three states over a period of years is given in Table 18.

Table 18. TURKEY POULT PRICES
OREGON, ILLINOIS AND VIRGINIA
(1945-1950)

State	Price per poult					
	1945	1946	1947	1948	1949	1950
	Cents	Cents	Cents	Cents	Cents	Cents
Oregon	75	65	65	88	83	73
Illinois	70	76	75	75	82	75
Virginia	68	71	72	80	80	75

It would appear that the differential in the cost of poults in each state is not significant and it thus may be concluded that in this element of cost, Oregon has neither a comparative advantage or disadvantage over other turkey states.

Labor

Labor is the third major item of expense in the production of market turkeys. Of the total cost of production, labor accounted for 9 per cent of the cost in Oregon, 8 per cent in Illinois and 6 per cent in Virginia. The labor charge in each state adjusted for the last three years, is presented in Table 19.

Table 19. LABOR COST PER TURKEY,
OREGON, ILLINOIS AND VIRGINIA,
(1948-50)

State	Labor cost per turkey raised		
	1948	1949	1950
	Cents	Cents	Cents
Oregon	66	63	64
Illinois	48	49	49
Virginia	29	28	29

When the average wage rate used in each study is adjusted to 1950 by means of the "Index of Farm Wages" as reported by the BAE, the average wage per hour in Virginia was \$.50, in Illinois \$.71 and in Oregon, \$1.03. The question arises as to whether or not labor, skilled in

turkey production, in Virginia would actually work for 50 cents an hour.

Illinois does not give a breakdown of labor but in Oregon only 20 per cent of the labor was hired while in Virginia 29 per cent of the labor was hired. The operator and his family contribute most of the labor needed to raise the turkeys to market age. It can be assumed that this represents skilled and experienced labor with the labor employed representing primarily unskilled help.

If the Virginia operator was to employ labor with the skill and experience to perform the same work he had been doing, it would seem that a higher wage would be necessary to attract desirable help. Therefore, the labor cost figure in Virginia, since it approximates hired labor wage appears to be lower than it should be.

It is to be recognized, of course, that farm wage rates on the Pacific Coast are among the highest in the country. This can be seen in the average farm wage rate for selected states as presented in Table 20.

As with all items of cost, the Oregon producer must reduce the use of labor to a minimum. The saving of even one cent per pound of turkey produced is significant under present price conditions. The issue might be raised, however, on what would be accomplished by the more efficient labor on the typical Oregon turkey farm.

Table 20. FARM WAGE RATES PER HOUR, SELECTED STATES AND UNITED STATES (1948-1950)

	Wage rate per hour		
	1948	1949	1950
New York	.94	.87	.89
Illinois	.84	.85	.86
Minnesota	.93	.93	.89
Virginia	.57	.55	.56
Texas	.59	.59	.60
Oregon	1.01	.68	.97
United States	.73	.68	.69

If the grower were to employ expensive labor saving equipment and then simply waste the labor so saved, little is to be gained by efficient operation. However, efficient use of labor is associated with a higher productive capacity per man. The purpose in reducing labor requirements per bird would be to enable the producer to handle more birds during the growing season or to allocate part of his labor supply to alternative enterprises.

Table 21 lists several important types of farming factors for the 89 Oregon farms included in the turkey cost study. Almost two-thirds of the full time farms in the study had turkey production as the primary enterprise. It is to be noted that the 51 full-time turkey farms have an average of 490 productive man work units. It would therefore appear that the labor supply of the average farm family would be fully utilized with no need for expansion or diversification. However, hidden by the average figure

Table 21. TYPE OF FARMING FACTORS FOR 89 OREGON FARMS PRODUCING TURKEYS IN 1949

Type of farming	Number of farms	Crop acres per farm	Average PMWU	Percent PMWU in turkeys	Number of farms having breeder hens
Poultry	51	63	490	72	37
Dairy	3	170	473	26	1
General	17	99	457	38	10
Intensive crop	8	94	801	29	5
Part-time	9	22	398	75	2
Resident	1	42	72	56	0

is the fact that one-third of the full-time turkey farms have an average of less than 300 P.M.W.U.'s per farm.

It is this group that should be especially concerned with the problem of efficient utilization of available labor.

The number of turkeys that can be raised in any year is, of course, dependent on the availability of the factors of land, labor, equipment and buildings and operating capital. Another very important factor not to be overlooked is the element of risk. The size of the turkey flock will often be limited, not by the factors of production, but by the amount of risk that the operator dares to incur.

It might well be, that a 2,000 bird flock on a diversified operation is more attractive to the operator than a 6,000 bird flock as a specialized enterprise. In either case the emphasis on labor efficiency should be

stressed in those instances where labor is the limiting factor preventing full utilization of the available labor supply. It would seem that those producers, who are not operating at full labor efficiency, would do well to consider expansion of their flocks or the inclusion of other enterprises in their operations.

Other Expenses

The other costs of production which have been combined under "other expenses" will be briefly mentioned. These costs account for 9 per cent of total production costs in Oregon and 8 per cent in both Illinois and Virginia. Table 22 gives the adjusted value of these miscellaneous cost items in each of the states for the past three years.

Table 22. OTHER EXPENSES PER TURKEY, OREGON, ILLINOIS AND VIRGINIA. (1948-1950)

State	"Other Expenses" per turkey raised		
	1948	1949	1950
	Cents	Cents	Cents
Oregon	58	61	62
Illinois	37	38	39
Virginia	37	38	39

Most of the costs involved in "other expenses" are of a minor nature and when considered separately are of little importance. However, as with the major items of

costs, the farmer stands to benefit whenever such expenses are held to a minimum consistent with the maintenance of quality production. This is especially true in those periods when net returns are at a minimum level.

It is to be noted that "other expenses" are identical for Illinois and Virginia while Oregon is approximately 20 cents higher. This would increase the cost of production in Oregon one cent per pound. Part of this differential might be due to storage charges. In 1949, Oregon producers held some birds in storage in anticipation of higher prices that never materialized.

Rail Rates

The cost of production is merely one aspect of the problem of comparative advantage. The prices received for the finished bird is of equal importance when considering the competitive position of the Oregon turkey industry. It is, of course, the residue of market prices over production costs, or net returns, that determines the relative profitableness of enterprises.

Oregon is a surplus area in the production of turkeys. The same is true of other Western states. Local consumption can account for only a fraction of the total turkey crop and the greatest portion of western production is shipped east of the Mississippi River, primarily to the

large cities of the eastern seaboard.

The fact the Oregon-grown turkeys must be shipped long distances to market means that Oregon producers must absorb the shipping charge incurred in the marketing process. The extent of these charges is presented in Table 23 which gives the cost of shipping a pound of turkey by rail from various sections of the country to four major markets.

Table 23. RAIL RATE PER POUND OF TURKEY IN CARLOAD LOTS, 1950*

From	Rail rate per pound of turkey shipped to			
	New York	Boston	Philadelphia	Chicago
	Cents	Cents	Cents	Cents
Portland	4.39	4.39	4.39	3.18
Salt Lake	3.86	3.87	3.80	2.56
Minneapolis	1.89	1.96	1.89	1.10
Des Moines	1.82	1.90	1.78	.98
Omaha	2.01	2.07	1.96	1.15
St. Louis	1.58	1.67	1.55	1.08
Ft. Worth	2.83	2.96	2.83	1.65
Richmond	.88	1.03	.79	--

* Carload lot - 30,000 pounds, net weight.

As would be expected, Oregon, which is furthest from the major consumption areas, has the highest shipping cost. There is little that can be done to reduce this cost. In the short run, it is more or less a fixed cost which will vary as rail rates in general vary, and which the Oregon producer must accept as a more or less permanent disadvantage.

When freight rates are raised by a straight percentage increase, as has occurred a number of times in recent years, the Oregon producer is placed at even a greater disadvantage. With his initially higher freight costs, such a rate change means that he must pay a greater increase than does the producer in the Mid-West. This results in a still lower return per bird. Thus, if the 1950 rates were increased ten per cent the producer shipping to New York from Portland would have to absorb an additional freight charge of 44 cents per 100 pounds of turkey. On the other hand, a producer shipping his birds to New York from Minneapolis would only have to absorb an additional 18 cents in freight charges. This would give the Mid-Western producer an additional advantage of 26 cents per 100 pounds in total receipts.

It is of interest to note that during the war period, 1941-1945, the price received by Oregon growers was at times as high as the price received in Virginia. This was due to large purchases of turkeys by the Armed Forces for use in the Pacific and Asian areas. The Oregon grower was closest to market in this instance and there was no freight charges to absorb.

In the long run, if Western population and per capita turkey consumption both continue to increase there might be a time when the West will become a turkey importing

area. This is not likely to occur unless unfavorable conditions result in a permanent reduction of the Western turkey population.

Price of Turkey

The supply of turkey available and the demand for turkey will determine the market price at any given time. The average price per pound to the farmer for turkeys sold at the farm for the last ten years on a regional basis is given in Table 24. The price to growers in Oregon, Illinois and Virginia is presented in Figure 5.

The demand for turkey is primarily the resultant of two factors: general economic conditions and the availability and price of red meats and poultry. Demand will be stimulated when the spendable income per person is at a high level and when red meats are either scarce or high priced in relation to turkey. Another factor of increasing importance affecting the demand for turkey is the present emphasis on turkey as a year around food item, not merely as a delicacy to be served on certain holidays. The Oregon turkey producers and the turkey industry as a whole stand to benefit from any program directed at consumers which will increase the consumption of turkey by encouraging the consumer to use turkey throughout the year. The greater the demand, the higher the price for

Table 24. AVERAGE PRICE PER POUND RECEIVED BY FARMERS FOR TURKEYS LIVWEIGHT, 1941-50*

Region	Average price per pound received by farmers for live turkey									
	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
North Atlantic	26.3	32.5	40.1	40.8	40.6	46.2	44.4	53.5	44.1	42.3
East North Central	20.4	27.1	33.7	34.4	33.4	36.6	37.6	47.2	38.0	36.1
West North Central	18.4	26.4	30.2	32.8	31.8	36.2	35.2	46.4	34.7	32.2
South Atlantic	23.0	29.2	35.4	36.7	37.9	40.2	40.5	48.8	38.7	38.4
South Central	17.4	23.8	30.1	31.2	30.6	32.4	32.4	41.0	31.1	30.3
West	20.7	28.9	33.5	34.0	34.0	34.0	35.1	46.0	32.8	28.9
United States	19.8	27.4	32.6	33.9	33.6	36.2	36.4	46.7	35.1	32.8

* Bureau of Agricultural Economics, U.S.D.A.

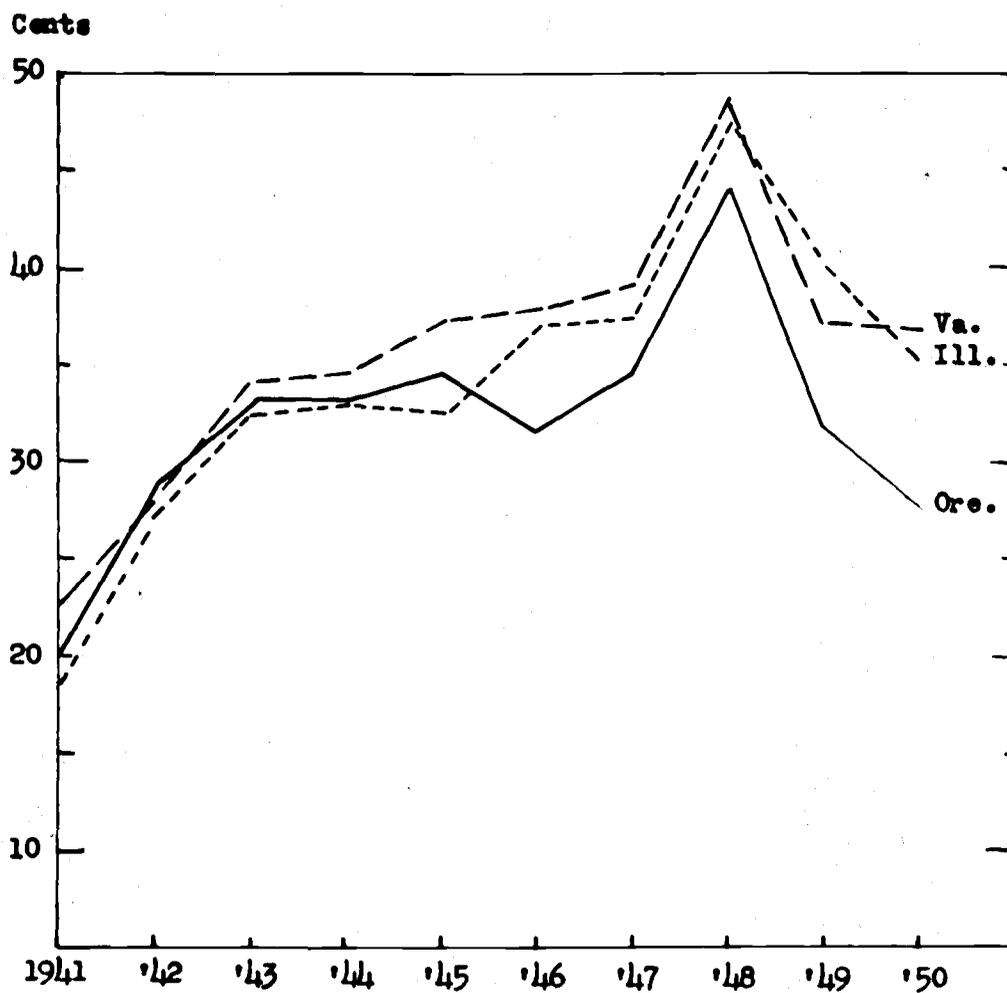


Figure 5. PRICE PER POUND OF TURKEY, LIVWEIGHT TO FARMERS, OREGON, ILLINOIS AND VIRGINIA, 1941-1950.*

* Bureau of Agricultural Economics, U.S.D.A.

a given supply of turkey.

With a given market price the Oregon producer can maximize his return by producing prime birds. Processors in Oregon pay for birds on a dressed grade basis with the top price being quoted for the prime or Grade A birds. Each cut in grade brings the producer a lower price per pound (Table 25).

Table 25. DRESSED PRICES RECEIVED
FOR TURKEYS BY GRADE*
(88 Flocks in Western Oregon, 1949)

Grade	Price per pound dressed	
	Hens	Toms
A	43.7	30.9
B	40.4	27.1
C	33.1	23.3
Undergrade	15.6	15.4

* Hyer, Edgar A. Cost of raising market turkeys in western Oregon, 1949. Corvallis, Oregon State College, 1951. 6 p. (Agricultural experiment station circular of information no. 493) p.6.

It is obvious from the price differential shown that the grower who can market most of his flock as Grade A birds will record the largest total return. If these birds can be produced at no greater cost than the lower grade turkeys then the producers with the Grade A flocks will also show the greatest net return. The problem of total feed consumption and early maturing

birds, which have already been discussed, are major factors in determining the net returns to the producer and really cannot be separated from the factor of price received for the marketed product.

The spread between the price of hens and toms really represents a premium for small birds. It would seem that the Oregon producer might indeed do well to consider raising a small type turkey. The widening gap between the price paid for turkeys in Oregon as compared to Illinois and Virginia, (Figure 5), might be partially explained by the increasing number of Beltsville Small White turkeys that are being raised in the East. The premium which is paid for this breed over the price for the Broad-Breasted Bronze would be reflected in the average price reported for each state.

It would thus appear Oregon producers are confronted with a double problem of high costs for the factors of production and low receipts from the marketed product in relation to comparable situations in other sections of the country.

Comparative Advantage

This study has been concerned with the advantages or disadvantages confronting the Oregon farmer in the production of turkey as compared to other turkey producing

areas. No mention has been made as to the comparative advantages of turkey production in Oregon in relation to other possible farm enterprises.

The law of comparative advantage infers that the tendency is for every farmer to produce those products for which the resources available have the greatest comparative advantage. Thus, while other areas may enjoy a greater comparative advantage than Oregon in the production of turkeys, it still may be that when Oregon farmers consider alternative enterprises to make use of their available resources, the production of turkeys would still represent the maximum utilization of such resources.

Thus, some Oregon farms, especially those located on poor hill soils may only be adapted with difficulty, if at all, to enterprises other than turkeys. Unless the operator shifts completely out of farming, turkey production may be just as profitable as any of the alternative enterprises that could make use of the available resources. In cases such as this, the production of turkeys will continue regardless of the comparative advantage possessed by other areas.

The problem of type of farming and enterprise selection will not be considered by this study other than to recognize that the comparative advantage or disadvantage

in relation to other areas is a relative concept which must be considered within the scope of availability of local resources and the possibility of alternative enterprises.

The Effect on Net Return to Oregon Turkey Producers
Caused by Varying the Combination of
Price and Production Factors

The competitive position of the Oregon turkey producer has been compared with that of producers in Illinois and Virginia. If it were assumed that the cost studies used as the basis for this comparison reflect accurately the production situation in each state, and still further, in each region, it is then apparent that the Oregon turkey producer is in a most unfavorable position at the present time.

While there are no cost data available from the West North Central states, it seems reasonable to assume that the cost-price relationship in this area would approximate those in Illinois. The price received per pound of turkey would be lower but so would the cost of feed. In 1950 the turkey-feed ratio for the East North Central states was 9.8 as compared to 10.0 for the West North Central states (Table 15). Feed will account for approximately two-thirds of the total cost of production in each area. If other costs are held to be similar, then comparable turkey-feed ratios would indicate that net returns should also be comparable.

Cost data are also lacking from the South Central region. This section of the country has the lowest

turkey-feed ratio of any area other than the Western region. Texas, the only major production state in the South Central region, has a turkey-feed ratio of 7.5 compared to 6.7 for Oregon. If this ratio were accepted as indicative of comparative advantage, then Oregon, with the lowest turkey-feed ratio of any major production state, was in the poorest competitive position during 1950.

The comparison made between states in previous sections was only for the three year period 1948-1950. As a three year period can hardly be considered representative of the long run situation, the question is whether or not Oregon's long run competitive position is as unfavorable as it seems. Several theoretical models will now be constructed so as to enable a comparison to be made as to Oregon's competitive position under varying economic conditions.

Table 27, to be found at the conclusion of this section, summarizes in tabular form the effects on net income caused by varying the combinations of price and production factors.

Model A: If it is assumed that costs other than feed are fixed, what would the price of feed have to be if the Oregon producer were to meet all expenses in 1950? He received \$5.89 per turkey marketed while the per bird

cost of production totaled \$6.86. This would mean that feed costs must be reduced by 97 cents if the operator is to be paid for his labor at the prevailing wage and if he is to receive an average return on his investment. In order to accomplish this reduction, poultry rations would have to cost no more than \$3.50 per hundredweight. This is a 20 per cent reduction in the average cost of the ration in 1950.

It is obvious that if feed costs were to be reduced 20 per cent in Oregon, due to a change in market prices, similar reductions would occur elsewhere. For simplicity it will be assumed that a 20 per cent reduction in feed costs occurs in both Illinois and Virginia. In this case, the Virginia producer would receive a net return totaling \$1.80 per bird while the Illinois producer would realize a net return of \$1.75 per bird. Thus, if it is assumed that the present relationship between feed costs in various regions were maintained, while the cost was reduced 20 per cent, Oregon would be in a very unfavorable position.

The high level of profits in the Mid-West and East would surely encourage a rapid expansion in the number of turkeys being raised in these areas. The greater the supply of turkey, the lower the price to producers.

Thus, the Oregon producer would have his receipts reduced and would once more be confronted with a net loss.

Model B: If all costs including feed were held constant, what price would the Oregon producer have to receive if he were to balance expenditures and receipts? A price per pound, liveweight, of 32.8 cents, or 37.3 cents on dressed weight equivalent, would provide the Oregon grower with receipts sufficient to cover all costs. This is 4.7 cents more than he received in 1950 when the average price per pound, liveweight, was 28.1 cents.

In 1950, the Virginia producer received a net return of \$1.13 per bird based on a price of 36.0 cents per pound. This was 7.0 cents a pound more than was received by the grower in Oregon. In shipping birds to the New York market the local grower has freight charges exceeding those of the Virginia grower by 3.5 cents. Thus, if shipping costs were the only reason for the price differential between the two states, then the Oregon producer should have received 32.5 cents per pound of turkey. The only apparent reason for the greater differential would be the large numbers of Beltsville Small Whites that were raised in Virginia. These birds would receive a premium for their small size and thus raise the average turkey price level to some extent.

The argument is often raised to the effect that it

costs more to produce a Beltsville than a Bronze and that a premium in price is needed to offset higher production costs. There has been no experimental data that would substantiate such a conclusion. Furthermore, if it can be assumed that the Virginia grower is acting rationally, it would seem that the sweeping shift to Beltsville Small Whites reflects the expectations of greater net returns than could be realized from the production of Broad-Breasted Bronze.

Table 26 presents the equilibrium prices for turkeys and feed for 1950, when costs other than feed are held constant. At any given price for turkey, assuming the cost-price relationship previously discussed, the grower can meet all costs only if feed does not cost more than indicated. In a like manner, the price that must be received for turkey, if receipts are to cover expenses when feed costs are at any given level, is also given.

Now let us consider the situation of the individual producer who is attempting to reduce his feed costs. In this case the 1950 price for the average poultry ration, \$4.39 per hundredweight, shall be used as the base price. By what methods could this producer reduce his expenditure for feed 20 per cent?

As was previously mentioned, economies in feed cost can be incurred by bulk purchasing and by using the most

Table 26. EQUILIBRIUM PRICES FOR TURKEY AND FEED,
OREGON, 1950*

Price equivalents		Price equivalents	
Per pound of turkey	Per hundred- weight of feed	Per pound of turkey	Per hundred- weight of feed
Cents	Dollars	Cents	Dollars
21	2.03	31	4.13
22	2.24	32	4.34
23	2.45	33	4.55
24	2.66	34	4.76
25	2.87	35	4.89
26	3.08	36	5.08
27	3.29	37	5.29
28	3.50	38	5.50
29	3.71	39	5.71
30	3.92	40	5.92

* With other costs held constant at the 1950 cost level any given price for turkey would require the corresponding price for feed if expenditures and receipts are to balance.

inexpensive protein supplements and feed grains, consistent with the maintenance of quality. Let it be assumed that the producer does reduce his feed costs to \$3.50 per hundredweight. He is now meeting all expenses but is receiving no profit. It must be recognized that there is a tendency for the marginal producers to shift out of production at the equilibrium point. The availability of alternative opportunities and the ease in effecting the change will determine the extent of any such shift. However, are there any other means by which

the individual producer can improve his competitive position by reducing costs?

The individual producer can primarily effect major savings in the cost of production by reducing costs of feed and mortality. While overall efficiency has been emphasized as being desirable, especially in periods of high costs and low prices, it is only in these two items that substantial reductions in cost can be made by the individual.

It has already been assumed that the producer can reduce the cost of his ration by 20 per cent. The next step is to reduce the amount of feed consumed per bird marketed. It has been shown that if Oregon producers could have reduced the amount of feed consumed per bird from 108 pounds to 87 pounds, the net loss in 1950 would have been cut from 4.6 cents per pound to only 0.1 cents per pound. This saving in feed would be the combined result of good range and early maturing stock.

Model C: The problem of good range in Oregon shall be by-passed in this discussion. Our emphasis instead, will be on reducing feed consumption by raising early maturing birds. It will be assumed that a 15-pound reduction in feed consumption per bird would be achieved by marketing the birds 18 days earlier. This would mean that the birds were 180 days old on the average instead

of 198 days old which was the average in the Oregon cost study.

A 15-pound reduction in feed consumption would reduce feed costs 52 cents if a hundredweight of ration cost \$3.50. Instead of a charge of \$3.77 for feed the cost would now be \$3.25. As expenditures and receipts had been made to balance by reducing feed costs 20 per cent, the producer now has a net return of 52 cents.

The importance of mortality has been shown by calculating the net return per bird in Illinois when the rate of mortality was 26 per cent as compared to 15 per cent. The net return for the high mortality flocks averaged 3.9 cents per pound while the flock with normal mortality had an average net return of 5.3 cents per pound. Thus, an 11 per cent reduction in mortality increased the net return by 36 per cent.

A certain death loss is inevitable and a rate of mortality of 10 per cent is about the lowest the average producer can hope to attain. In the Oregon study the 45 producers with the lowest death losses had an average mortality rate of 8.5 per cent. As the average mortality rate was 15 per cent in 1950, let us assume that the death loss can be reduced 5 per cent. This would decrease costs 5 cents per bird and would increase the net

return to 57 cents per bird.

This net return to an efficient operator is not an unreasonable figure. The ten most profitable flocks in the 1949 Oregon study were raised at a profit of \$1.10 per bird. It must be realized, however, that these are the above average producers operating under ideal conditions and that the average grower will realize no such profit under present price conditions.

The reduction in the number of turkeys raised in Oregon is a consequence of their unfavorable price-cost relationship. The marginal producers are leaving the industry providing they have alternative opportunities to turn to. Thus if the trend in costs and prices is to continue, as it has in the past few years, it would appear that a further contraction in production will occur.

Model D: However, let it now assume that the Oregon industry as a whole, in 1950, was as efficient as that in Virginia in relation to feed consumption and furthermore let it be assumed that the price received for turkey in Oregon shall be the same except for the absorption of freight charges. In this case, the average feed consumption per bird will be held at 90 pounds and the price received per pound is 32.5 cents. It will be assumed that the birds in Oregon would weigh the same

as the birds in Virginia or 18.3 pounds liveweight. Instead of a net loss of 97 cents the loss is reduced to 13 cents per bird.

Model E: If we go one step farther, and assume that the ration in Oregon cost the same as it did in Virginia in 1950 then the net return to the producer would be 33 cents.

Model F: From this comparison it would seem obvious that the outlook for the industry in Oregon is not bright. A further comparison can be made by assuming that while the feed consumption and weight of the birds are held constant, the price of feed in Oregon is equal to that in Virginia. The price of poult shall also be reduced from 75 cents to 60 cents per poult. Assuming the 1950 price of 28.1 cents per pound, liveweight, the Oregon producer would record a net loss of 14 cents per bird.

Model G: By assuming a local market for all Oregon production at the same price Virginia growers claim, as can only occur with a large increase in both population and per capita turkey consumption, then a substantial net income will be realized. This can be further enhanced by reducing feed costs to the Virginia level and by reducing both the poult cost and rate of mortality. In this ideal situation the Oregon producer would receive a net income of \$1.39 per bird.

From this set of comparative models it is to be seen that except for an ideal situation, not likely to occur in the next few years, the net income of Oregon turkey producers falls far below that received by producers in the Mid-West and East.

Table 27. THE EFFECT ON NET RETURN TO OREGON TURKEY PRODUCERS CAUSED BY VARYING THE COMBINATIONS OF PRICE AND PRODUCTION FACTORS.

Item	1950	Model						
		A	B	C	D	E	F	G
Expenses								
Feed	\$4.74	\$3.77	\$4.74	\$3.25	\$3.95	\$3.49	\$4.18	\$4.18
Poults	.86	.86	.86	.81	.86	.86	.69	.66
Labor	.64	.64	.64	.64	.64	.64	.64	.64
Other	.62	.62	.62	.62	.62	.62	.62	.62
TOTAL	6.86	5.89	6.86	5.32	6.07	5.61	6.13	6.13
Receipts	5.89	5.89	6.86	5.89	5.94	5.94	5.89	7.52
Net Return	\$-.97	-	-	\$+.57	\$-.13	\$+.33	\$-.14	\$1.39
Per cent mortality	15.0	15.0	15.0	10.0	15.0	15.0	15.0	10.0
Pounds of feed consumed	108	108	108	93	90	90	108	108
Average liveweight	20.9	20.9	20.9	20.9	18.3	18.3	20.9	20.9
Price feed per hundred-weight	\$4.39	\$3.50	\$4.39	\$3.50	\$4.39	\$3.87	\$3.87	\$3.87
Price per pound turkey liveweight	28.1¢	28.1¢	32.8¢	28.1¢	32.5¢	32.5¢	28.1¢	36.0¢
Price per pult	75.0¢	75.0¢	75.0¢	75.0¢	75.0¢	75.0¢	60.0¢	60.0¢

Conclusion

Through the use of model situations it has been demonstrated that Oregon turkey producers are in a most unfavorable competitive position. In only one instance, other than the ideal situation, was the net return to Oregon producers even half as much as that received by producers in Virginia. This was possible only with reductions in feed prices and feed consumption that the average producer could not hope to duplicate.

Virginia was used as the comparison because cost data from that state were recent and in such a form as to be readily compared with the data obtained from the Oregon study. However, on the basis of the price-cost relationship existing in the North Central states, it would seem logical to conclude that the net return to producers in this area would approximate that in Virginia. In fact, due to the low price of feed in this area, turkey producers in the North Central region would be in a more favorable position than those in the East if there was to be a decrease in the price of turkeys.

The production of turkeys in the Mid-West is another method of marketing corn. The typical Oregon turkey producer, on the other hand, is not marketing grain but turkeys. This means that he purchases the bulk of his

feed. Under such conditions the Mid-Western producer will find it profitable to raise turkeys long after the Oregon producer has shown a net loss.

An important factor in the high cost of producing turkeys in Oregon is the high price of wheat compared to other feed grains. As a result of the present price support policies, the traditional disparity between poultry ration costs in Oregon and the Mid-West was doubled in 1949 and 1950. In this same period, Virginia producers, whose feed costs always had been slightly higher than those of producers in Oregon, were able to purchase their feed for 20 to 40 cents a hundredweight less than could Oregon producers.

It has been shown however, that even when a return to the traditional feed cost alignment is assumed, the typical Oregon turkey producer will just about manage to meet all his expenses. At the same time producers in the Mid-West and East would be recording a substantial net return from their operations. It must therefore be concluded that a drop in feed costs will not automatically solve the problems of the turkey grower.

An additional aspect of this problem is the further expansion of production due to the high level of returns in the Mid-West and East. If producers in these sections have no alternative enterprises which would be at least

equally profitable, then it can be expected that production will continue to expand as long as a net return is to be earned. An increasing supply of turkey will, under normal circumstances, result in a lower market price. Any reduction in the price of turkeys will make the position of the Oregon turkey grower still more untenable.

The disparity in the price paid for turkeys between Oregon and the Eastern production areas is greater than would be warranted by the differential in the cost of shipping the birds to Eastern markets. If this extra differential is caused by the type of bird marketed, then the Oregon turkey grower would do well to shift his production to the more desirable type of bird. From present indications it would appear that the trend toward the small size bird will develop to the extent that the Broad Breasted Bronze will be displaced by the Beltsville Small Whites as the number one market turkey.

The turkey industry in Oregon has been on the decline since 1945 and apparently this trend will continue for the next few years. The level that production must reach before the industry is stabilized cannot be definitely established at this time. The stabilization of the Oregon turkey industry is dependent on two factors (1) the future price-cost relationships and (2) the selection

of alternative opportunities available to the Oregon producer.

Reductions in feed and mortality costs are the primary methods by which Oregon producers can reduce their operating costs. Savings in feed costs can be effected by reducing feed consumption and by lowering ration costs per hundredweight through bulk purchases and the use of the most inexpensive grains and protein supplements consistent with maintaining quality. A reduction in the average death loss will reduce mortality costs which include not only the original cost of the poults but also the feed, labor and other expenses incurred until the bird was lost.

It has been shown that when feed and mortality costs are held to the barest minimum the net return to the Oregon producer is only half that received by the average producer in Virginia. It must be recognized that the typical Oregon producer could not hope to operate at such a level of efficiency. Furthermore, as production increases in the East, the total receipts per bird will be reduced due to the drop in price which would follow an increase in production. The Oregon producer, already operating at maximum efficiency, would be in no position to effect any additional economies in the cost of production.

The decrease in the number of turkeys produced in Oregon is the consequence of this unfavorable competitive position. Producers are shifting from turkey production to alternative farm enterprises or else they are leaving the agricultural production picture altogether. This shift will be made not only by the marginal producer but also by the supermarginal producer who anticipates a greater return from an alternative enterprise.

There are two groups of producers that will continue to raise turkeys. The first group consists of the above average farmers who are receiving profits as great as could be anticipated from any alternative enterprise. The second group consists of marginal producers who find that turkey production has the greatest comparative advantage in the use of their available resources. This group either has no choices of alternative opportunities at all, or else these alternatives are such that their competitive position would not be improved. Unless, these producers shift out of farming altogether, they will continue to raise turkeys.

The level of turkey production in Oregon will be stabilized when this latter group is reduced to those producers who will not leave the industry voluntarily. The whole production picture is a dynamic situation which

is constantly in a state of flux. Thus, those very factors which determine the ingress and egress of producers from any enterprise are themselves never stabilized for any length of time. It would seem however, logical to conclude that the Oregon turkey industry will continue to contract under present price-cost relationships.

BIBLIOGRAPHY

1. Almquist, H. J. Grain consumption and feed efficiency of Broad Breasted Bronze and Beltsville Small White turkeys. Modesto, Cal., Grange company, 1951. 8p.
2. Benyman, Carl N. and Mark T. Buchanan. An economic study of Washington's turkey industry in 1942, part II: The production and sale of market birds. Pullman, State College of Washington, 1944. 42 p. (Agricultural experiment station bulletin no. 453).
3. Broadbent, Dee A., Thomas W. Preston and George T. Blanch. An economic analysis of turkey production in Utah. Logan, Utah State Agricultural College, 1945. 47p. (Agricultural experiment station bulletin no. 318).
4. Cushman, Harriette and Howard Welch. Turkeys in Montana. Bozeman, Montana State College, 1947. 43p. (Montana State College extension bulletin no. 248).
5. Dunsdon, Rollin O. An analysis of Oregon's competitive position in producing and marketing turkeys. M.S. Thesis, Oregon State College, 1948. 120 p.
6. Goodearl, George P. Growth and development of three types of turkeys. Fargo, North Dakota Agricultural College, 1947. 13p. (Agricultural experiment station bulletin no. 343).
7. Headley, F. B. Relative cost of producing large and small turkeys. Reno, University of Nevada, 1943. 15p. (Agricultural experiment station bulletin no. 167).
8. Headley, F. B. Relation of size of turkey to (1) economy of production (2) edible meat in carcass (3) weights of parts of carcass. Reno, University of Nevada, 1948. 14p. (Agricultural experiment station bulletin no. 180).
9. Hyer, Edgar A. Cost of raising market turkeys in western Oregon, 1949. Corvallis, Oregon State College, 1951. 6p. (Agricultural experiment station circular of information no. 493).

10. Lucas, William C., Karl C. Seeger and A. E. Tomhare. Production factors of six varieties of turkeys. Newark, Del., University of Delaware, 1949. 19p. (Agricultural experiment station bulletin no. 279).
11. Misner, E. G. Costs and returns for the turkey enterprise. Ithaca, Cornell University, 1946. 30p. (Agricultural experiment station bulletin no. 827).
12. Oxstein, Walter H. The Wall Street Journal, p.1 January 30, 1951.
13. Plaxico, James S. Market turkeys, an economic survey. Blacksburg, Virginia agricultural experiment station, 1950. 35p. (its bulletin no. 440).
14. United States Department of Agriculture, Bureau of Agricultural Economics. Agricultural prices. Washington, 1941-1950. (mimeographed).
15. United States Department of Agriculture, Bureau of Agricultural Economics. Agricultural statistics. Washington, Government Printing Office, 1940-1949.
16. United States Department of Agriculture, Bureau of Agricultural Economics. Crops and markets. Washington, Government Printing Office, 1948-1950.
17. United States Department of Agriculture, Bureau of Agricultural Economics. Farm labor. Washington, 1948-1950. (mimeographed).
18. United States Department of Agriculture, Bureau of Agricultural Economics. Farm production, disposition, cash receipts and gross income, turkeys. Washington, 1946-1951. (mimeographed).
19. United States Department of Agriculture, Bureau of Agricultural Economics. Turkey intentions report. Washington, 1951. 2p. (mimeographed).
20. Wilcox, R. H. and H. H. Alp. A study of turkey production costs in Illinois, 1945. Urbana, University of Illinois, 1946. 11p. (mimeographed).