

JULY, 1948

RESEARCH BULLETIN 421

---

UNIVERSITY OF MISSOURI

COLLEGE OF AGRICULTURE

AGRICULTURAL EXPERIMENT STATION

SAM B. SHIRKY, *Acting Director*

# Economic Facts on the Hog Industry of Missouri

R. L. KOHLS



(Publication Authorized July 15, 1948)

COLUMBIA, MISSOURI

---

## Contents

	Page
INTRODUCTION .....	3
Purpose of the Study .....	3
Scope of the Study .....	3
AREAS OF HOG PRODUCTION .....	4
United States Hog Production .....	4
Missouri Hog Production .....	4
THE MARKETING OF MISSOURI HOGS .....	10
Hog Sales .....	10
Hog Purchases .....	11
Types of Markets Used .....	11
Movement of Hogs to Market .....	14
Disposition of Hogs Received at Public Markets .....	14
HOG PRICES .....	15
The Geography of Hog Prices .....	15
Hog Price and Production Cycles .....	17
Seasonal Variation of Hog Prices .....	21
HOG PRICE DIFFERENCES .....	25
Price Differences Between Markets .....	26
Price Differences Between Weight Groups .....	30
HOG RECEIPTS AND WEIGHTS AT MISSOURI	
TERMINAL MARKETS .....	33
Hog Receipts .....	33
Hog Weights .....	38
SUMMARY .....	42
APPENDIX .....	46

# Economic Facts on the Hog Industry of Missouri

R. L. KOHLS\*

## INTRODUCTION

Hogs are raised on over two-thirds of all the farms in Missouri. They have been one of the greatest single contributors to the cash farm income of Missouri farmers, having contributed from 20% to 29% of the total cash farm income since 1924. Over 31% of the dollars received from the marketing of livestock came from the sale of hogs during 1940-44. Anything that affects the hog industry necessarily affects the pocketbook and plans of the majority of Missouri farmers.

**Purpose of the Study.**—It was the purpose of this study to present in a broad manner pertinent factors related to this important industry. The study undertook to survey some of the important phases of the hog enterprise. To accomplish this, the data are presented under five major headings as follows:

1. Where hogs are produced.
2. The Marketing of Missouri Hogs.
3. Hog Prices.
4. Hog Price Differences.
5. Receipts and Weights at Missouri's Terminal Markets.

**Scope of the Study.**—As dictated by the purpose of the study, the data presented cover a broad field. Geographically, emphasis is restricted to Missouri except in instances where comparison with other areas is needed for clarity. Most of the original data concerning the methods of marketings and some of the data concerning areas of production were collected under the direction of Dr. Herman Haag in cooperation with other states in the corn belt.<sup>1</sup> The data pertaining to hog price differences were collected under the direction of Dr. E. H. Matzen and Dr. Herman Haag working in cooperation with a regional project on hog price differentials.<sup>2</sup> These data have been used freely but with only a minimum of footnote acknowledgement. Most of the other data were obtained from government statistical reports which are largely familiar to workers in this field.

<sup>1</sup>The regional study is reported in "Marketing of Livestock in the Corn Belt Region" Bulletin 365, Agricultural Experiment Station, South Dakota State College, Brookings, S. D.

<sup>2</sup>The regional study is reported in "Price Differential for Slaughter Hogs" Bulletin P93, Agricultural Experiment Station, Ames, Iowa.

\*The writer gratefully acknowledges the guidance and advice given by Dr. E. H. Matzen.

### AREAS OF HOG PRODUCTION

**United States Hog Production.**—Corn is the principal feed for hogs in the United States. Hogs are produced where corn is produced. Seven states produced about 60% of the pigs that were saved in U. S. during 1935-44. These states in order of their importance in numbers were Iowa, Illinois, Indiana, Minnesota, Missouri, Ohio and Nebraska. These same states also produced 60% of the nation's corn during this same period. The Southern states made up a secondary area of production; during 1935-44 this area produced about 24% of the nation's hogs. The very close relationship between pig and corn production is shown in Table 1.

TABLE 1.—PERCENTAGE OF TOTAL PIGS AND CORN RAISED  
BY 10 LEADING HOG STATES, 1935-44

State	Pigs Raised		Corn Raised		Pigs Raised Per Sq. Mile	Bushels of Corn Produced Per Pig Raised
	% of U.S.	Rank	% of U.S.	Rank		
Iowa	17.8	1	18.1	1	256	33
Illinois	9.6	2	14.3	2	138	49
Indiana	7.7	3	6.8	4	172	29
Minnesota	7.0	4	6.9	3	67	32
Missouri	6.3	5	4.4	7	72	23
Ohio	6.1	6	6.0	5	121	31
Nebraska	4.3	7	5.6	6	45	42
Wisconsin	3.9	8	3.4	8	56	28
Texas	3.1	9	3.1	9	12	25
Kansas	2.6	10	2.1	14	31	22

Iowa, the corn and hog center of the country, raised 256 pigs per square mile in comparison to the United States average of 27 (Table 1). Missouri produced 72 pigs per square mile, exceeded in density of production by Iowa, Indiana, Illinois and Ohio in that order. In comparison to the other six leading hog producing states, Missouri did not produce as much corn in relation to the hogs raised. On the average during 1935-44, Missouri produced about 23 bushels of corn for each pig raised while Iowa produced about 33 bushels; Illinois, 48 bushels; and Nebraska, 42 bushels. This meant that Missouri producers as a group operated their hog enterprise under comparative deficit feed conditions and at times had to purchase additional corn outside the state. This situation is a limiting factor to hog production. The necessity of purchasing feed puts an area at a disadvantage to that which raises its own feed.

**Missouri Hog Production.**—The areas of Missouri hog production also are related to the areas of Missouri corn production. This fact is shown in Figure 1. The long-time trend of Missouri hog numbers and their relative importance to U. S. hog production are shown in Figure 2 and Table 2.

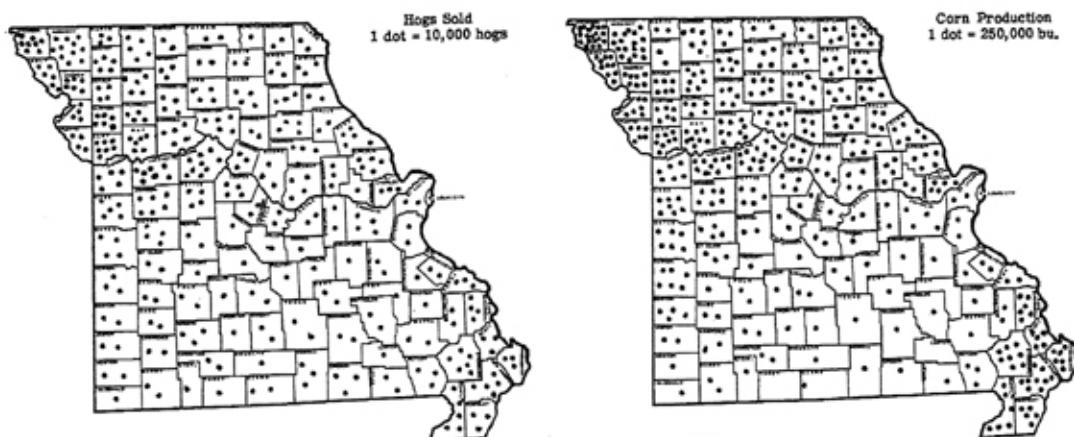


Fig. 1.—Average annual number of hogs and corn production in Missouri, 1935-1944.

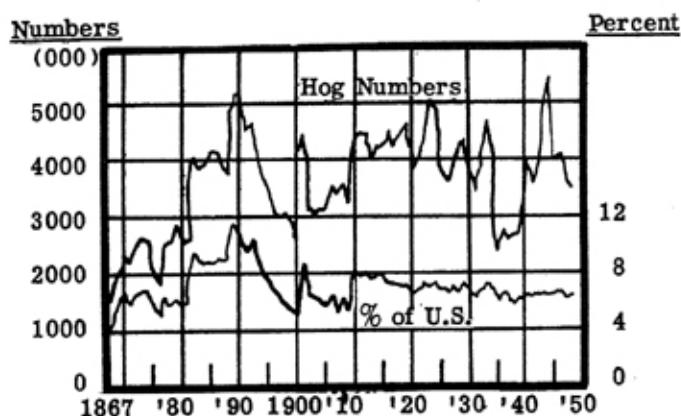


Fig. 2.—Missouri hog numbers and percentage  
Missouri numbers were of U. S. numbers, 1867-1948.

TABLE 2.--HOGS ON MISSOURI FARMS JANUARY 1, AND MISSOURI CORN  
PRODUCTION BY 10 YEAR PERIODS, 1870-1944

	Hogs on Farms, Jan. 1		Corn Production		Bushels of Corn Produced Per Hog on Farms January 1
	Av. No. (000)	% of U.S. Total	Av. Bu. (000)	% of U.S. Total	
1870-79	2,421	6.3	97,352	7.2	38.3
1880-89	3,857	8.7	168,602	9.1	42.8
1890-99	3,796	7.9	170,966	7.9	40.1
1900-09	3,344	6.4	193,364	7.3	58.7
1910-19	4,391	7.8	183,146	6.9	42.5
1920-29	4,242	7.1	171,003	6.3	42.9
1930-39	3,370	6.5	107,976	4.3	30.8
1940-44	4,356	6.5	137,305	4.7	30.2
1945-48	3,682	6.3	141,750	4.6	38.5

Hog numbers in Missouri expanded rapidly from 1870 till 1890 along with a similar rapid expansion of corn production. Much of this expansion was no doubt due to the development of new agricultural resources within the state. In 1867, Missouri produced 4% of the nation's hogs and 6% of its corn; in 1890, the state produced 11% of the nation's hogs and 11% of its corn.

The ten year period, 1890 to 1900, witnessed a heavy reduction in Missouri hog numbers and during 1900 to 1909 Missouri produced only 6.4% of the nation's hogs. This decline in the relative importance of hog numbers was accompanied by a decline in the relative importance of corn production. Since 1910, the importance of Missouri as a hog producing state in relation to the U. S. has been slowly declining. With the exception of the drought years of the 1930s, it has been producing between 6 and 8% of the nation's hogs. At least part of this decline no doubt was due to a decline in corn production. This decline in corn production was even more marked than the decline in hog production.

Prior to 1930, about 40 bushels of corn were produced in Missouri for each hog on farms January 1. Since then only about 30 bushels for each hog have been produced. The ability of hog producers to maintain hog production with less home grown corn has been increased by the improvement of transportation facilities. Since the development of the truck it has been much easier to secure corn from nearby surplus areas. The tendency toward a grass economy has also aided Missouri farmers in producing pork with less corn. This smaller base of home grown corn, however, has increased the dependence of the hog enterprise on feed supply conditions in other areas and definitely limits the possibility of expanding hog production in Missouri.

The concentration of hog production within the state was not uniform. During the period 1935-44 about one-half of the total hog population of the state was in the area north of the Missouri River. The area in the northwestern part of the state, which sold over 200 hogs per 1000 acres (Fig. 3), produced over 25% of hogs raised in Missouri. Bordering the area mentioned and also north and west of St. Louis were the areas of secondary importance in concentration. A six county area in the southeastern section sold an average of 100-149 hogs per 1000 acres. Most of the remaining areas in the southern half of the state and a five county area in the north central section sold less than 100 hogs per 1000 acres.

Not only was the production of hogs concentrated in the northwestern part of the state, but hogs were a more important enterprise to the farm business in this area. This is shown by the number of hogs

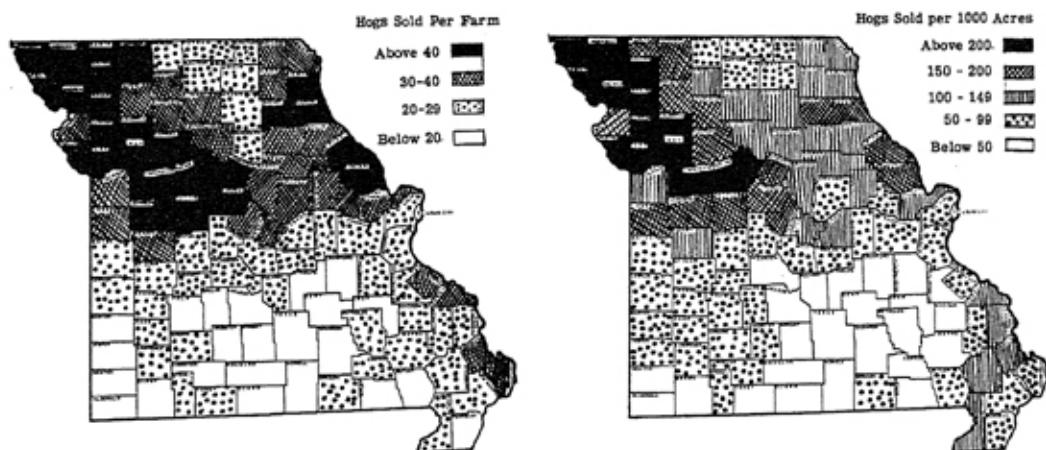
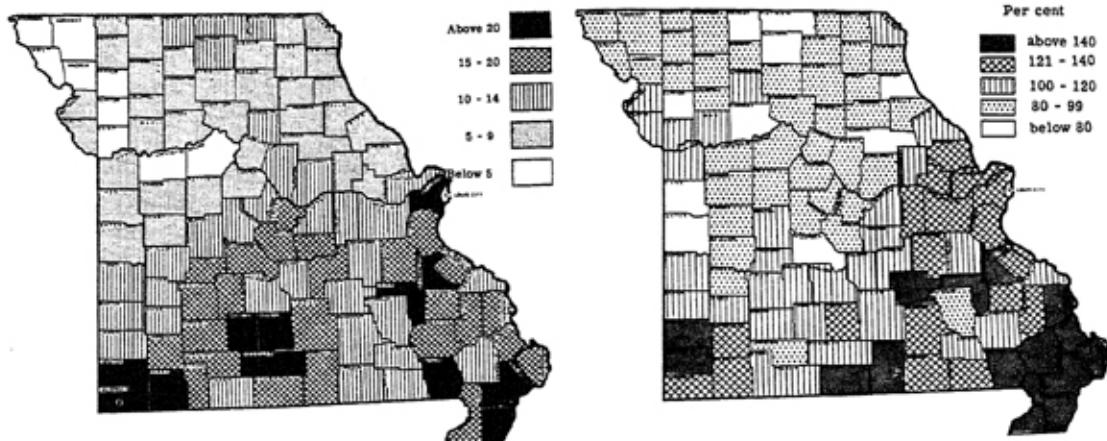


Fig. 3.—Number of hogs sold in Missouri, 1944.

sold per farm reporting hogs. (Figure 3.) Atchison, Clay and Clinton counties sold an average of over 75 hogs per farm, which was the highest average of the state. Only fourteen counties south of the Missouri River sold more than 30 hogs per farm in 1944. Less than 20 hogs were sold per farm in approximately one-third of the counties in the southern half of the state.

The importance of farm slaughter of hogs differed widely throughout the state. Figure 4 shows the number of hogs which were slaughtered on the farm for each 100 hogs sold alive in 1944. Hog slaughter per 100 hogs sold was greatest in the area where hog production was least important. In the commercial hog producing areas of the northwest less than 10 hogs were slaughtered for each 100 sold alive. However, in many of the central and southeastern sections over 15 hogs were slaughtered for each 100 hogs sold alive. From the standpoint of supplies for the market it is important to recognize that in almost half the counties of the state at least one hog is produced for home consumption for every five or six hogs raised for sale.

Though hog production is highly concentrated in the northern section of the state; there has been a trend toward increasing importance of the southern and southeastern areas relative to the total production of the state. The percentage contribution that the hog numbers of each county made to the state total hog numbers was calculated from 1925 to 1944. The 1935-44 percentage contributions were averaged and compared to the 1925-34 average contributions of each county. This comparison is shown in Figure 5. The southeastern and southern sections had increased their percentage contributions to the state hog production markedly. The eight counties in the extreme southeastern part averaged a 62% greater contribution in 1935-44



than in 1925-34. During 1925-34, this area produced 5.6% of the total hog numbers of the state; during 1935-44, it produced 9.1% of the total. The extreme southwestern section and the area immediately around St. Louis also increased markedly in importance compared to the earlier period. A large number of the central and northern counties have declined in relative importance.

Much of this shift took place during the years 1931 through 1935. Those areas which have shown relative increases for the 1935-44 period increased rapidly during 1931 to 1935 and since then have tended to stabilize at the relatively higher levels. Much of the explanation of this brief period of change may lay in the ability of the various areas to withstand the corn shortages which followed the droughts of 1934 and 1936. The specialized corn-hog areas of the northern sections were forced into heavy liquidation while the southern areas, not so heavily dependent on corn, were not. Also, yields of corn in the southeastern area were not reduced as much by the drought which aided that area in maintaining its hog population. The soil conservation program has probably influenced the northern hog producers to refrain from rebuilding their hog numbers to the relative position of the 1925-34 levels.

Another factor of importance in the geography of Missouri hog production is the concentration of feeder pig purchases and sales. Figure 6 shows the feeder pig sales and purchases per 1000 acres during 1940. The areas of high concentration of feeder pigs sold were in the southeast and scattered regions in the northern sections. The four southeastern counties in the boot area sold 67 feeders per 1000

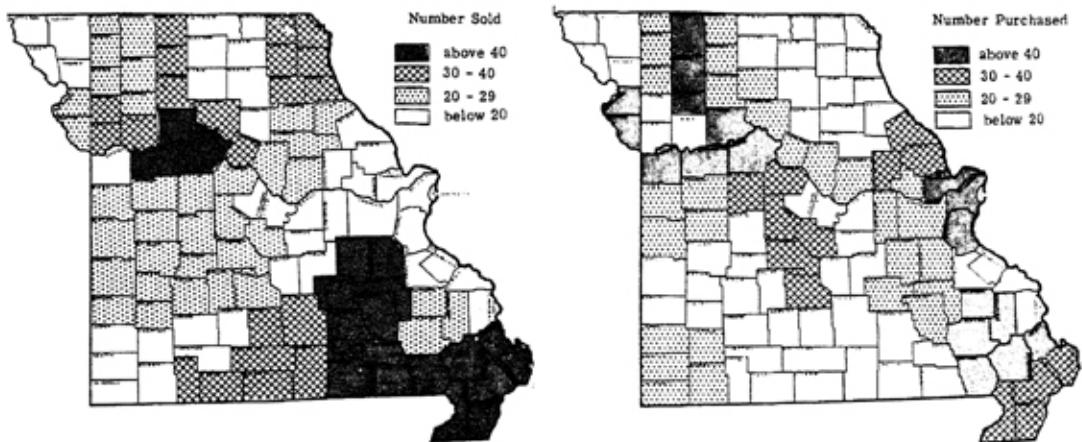


Fig. 6.—Number of feeder pigs sold and purchased per 1000 acres, 1940.

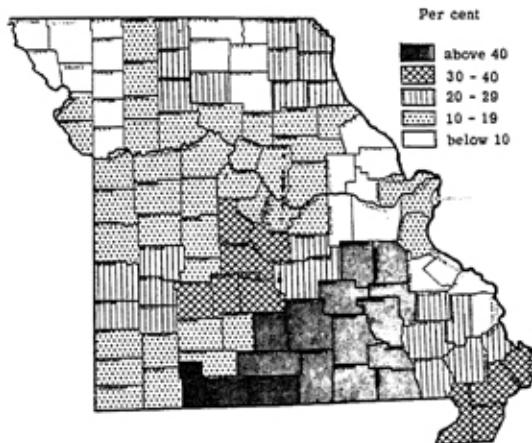


Fig. 7.—Percentage of total hogs sold per farm that were feeder pigs, 1940.

acres—the highest average for the state. To some extent the areas in which purchases were highest were also those of high sales. There were important feeder purchasing areas in the vicinity of both St. Louis and Kansas City. These two areas averaged purchases of 62 feeders per 1000 acres which was the highest average for the state.

Figure 7 shows the importance of feeder pig sales to the individual farm business. In much of the Ozark region 40% or more of the total hogs sold per farm were feeder pigs. In the Stone-Taney-Ozark county area, 57% of the total hogs sold from each farm were feeder pigs. In the northwestern regions where the concentration of hog numbers was greatest both on a per farm and per acre basis very few feeder pigs were sold. This again reflected the greater availability of corn supplies to fatten hogs. Where corn was plentiful most of the hogs tended to be marketed as slaughter hogs.

### THE MARKETING OF MISSOURI HOGS<sup>3</sup>

**Hog Sales.**—An average of 36.4 head of hogs were sold from each farm selling hogs which was surveyed during 1940. This was the smallest number sold per farm of any of the seven leading hog states and slightly less than half the 73.5 head sold per farm in Iowa.

Of these hogs sold from Missouri farms, 82.3% were slaughter hogs; 15.9% were feeders and 1.8% were breeding hogs. Missouri farmers sold hogs on an average of 3.2 times each year in lots averaging 11.4 hogs per sale. Only Minnesota farmers of the seven leading hog states sold hogs less times per year and in smaller numbers per sale. Iowa producers made 3.9 sales per year in average lots of 18.9 hogs.

Missouri hog sales were made in lots which were smaller than other principle hog producing states. The size of lots in which hogs were sold is shown in Table 3.

TABLE 3.—SIZE OF LOTS IN WHICH HOGS WERE SOLD, 1940

Number Per Lot	Percentage of Farmers Selling Hogs in Various Sized Lots				Percentage of Hogs Sold In Various Sized Lots			
	Mo.	Ia.	Ill.	Av. 7 States*	Mo.	Ia.	Ill.	Av. 7 States*
	%	%	%	%	%	%	%	%
1	5.3	0.5	2.9	4.3	0.6	--	0.3	0.5
2	4.9	1.1	3.6	4.0	0.7	0.4	0.5	0.6
3	5.5	1.2	2.6	3.8	1.3	0.3	0.4	1.0
4	6.6	1.5	5.2	4.9	2.1	0.6	1.2	1.5
5	8.5	2.1	4.7	5.1	4.1	0.7	1.7	2.0
5 or less	30.8	6.4	19.0	22.1	8.8	2.0	4.1	5.6
6-10	33.0	16.9	26.7	25.7	22.5	9.2	13.8	15.6
11-15	15.2	20.2	17.8	17.3	17.5	15.1	16.7	17.3
16-20	8.9	19.7	13.3	12.5	14.5	18.5	16.8	15.2
21-25	5.2	12.0	8.5	7.7	11.1	13.8	14.1	12.0
26 or more	6.9	24.8	14.7	14.7	25.6	41.4	34.5	34.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Leading hog states: Iowa, Illinois, Indiana, Ohio, Missouri, Minnesota, Nebraska.

Though nearly one-third of Missouri farmers sold hogs in lots of 5 or less, the hogs which were sold in these small lots made up less than 10% of the total number sold. Another third of Missouri producers sold in lots of 6-10 head. Approximately two-thirds of the sellers sold less than a third of the total hogs sold. A greater proportion of hogs was sold in these small sized lots in Missouri than in any other principal hog-producing state. This was another indication of the small size of the hog enterprise on many of the Missouri farms.

Three-fourths of the hogs marketed from Missouri during 1940

<sup>3</sup>Much of the material in this section was adapted from *Marketing Livestock in the Corn Belt Region*, by Corn Belt Livestock Marketing Research Committee and published in Bulletin 365, South Dakota State College Experiment Station. The Missouri data were assembled under the direction of Dr. Herman Haag.

TABLE 4.--THE AVERAGE WEIGHT AND RANGES IN WEIGHT OF  
BUTCHER HOGS SOLD BY FARMERS, 1940

	Average	Range of 50% of Number	Range of 75% of Number
Missouri	221	210-229	200-229
Iowa	242	217-249	204-267
Illinois	231	220-242	200-250
Average of Seven States*	230	208-242	195-261

\*Iowa, Illinois, Indiana, etc.

were within the narrow weight range of 200-229 pounds (Table 4). The bulk of the sales in the other states varied more widely. It must be recognized that average weights vary from year to year, but the fact that Missouri hogs tended to fall in the lighter classes probably would be relatively true year in and year out.

**Hog Purchases.**—Missouri farmers bought about 23 hogs for each 100 hogs they sold. This was a considerably higher ratio of purchases to sales than in any of the principal hog raising states. The great bulk of the hogs purchased were feeders. The Missouri farmers who purchased feeders, bought an average of 26.6 head in 1940. These farmers bought on the average about 12 head per lot and purchased an average of 2.3 lots per year. Feeder pigs purchased averaged 70 pounds each.

Many of these feeder purchases were made in small sized lots—36.6% in lots of 5 head or less. Only one-fifth of the farmers buying feeder pigs bought in lots of 16 or more, but these represented over one-half of the total feeder pig purchases. Though many farmers purchased feeder pigs, it was evident that the bulk of feeder purchases was made by a comparatively small group of farmers buying fairly large groups of feeder stock.

**Types of Markets Used.**—Farmers had many different types of markets among which to choose as an outlet for their hogs. The extent each type of outlet was used is shown in Table 5.

Over one-half of all the hogs and practically two-thirds of the slaughter hogs sold by producers in Missouri were marketed through the terminal markets. Generally, this was a larger percentage going through the terminal markets than in the other leading hog producing states. This greater use of the terminal market outlets was probably due to the fact that terminal markets were accessible on both the eastern and western borders and in the southwestern section of the state.

Approximately one-fifth of the hogs from Missouri were marketed direct to packing plants—a larger percentage than the average of the other seven states, but considerably below that of Iowa or Minnesota.

TABLE 5.--PER CENT OF HOGS SOLD BY FARMERS AT VARIOUS TYPES OF MARKETS BY TYPES OF HOGS, 1940

Type of Market	All Hogs Sold				Slaughter Hogs Sold				Feeder Hogs Sold			
	Mo.	Ia.	Ill.	Ave. 7 States*	Mo.	Ia.	Ill.	Ave. 7 States*	Mo.	Ia.	Ill.	Ave. 7 States*
Terminal Public Market	54.4	19.5	59.0	39.9	62.5	20.2	61.9	43.3	16.5	15.3	13.9	14.4
Packing Plants	18.3	30.8	10.2	16.2	21.4	32.3	10.5	17.5	4.2	20.3	6.6	7.6
Dealers or Truck Buyers	7.9	23.4	2.8	10.4	4.3	24.4	2.1	9.8	26.4	15.2	13.8	15.5
Auctions or Sale Barns	2.2	2.5	0.8	7.8	0.6	1.3	0.2	6.6	10.2	14.5	10.2	17.0
Concentration Yards or Local Markets	7.6	15.0	18.3	16.2	8.6	15.4	19.3	17.0	3.6	13.4	3.7	10.4
Local Cooperative Associations	1.2	5.9	4.4	4.6	1.3	6.0	4.5	4.8	0.7	5.4	4.2	3.0
Farmers and Others	8.4	2.9	4.5	4.9	1.3	0.4	1.5	1.0	38.4	15.9	47.6	32.1
Total Sold	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Leading hog states: Iowa, Illinois, Indiana, Ohio, Missouri, Minnesota, Nebraska.

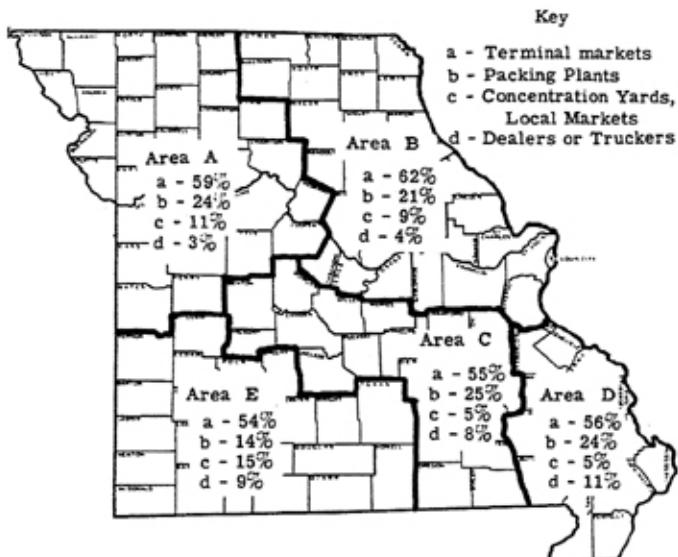


Fig. 8.—Percentage of slaughter hogs sold by farmers at various types of markets, by regions, 1940.

The other types of markets received only a small percentage of the total hogs marketed. Dealers or truck buyers, auctions, local markets, and cooperatives received only about 20% of the hogs sold in Missouri which was only slightly more than half the average percentage marketed through these agencies in the other seven states. These agencies were even less important if only the sales of slaughter hogs was considered.

The preference of farmers for the different types of marketing outlets varied somewhat throughout the state. The percentage of slaughter hogs that were sold at each of four types of outlets for each of five areas of the state is shown in Figure 8.

It should be recognized that use of different types of outlets varied somewhat within each area as well as between areas. Generally, the terminal markets received from one-half to about two-thirds of all the slaughter hogs marketed. The greatest preference for terminal markets was shown in the commercial hog producing areas near the large terminal markets on the western and eastern borders of the state. Packing plants received between one-fifth and one-quarter of slaughter hogs in all areas except the southwest. Concentration yards and local markets received over 10% of the receipts on the western, northern and southwest areas. Dealers or truckers were important outlets in the region of small producers—the southern areas. Marketing through cooperative associations was of greatest importance in Areas C and E where they received 2% and 5% respectively of the hogs marketed.

The greatest single market outlet for feeder pigs in Missouri was through farmer buyers, who bought nearly two-fifths of the total feeders sold. Dealers or truck buyers and local auctions accounted for about one-third of the sales. The above three market outlets accounted for three-fourths of the feeder pigs sold in Missouri. In Missouri as in other hog states, the terminal markets were a minor outlet for feeder pigs.

Concerning the final disposition of hogs sold through the less important types of markets, the following statements were applicable:

1. Of the hogs handled by local cooperative associations, 90.8% were sold at the terminal markets and 9.2% at packing plants.
2. Of the hogs sold through concentration yards or local markets, 99.3% were sold to packing plants; 0.5% through terminal markets, and 0.2% to local butchers and others. Of all the hogs bought at these yards, 97.3% were purchased from farmers; 2.7% from truckers or dealers. (In most of the other leading hog states the percentage purchased from truckers and dealers was considerably higher.)
3. Of all the hogs consigned for sale through local auctions, 63.9% were consigned by farmers; 36.1% by truckers or dealers. Of all the hogs bought at auctions, 49% were purchased by farmers; 49.9% by dealers and order buyers, and 1.1% by packers. When only slaughter hogs were considered, 94.7% were purchased by dealers and order buyers.

The farmers who sold hogs in large lots used the terminal markets to a greater extent than farmers selling in small lots. This is shown in Table 6.

Dealers or truck buyers, auctions, local cooperatives and farmers

TABLE 6.--PERCENT OF SLAUGHTER HOGS SOLD BY MISSOURI FARMERS  
AT SPECIFIED MARKETS BY SIZE GROUPS

Number Per Lot	Terminal Markets	Packing Plants	Dealers or truck Buyers	Auctions or sale Barns	Concen- tration Yards	Local Coops.	Farm- ers
10 or less	46.0	21.4	10.5	2.2	8.6	4.8	6.5
10 - 59	52.6	24.8	7.1	0.7	10.4	2.5	1.9
60 or more	70.5	19.1	2.0	0.3	7.3	0.3	0.5

received a greater percentage of the hogs marketed in small lots than of those marketed in large lots. Packing plants and concentration yards received a greater percentage of the hogs when the lot was from 10 to 59 head in size. Of all the lots of 60 or more head, the terminal markets received 70%.

As stated earlier, Missouri pork producers purchased a considerable number of feeder pigs. Of these purchases 54.7% were made from other farmers; 17.8% from truckers and dealers, and 18.2% from auctions. Less than 10% of the feeder purchases were made at terminal markets, concentration yards or cooperative associations. Farmers used local auctions as both a sales outlet for feeder pigs and as a place of purchase of feeder stock. Of the feeder stock sold through auctions, 61.5% were sold by farmers. Of feeder stock purchased at auctions, 62.3% were purchased by farmers. When feeder pigs were purchased in large lots of 20 or more, 48% were purchased from dealers, truckers or local auctions and 44% were purchased from other farmers. Two-thirds of the feeders bought in lots of less than 20 were purchased from other farmers.

The large majority of farmers considered terminal markets as the most important source of price information used in determining where to buy or sell their hogs.

**Movement of Hogs to Market.**—Hired truckers moved 65.4% of the hogs from Missouri farms; farmers moved 21.0% in their own trucks; buyers moved 12.4% and 1.2% were moved by other means.

There was considerable difference in the size of the area which the various types of market served as shown in Table 7.

The bulk of the receipts of dealers, auctions and cooperatives were received from a surrounding 25 mile area. In fact, four-fifths of the sales to cooperatives came from distances of 10 miles or less. Concentration yards and packers obtained their hogs from a much greater territory. More than one-third of the receipts of packing plants came from a distance of over 100 miles.

**Disposition of Hogs Received at Public Markets.**—The disposition of the hog receipts varied from market to market as shown in the Table 8.

Local slaughter consumed a great share of the receipts at

TABLE 7.--PERCENT OF HOGS RECEIVED AT VARIOUS TYPES OF MISSOURI MARKETS FROM VARIOUS DISTANCES

Number of Miles	Type of Market Outlet				Packing Plants
	Dealers	Auctions	Local Coops.	Concentration Yards or Local Markets	
10 or less	35.6	28.9	82.6	--	--
10 - 25	31.3	28.7	16.3	49.1*	8.4*
25 - 50	20.0	19.4	1.1	38.3	19.0
50 - 100	8.4	13.1	--	12.6	37.3
100 or over	4.7	9.9	--	--	35.3
Total	100.0	100.0	100.0	100.0	100.0

\*25 miles or less

TABLE 8.--DISPOSITION OF HOGS RECEIVED AT SEVEN PUBLIC MARKETS, 1940

	Percent of Receipts		
	Stocker and Feeder Shipments	Other Shipments	Local Slaughter
Chicago	--	8.3	91.7
National Stockyards	0.6	32.2	67.1
St. Joseph	1.3	4.2	94.5
Kansas City	4.6	12.8	82.8
Springfield	6.5	83.8	9.7
Joplin	29.3	50.0	20.7
St. Louis, Mo.	2.2	27.7	69.3

Chicago, St. Joseph and Kansas City. Both feeder and other shipments were of relative unimportance at these markets. At Springfield, Joplin, St. Louis, Mo., and the National Stockyards at St. Louis, purchases by order buyers for re-shipment were of major importance. At the National Stockyards about one hog was shipped to some other place for every two hogs slaughtered locally. At Springfield and Joplin local slaughter demand for hogs was relatively unimportant. Only at Joplin were stocker and feeder shipments of importance.

### HOG PRICES

**The Geography of Hog Prices.**—The average market price of hogs differed between areas throughout the United States. This is illustrated in Figure 9 which shows the 5 year average price paid for 200-220 pound hogs at 25 important livestock markets. Prices were highest on the east and west coasts where the population was large and the hog production was small. In general, prices decreased as distance from these areas increased with the lowest prices occurring in the central areas of the United States. This lower price reflected the surplus supply condition and distance from the great consuming centers. The tier of states reaching from the Dakotas to Texas was the area of lowest prices. This was the surplus area which was

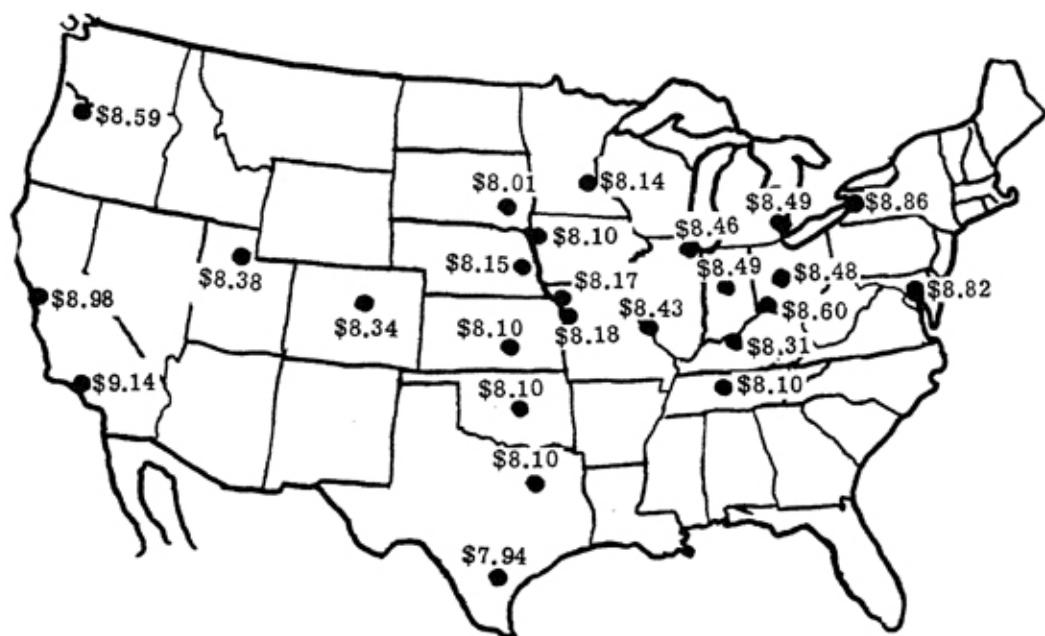


Fig. 9.—Average price of 200-220 pound hogs at important livestock markets, 1937-1941.

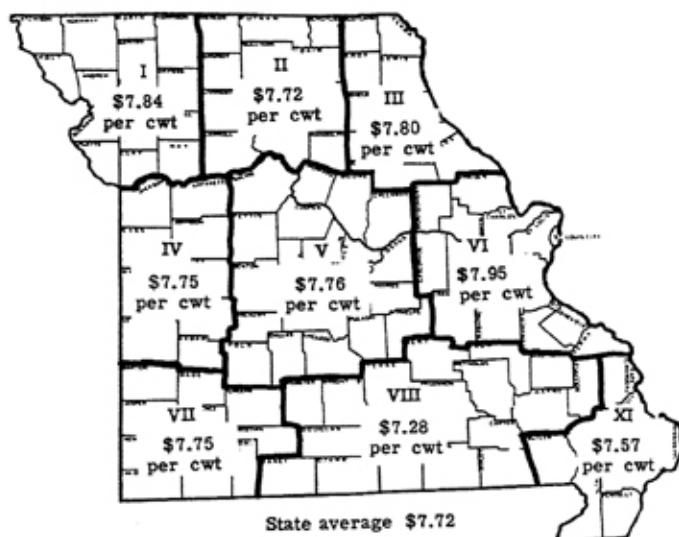


Fig. 10.—Average hog price received by Missouri farmers, by regions, 1937-1941.

farthest from the coastal consuming centers. Prices in some southern markets were low also because of the lower quality of the hogs produced in that region.

Hog prices which were received by Missouri farmers also differed from region to region within the state (Figure 10). Price differences were largely reflections of distance from the larger markets and differences in hogs sold. Highest prices were received by those

farmers living in the areas immediately surrounding the terminal markets of St. Louis, Kansas City, and St. Joseph. Farm prices in other regions ranged somewhat lower. Producers in southern and southeastern regions of Missouri received the lowest prices. This was due to both distance from markets and the type of hogs produced. As pointed out earlier in this study, these were areas of considerable feeder pig production. The fact that the southern section of the state produced less corn very likely resulted in lower quality hogs than those raised in the heavier corn producing areas of the state.

**Hog Price and Production Cycles.**—The most important factor in determining whether hog prices will be \$3.50 or \$15.00 per cwt. was the level of prices of all other products, and not so much the supplies of hogs available at the time. The fact that hog prices and the general price level (U. S. wholesale prices are often used as a measure of this) moved up and down together is shown in Figure 11. Though hog prices tended to fluctuate widely, high hog prices occurred when all prices were high, such as during war periods. Low hog prices occurred when all other prices were low, such as during 1931 to 1934. For the period of 1910-46, the lowest hog numbers were in 1935 when

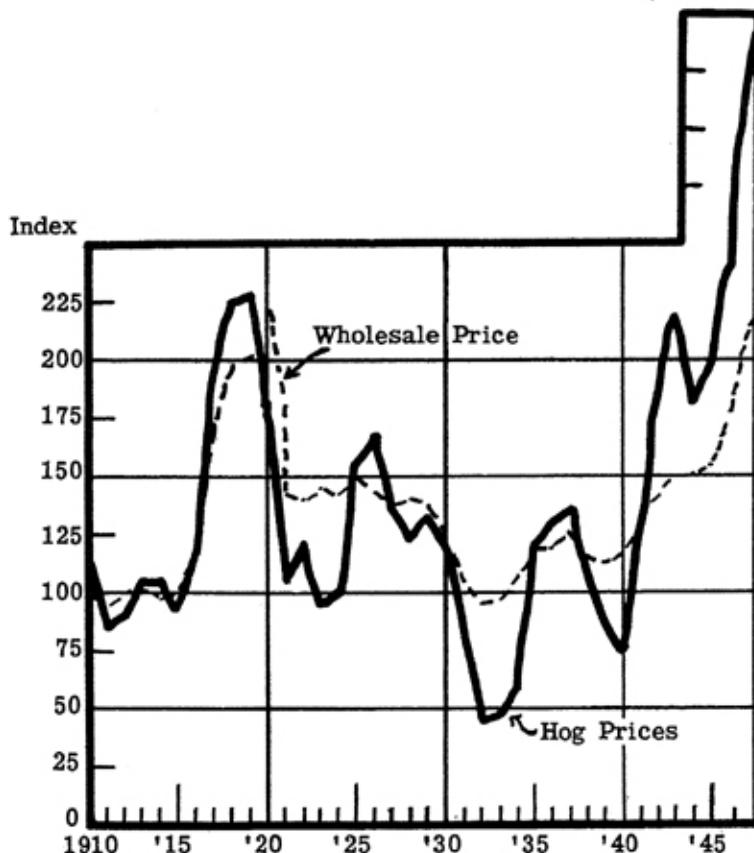


Fig. 11.—Indexes of Missouri hog prices and U. S. wholesale prices, 1910-1947.

price averaged about \$9.00 per cwt, the highest hog numbers were in 1944 when prices per cwt. averaged \$13.00. Hog numbers in 1934 and 1946 were substantially the same; the prices were about \$4.00 and \$17.00 per cwt. respectively.

Hog prices, like other farm prices, tended to rise faster and farther during periods of generally rising prices, such as during 1916 to 1920, 1935 to 1937 and 1941 to 1946. However, also like other farm prices, hog prices tended to break before and fall faster and farther during periods of generally falling prices, such as during 1919 to 1921, 1929 to 1932, and 1938 to 1940. Supplies of hogs were important in determining minor price fluctuations around a given level, but not in determining major price change.

Figure 12 shows the fluctuations in actual prices received by Missouri farmers, purchasing power, hog numbers on Missouri farms January 1 and the Missouri hog-corn ratio. Hog prices per cwt. have fluctuated violently from more than \$17.00 to less than \$4.00 since 1910. As stated before, these major fluctuations corresponded to changes in the general price level. The purchasing power of hog prices indicates whether the returns from hogs will purchase a large or small amount of other farm products. To determine this, the actual prices of hogs were divided by an index of all other farm prices. Purchasing power thus determined, was a measure of the relative profitability of the hog enterprises as compared to other farm products. The purchasing power of Missouri hogs has fluctuated in rather irregular cycles of from 4 to 7 years in length, averaging 5.3 years per cycle. Generally, actual price and purchasing power moved up and down together.

This cyclical variation in price and purchasing power was accompanied by a similar variation in hog numbers, though inversely related. That is, when the purchasing power of hogs was relatively high, numbers tended to be relatively low.

Hog producers have three alternatives in their response to hog prices. They may maintain constant production regardless of price; they may expand production when prices are favorable (purchasing power high) and contract when prices are unfavorable (purchasing power low), or they may attempt to anticipate future prices and plan production on that basis. It is natural to expand hog production when prices are favorable. The inverse relationship of the number and purchasing power cycles showed that the great majority of producers regulated their future production in light of current prices.

The variation in length and violence of fluctuation of the hog numbers cycle can be partly explained by such unforeseen factors as a partial failure of the corn harvest or an exceptionally large one. The

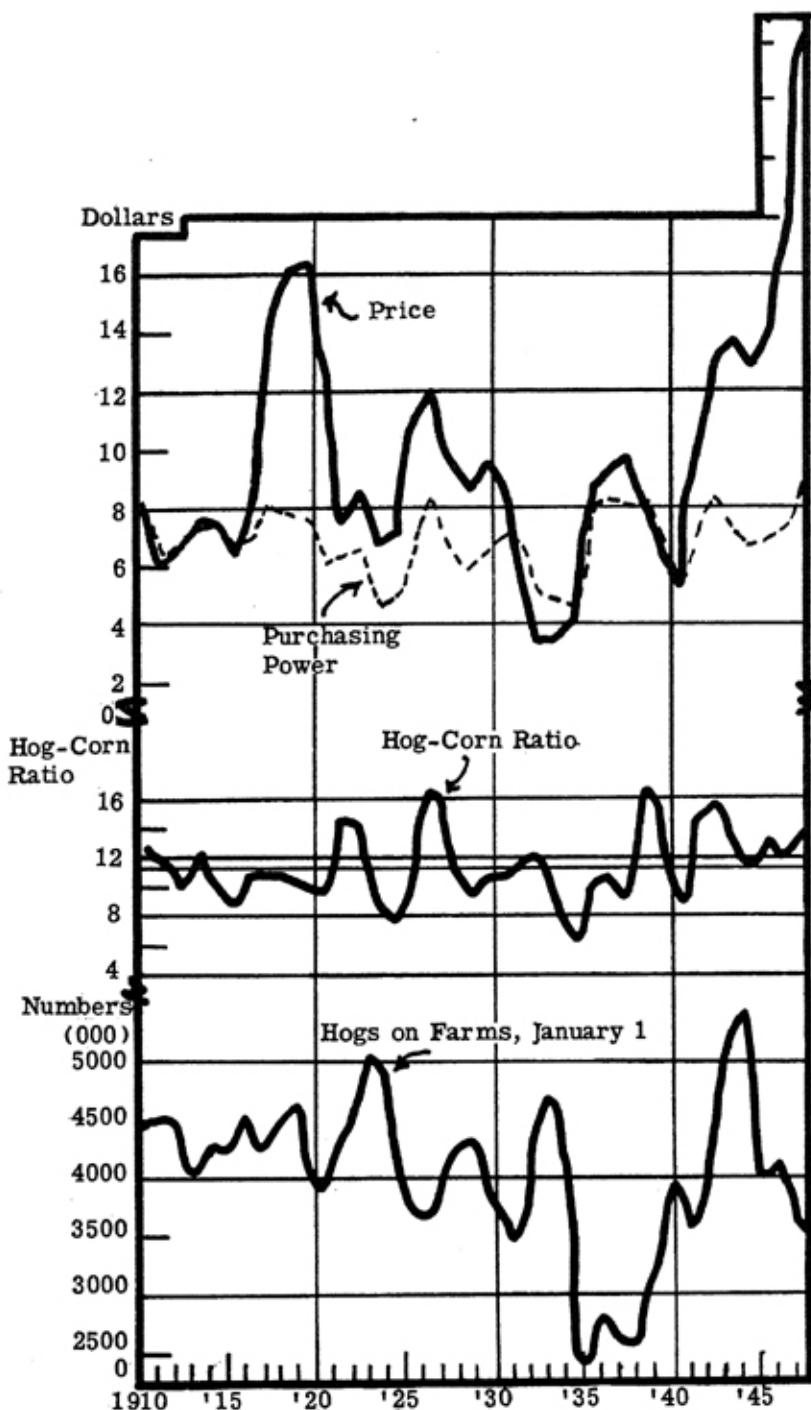


Fig. 12.—Missouri hog prices, purchasing power, hog-corn ratio, and hogs on farms January 1, 1910-1947.

severe liquidation which took place in 1934-35 and the less than normal rise in numbers that followed were largely due to the failures of the 1934 and 1946 corn crops which resulted in short feed supplies. The feed situation (corn) in Missouri and the surrounding corn pro-

ducing states has had marked influence on the extent and timing of the year-to-year hog number fluctuations.

Hogs are largely "corn on the hoof". Because the enterprise depends largely on the supplies of this feed, the relationship between hog prices and corn prices was one of the most important factors in motivating the farmer to change his production plans. A measure of this price relationship was found in the hog-corn ratio which shows the number of bushels of corn that 100 pounds of hogs will buy. This ratio (Figure 12) also moved through cycles from 4 to 7 years in length and was probably the most important single factor influencing expansion or contraction of hog numbers.

If the hog-corn ratio was high—especially during October, November, and December—farmers as a group tended to increase their breeding of sows and consequently their production. Increased supplies were later reflected in market receipts forcing the price of hogs down relative to corn prices. A low hog-corn ratio discouraged hog production and was reflected later in reduced receipts. Small receipts resulted in higher hog prices in relation to corn—again encouraging expansions in hog numbers. This explains the reverse relationship between numbers and the hog-corn ratio. There is approximately an 18 month lag between the peak of the ratio and the peak in numbers on farms January 1. This is about the time required after the farmer decided to increase his breeding herd till the increase is reflected in increased market receipts.

The 36 year average hog-corn ratio for Missouri was 11.4. This ratio also represented a no-change ratio for Missouri—that is, if the ratio remained at this level hog production would tend to fluctuate little.<sup>4</sup> Since 1910, the ratio has been above average 14 years and below average 22 years. The Missouri hog-corn ratio has been gradually increasing. During the ten year period 1915-24 the average ratio was 10.6; during 1925-34, 11.1; and during 1935-44 it was 12.3. The average yearly ratios have fluctuated from 6.4 or 56% of the average to 16.6 or 145.6% of the long-time average.

The hog-corn ratio of Missouri has been below the ratio for the North Central States since that ratio was first calculated in 1924. During 1925-34, Missouri averaged 1.6 points or 13% below the North Central ratio and during 1935-44, 1.7 points or 12% below.

The two ratios, however, moved up and down together both from month to month and from year to year. The North Central States ratio can be used by Missouri hog producers as a measure of their relative hog-corn prices. The State ratio was below the regional ratio

<sup>4</sup>Wells, Oris V. *Farmers' Response to Price in Hog Production and Marketing*, U. S. D. A. Technical Bulletin No. 359, April 1933.

TABLE 9.--MISSOURI HOG-CORN RATIO WITH COMPARISONS,  
MONTHLY AVERAGE, 1925-44

Months	Missouri	North Central States	United States
January	11.9	13.2	12.3
February	12.2	13.8	12.6
March	12.6	14.4	13.0
April	11.8	13.6	12.3
May	11.2	12.7	11.6
June	11.1	12.5	11.4
July	11.5	12.7	11.7
August	11.2	12.6	11.7
September	11.8	13.0	12.1
October	12.6	14.2	12.9
November	12.7	14.2	13.0
December	11.9	13.3	12.3
Average	11.9	13.4	12.2

largely because of its being a deficit corn-producing state with relatively higher corn prices and a state farther from the pork consuming centers resulting in relatively lower pork prices. The State hog-corn ratio was more favorable when compared to the regional ratio in times of high prices than during periods of low prices. This, however, did not disturb their close relationship.

The hog-corn ratio has a rather definite seasonal pattern resulting from the interaction of the seasonal nature of corn and hog prices. The twenty-year average monthly ratios were as shown in Table 9. The ratio increased until March, decreased during the summer months and reached the seasonal peak during October and November. The seasonal pattern has use in aiding in the proper evaluations of increases or decreases of the ratio from month to month in ascertaining whether the movement is favorable or unfavorable compared to the average.

**Seasonal Variation of Hog Prices.**—The prices of hogs at the large markets moved in a rather definite pattern throughout the year and this seasonal pattern was reflected in the prices farmers received for their hogs.

The long-time seasonal price movements have been determined for both the East St. Louis market and the Kansas City market for the light weight hogs as represented by the 160-180 pound group, the medium weight hogs as represented by the 200-220 pound group, and the heavy weight hogs, as represented by the sows, for the 16-year period, 1927-42. Generally the price patterns of the St. Louis and Kansas City markets were similar. The high and low months for a given weight group on one market were identical to those of the other (Figure 13).

Because of the two litter tendency in hog production, receipts moved through two periods of relatively large and small supplies. The

pigs farrowed in the fall reached the market in greatest numbers during the late spring; pigs farrowed in the spring reached the market in the late fall and early winter. This pattern of receipts resulted in a pattern of hog prices that was relatively low during the late spring and late fall and relatively high during the early spring and early fall seasons. The variations in prices, however, were not as great as the variations in receipts.

In the average seasonal pattern of prices for the light 160-180 pound hogs, the spring peak in prices came during March and represented about a 10% rise from the year's low period in December. Prices then declined about 4% to a minor low period in May. From May prices rose approximately 15% to the year's high period in August. The fall period of high prices tended to extend from July through September, after which it dropped 20% to the year's low in December. The seasonal pattern of prices was substantially the same on both the St. Louis and Kansas City markets, except that in the early spring period prices appeared to be relatively a little stronger on the Kansas City market.

The seasonal pattern of the medium weight 200-220 pound hogs was generally very similar to that of the lighter weights. However, the highest fall prices, on the average, came in September instead of August.

The seasonal variation in sow prices also had the same relatively high and low periods as the other weight groups. The decline in

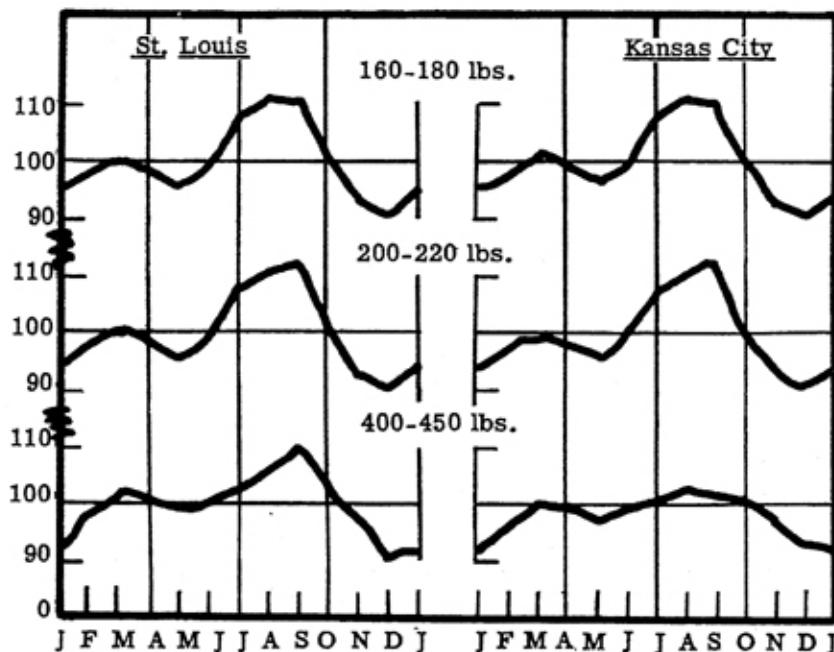


Fig. 13.—Average seasonal variation of hog price by weight groups, St. Louis and Kansas City, 1927-1942. Yearly average price = 100.

prices that occurred after the March peak, however, was not as severe as that which occurred in the prices of the other groups. The fall period of high prices was of shorter duration and not of the relative height of the other groups. The seasonal rise in prices that occurred in the spring and the fall was relatively greater on the St. Louis market.

The index of average seasonal variation was not a good indicator of the magnitude of variation. Its primary value was to show the direction of movement of prices during the year. Table 10 shows how many times during the 16-year period, 1927-42, the monthly prices remained the same or changed in the direction indicated by the average seasonal indexes.

The seasonal pattern is followed more often during certain periods of the year than during others. For both the 160-180 and the 200-220 pound groups, the rise from June to July, the fall from September to November and the rise from December to January occurred 75% or more of the time. The average seasonal movement during the rest of the year was considerably less reliable as an indicator of the direction prices were likely to move; in some periods it was followed only 50% of the time. The seasonal pattern of sow prices was followed with less regularity than the patterns for the other weight groups, and only the downward movement from September to November occurred over 75% of the time. For all groups, the price movements during the period of spring price peaks and the early fall price peaks seemed least likely to conform to the average seasonal patterns.

One of the reasons for the variations in the seasonal price patterns from year to year was the changing of the general trend of hog prices

TABLE 10.--DIRECTION OF AVERAGE SEASONAL HOG PRICE MOVEMENT AND PERCENT OF TIMES FOLLOWED\*

Period	160-180 lbs.			200-220 lbs.			Sows		
	Price move- ment**	St. Louis	Kansas City	Price move- ment**	St. Louis	Kansas City	Price Move- ment**	St. Louis	Kansas City
		%	%		%	%		%	%
Jan.-Feb.	+	63	75	+	63	56	+	81	69
Feb.-Mar.	+	50	75	+	63	69	+	75	69
Mar.-Apr.	-	63	63	-	63	69	-	56	44
Apr.-May	-	56	63	-	63	63	-	50	50
May-June	+	69	63	+	75	75	+	56	69
June-July	+	94	94	+	94	88	+	63	56
July-Aug.	+	63	69	+	50	63	+	63	50
Aug.-Sept.	-	50	50	+	56	56	+	56	63
Sept.-Oct.	-	94	88	-	100	88	-	81	81
Oct.-Nov.	-	100	88	-	94	94	-	88	88
Nov.-Dec.	-	56	56	-	56	63	-	75	63
Dec.-Jan.	+	75	81	+	81	75	-	63	50

\* Times followed included those cases in which prices remained unchanged.

\*\* Upward price movement indicated by (+); downward by (-).

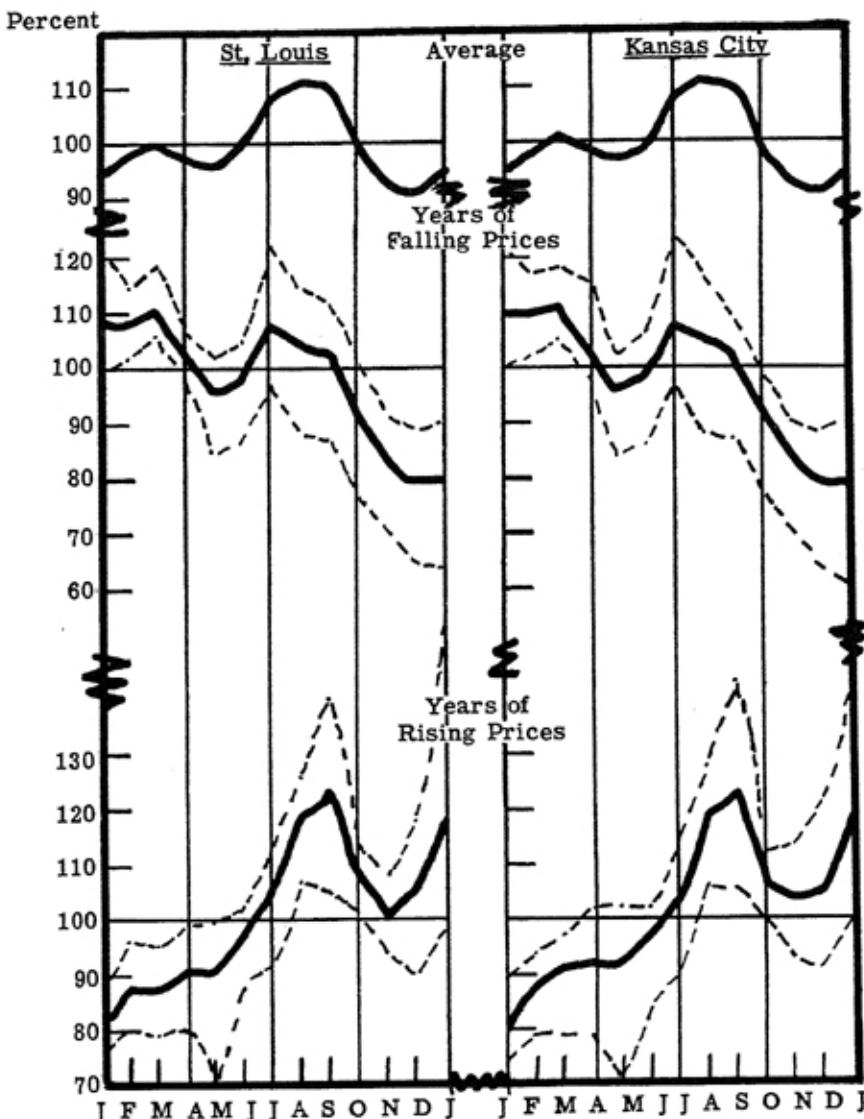


Fig. 14.—Average seasonal variation in prices of 160-180 pound barrows and gilts at St. Louis and Kansas City. Yearly average price = 100. Broken lines denote extreme variations from average.

during the year. To ascertain the effect of changing price levels on seasonal patterns, each weight group was sorted into years of increasing hog prices and years of decreasing hog prices. The seasonal pattern of hog prices when hog prices were declining was greatly different from the pattern of prices during years when hog prices were rising, (Figure 14). The differences in the extent of the rise or fall of prices in different years resulted in wide variation from the average pattern. Generally, the patterns of price behavior were substantially the same on both the St. Louis and Kansas City markets.

When the average seasonal pattern was compared to that pattern during years of declining prices for the light weight hogs, the price increase in the spring was not as great, and the decline from March to May was approximately three times more severe. The second peak in prices on the average occurred in August; with declining hog prices, it occurred a month earlier and was of shorter duration. The decline which followed was markedly more severe than indicated by the average seasonal. The tendency was for the December low to extend through into January.

When the average seasonal pattern was compared to that pattern in the years of rising prices, the peak spring prices were delayed until April and practically no decline in prices occurred in the late spring and early summer months. The rise to the fall peak was approximately twice as great as indicated by the average seasonal, and the price decline which followed was terminated in November instead of December.

In general, the effect of rising and falling prices on seasonal pattern of medium and heavy weight hogs was the same as for the light weight groups.

The principal effects of declining hog prices on the seasonal price pattern was: (1) to make the price break after the March peak more severe than average, (2) to reduce the fall peak in prices to a lower level than the spring peak, and (3) to exaggerate the price break following the fall peak. There was also a tendency for the fall peak in prices to come sooner than average and for the following downward trend to extend on through the following January.

The principal effects of a rising level of hog prices during a year was: (1) to minimize the drop which, on the average, followed the spring rise in price, (2) to increase the fall peak in prices, and (3) to shorten the duration of the price break which followed the fall peak resulting in an upturn of prices in November instead of January.

Usually, the producer should move his hogs to market as rapidly as possible during years of falling prices. During years of rising prices, the producer could market his hogs somewhat later than normally and still receive peak prices.

#### HOG PRICE DIFFERENCES<sup>5</sup>

The differences in hog prices between certain markets and between the specific weight groups within a given market were analyzed. These price differences have been studied on an annual, monthly, weekly, and daily basis.

<sup>5</sup>Much of the material was adapted from the study, "Price Differentials for Slaughter Hogs", by the North Central Livestock Marketing Research Committee. The data for Missouri were assembled by Dr. Herman Haag and Dr. E. H. Matzen.

**Price Differences Between Markets.**—Generally, hog prices in western markets have become more favorable relative to Chicago. This trend has been most pronounced since the latter part of the 1930s. This can be partly attributed to the increased population in the west coast areas strengthening the western demand for pork. Though varying from year to year, St. Joseph, Kansas City and St. Louis hog prices have been gradually strengthening in relation to Chicago prices since 1930. The most marked gain from the 1930-34 period to the 1940-44 period was made by the 160-180 pound hogs on the St. Joseph market, the price changing from an average of 39¢ below Chicago to only 17¢. The price difference of the 200-220 pound group between Chicago and St. Louis showed little change during this period.

Sow prices on the St. Louis, Kansas City and St. Joseph markets improved about 10¢ per cwt. in relation to Chicago sow prices from the 1930-35 to the 1940-44 period. The price spread during the 1945-47 period declined leaving very little spread between these markets and Chicago. The price differences for all weight groups between these markets and Chicago is shown in Table 11.

Freight rates between markets were not closely associated with either the actual amount or changes in amount of price difference between markets. In most cases the price differences per cwt. were less than the rail rates per cwt. Throughout the four-year period 1938 to 1941, rail rates between Chicago and Kansas City and St. Joseph remained unchanged at 42¢ per cwt. in double-decked cars. The annual price differences between Chicago and Kansas City and St. Joseph for 200-220 pound hogs during these years varied from 18¢

TABLE 11.—HOG PRICE DIFFERENCE FOR THREE SPECIFIC MARKETS  
MEASURED FROM CHICAGO\*

Markets	Period	Weight Groups				
		160-180 Cents	180-200 Cents	200-220 Cents	240-270 Cents	Sows Cents
St. Louis	1930-34	+ 3	0	- 2	- 2	-20
	1935-39	+ 1	+ 2	- 2	- 6	-15
	1940-44	+ 8	+ 5	- 3	- 5	-11
	1945-47					
	Av. 1930-44	+ 4	+ 3	- 2	- 5	-15
Kansas City	1930-34	-37	-34	-35	-29	-35
	1935-39	-35	-32	-32	-26	-27
	1940-44	-28	-21	-25	-23	-28
	1945-47	-27	-26	-23	-18	0
	Av. 1930-44	-32	-30	-30	-27	-30
St. Joseph	1930-34	-39	-37	-35	-33	-34
	1935-39	-33	-33	-34	-32	-27
	1940-44	-17	-21	-25	-23	-25
	1945-47	-22	-23	-16	-18	-4
	Av. 1930-44	-30	-30	-32	-29	-29

\* (+) Indicates price was above Chicago price; (-) indicates price was lower than Chicago.

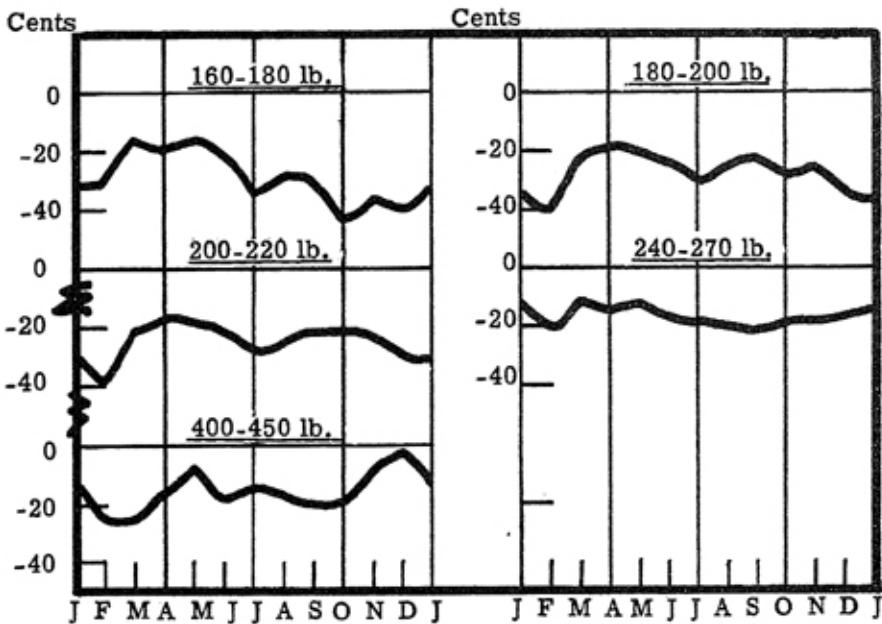


Fig. 15.—Average monthly amount Kansas City hog prices were below St. Louis prices, by weight groups, 1937-1941.

to 36¢ below Chicago. The prices for sows ranged from 9¢ to 30¢ below Chicago. For this same period the rail rate between St. Louis and Kansas City was 30¢. The price of 200-220 pound barrows and gilts at Kansas City varied from 13¢ to 30¢ below St. Louis; the price of sows varied from 8¢ to 29¢.

Though the differences in hog prices between markets varied greatly from year to year, there tended to be a seasonal pattern of price differences for each of the weight groups. This is shown in Figure 15.

Prices of 160-180 pound hogs at Kansas City were the most below the St. Louis prices in the late fall and winter months; and least below in the spring months. Generally this pattern was followed over one-half of the time. The decrease in price difference from February to March, and the increase from June to July occurred with the greatest regularity.

The price of the 180-200 pound hogs at Kansas City were the most below St. Louis from December through February; the difference was least during April and May. The price difference widened from January to February and narrowed from February approximately 75% of the time. The price differences of the 200-220 pound hogs generally followed this same pattern.

The 240-270 pound hogs on the Kansas City market sold at the greatest discount from St. Louis price in February and during the fall months. They sold at the least discount during the spring months.

of March through May. The increase in price difference from January to February and the decrease from February to March occurred during 12 years out of 15.

Kansas City sow prices were lowest in relation to prices at St. Louis during February and March and were relatively highest during December and May. The relative increase in Kansas City prices from October to December and the decrease from December to February occurred a majority of the time.

Kansas City and St. Joseph usually paralleled each other closely. No seasonal pattern of price differences appeared significant. The seasonal pattern of price differences between Kansas City, St. Joseph and St. Louis prices and Chicago prices is shown in the Appendix.

Not only did price relationships between markets change from year to year and month to month, but wide weekly fluctuations occurred. Figure 16 shows the weekly fluctuations of price differences between Kansas City and St. Louis. The study of weekly fluctuations only aided in emphasizing that the markets were in a continual state of adjustment which required close study if selling was to be done most advantageously.

The differences between St. Louis and Kansas City prices fluctuated from day to day as well as from week to week as shown in Table 12.

TABLE 12.--PERCENT OF TIMES PRICE DIFFERENCE BETWEEN TWO MARKETS FOR 200-220 POUND HOGS REMAINED THE SAME FOR SPECIFIED CONSECUTIVE MARKET DAYS, 1937-41

Price Differences Remained the Same	Kansas City and St. Louis	St. Joseph and Chicago
	%	%
1 day	77.6	74.4
2 days	17.7	19.6
3 days	3.5	4.7
4 days	1.2	0.9
5 days		0.4
Total	100.0	100.0

During the five-year period, 1937-41, the price differences between the 200-220 pound hogs on these markets changed from one day to the next 77.6% of the time; they remained the same for only two consecutive days 17.7%; for only three consecutive days 3.5%, and for four consecutive days 1.2%. It was evident that daily changes occurred the great majority of the time. Only in about one time out of 100 could price differences be expected to remain unchanged as much as four days in a row.

Though day to day changes in price differences between St. Louis and Kansas City were the rule rather than the exception, the actual change was only 5¢ or less 53.7% of the time (Table 13). On 25.5%

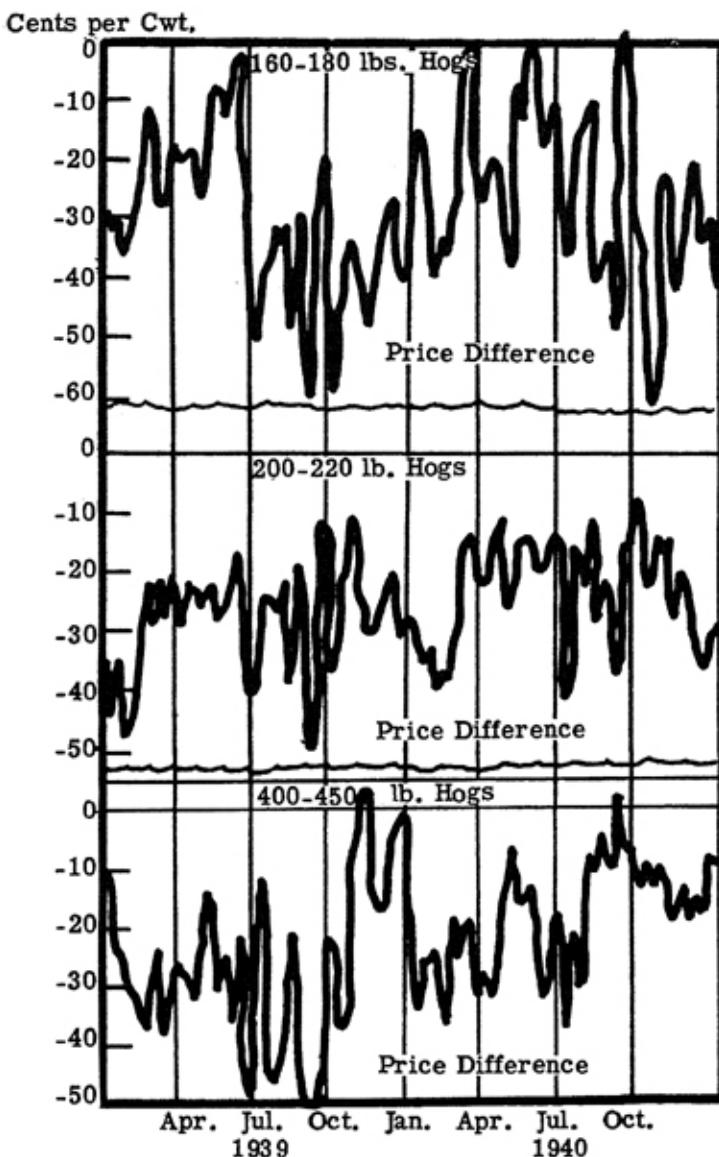


Fig. 16.—Fluctuations of weekly hog price differences between St. Louis and Kansas City, 1939-1940. Kansas City prices are measured from St. Louis prices, which are represented as 0.

TABLE 13.--AMOUNT OF DAILY CHANGE IN PRICE DIFFERENCE BETWEEN TWO MARKETS FOR 200-220 POUND HOGS, 1937-41

Amount of Change	Kansas City and St. Louis	St. Joseph and Chicago
Cents per Cwt.	%	%
0 - 5	53.7	72.1
6 - 10	25.5	19.1
11 - 15	12.6	5.7
16 - 20	5.0	1.8
21 - 25	1.5	0.7
26 - 30	1.1	0.4
30 and over	0.6	0.2
Total	100.0	100.0

of the days that price differential changes took place, the change was from 5¢ to 10¢; a change of from 10¢ to 15¢ occurred 12.6% of the time; and change of 15¢ to 20¢ occurred only 5% of the time. In the remaining 3.2% of the times when the differential changed, the amount of change varied from 20¢ to over 40¢. Thus between these markets, day to day changes in price relationships occurred over three-fourths of the time, but approximately four-fifths of the changes involved 10¢ or less.

The differences in the weight of hogs which were sold at the two markets, and the differences in the pattern of receipts and their composition tended to partly explain the seasonal and short time changes of relative price between the two markets. It was apparent that the average seasonal pattern of price differences was at best no more than a guide. Since fluctuation of the relative prices between markets was common, a close study of price differences is justified where opportunities for selling hogs at more than one market are available.

**Price Differences Between Weight Groups.**—Prices differed between the various weight groups on one market as well as between markets for a given weight group. In studying the price differences between weight groups on the St. Louis, Kansas City and St. Joseph markets, the price of 200-220 pound barrows and gilts was taken as the base price from which to measure the price of hogs in the other weight groups.

The annual price differences between the various weight groups and the 200-220 pound group on each market fluctuated widely from year to year. (See Figure 17). Generally, the 180-200 pound group was discounted the least of any weight group. On the St. Louis market this weight group was discounted less than on St. Joseph or Kansas City markets. For several years prices paid for this group of hogs at St. Louis actually averaged as high or higher than the 200-220 pound group.

On the Kansas City and St. Joseph markets the prices of the 240-270 pound hogs were relatively stronger compared to the 200-220 pound group than those of the light 160-180 pound group. On St. Louis markets, however, heavier hogs tended to be sold at a greater disadvantage than the lighter weights. As would be expected, the weight group which sold at the greatest disadvantage on all three markets was the 400-450 pound sows. Of the three markets, sows were discounted the most on the St. Louis market; the least on the St. Joseph market. St. Louis was the stronger market for the lighter weight hogs than were the other two markets. Kansas City and St. Joseph were the stronger markets for heavier weight hogs.

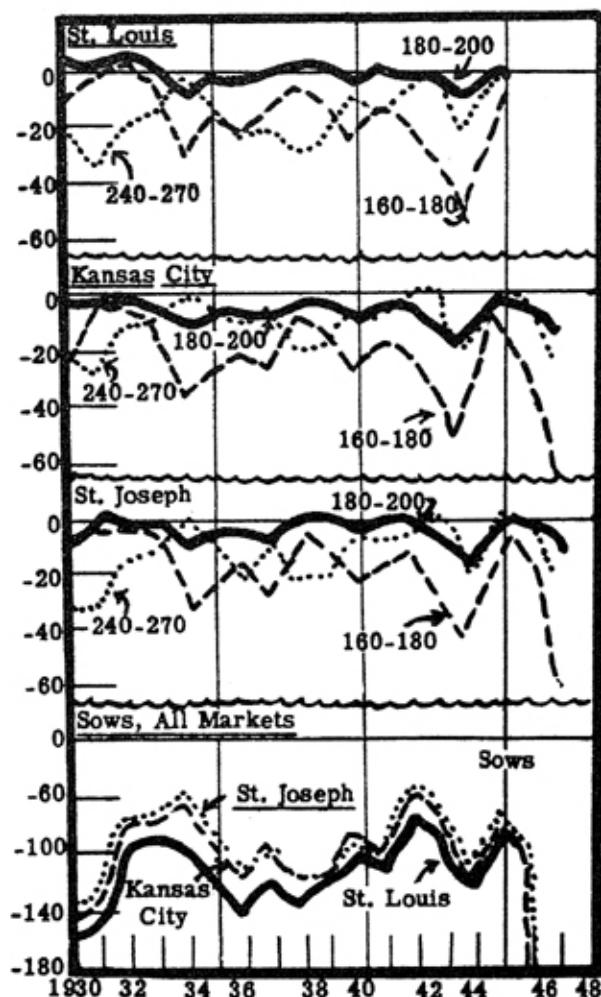


Fig. 17.—Annual price differences between specified weight groups and 200-220 pound hogs by markets, 1930-1948. Prices of all weights were measured from prices of 200-220 lb. hogs, which were represented by 0.

During the early years of World War II, the light weight groups were more heavily discounted than usual. During 1945, under price ceilings, the price differences between the various weight groups tended to disappear, with all but sows selling at near the price of the 200-220 pound hogs. Data for 1947, the first year following the end of price controls, indicate price differences between weight groups became more pronounced.

The average seasonal pattern of price differences showed that the light weight groups generally were most heavily discounted during the late summer and early fall months and were discounted least (or in some cases were actually selling at a price advantage) during the mid-winter months. The light groups sold at the greatest discount during the period of August through October over 50% of the time;

they sold most advantageously November through December over 60% of the time.

On the average, the heavier weight group of 240-270 pound hogs, sold at the least discount during the late fall months and were discounted the most during mid-summer and mid-winter periods. The severe break from June to July in the prices of heavier weight hogs when compared to the 200-220 pound class occurred over 70% of the time. The seasonal strengthening from August to October also occurred with regularity.

The average seasonal pattern of sow price differences was more reliable than that of the other weight groups. Sows sold at the greatest disadvantage during July and August, and at the least disadvantage during October through December a majority of the time. The weakening of relative sow prices from May to July and their strengthening from August through November were followed in a great majority of the years. The pattern of increasing disadvantage of sow prices from November to January was also highly reliable.

As in the case of price differences between markets, price differences between weights on one market fluctuated from week to week and day to day. Week to week fluctuations varied from minor price changes to those which were quite marked. Frequent change in price relationship was the rule rather than the exception.

The differences in prices between weight groups on the St. Louis and St. Joseph market changed from day to day more than 50% of the time during the five-year period 1937-41 (Table 14). Daily changes in price differences were more frequent on the St. Louis market than on the St. Joseph market, and more frequent in the 160-180 pound group than in the 240-270 pound group. Price differences between

TABLE 14.--PERCENT OF TIMES PRICE DIFFERENCE BETWEEN DIFFERENT WEIGHT GROUPS AND 200-220 POUND HOGS REMAINED THE SAME FOR SPECIFIED CONSECUTIVE MARKET DAYS, BY MARKETS, 1937-41

Price Difference Remained The Same	St. Louis		St. Joseph	
	Weight Groups		Weight Groups	
	160- 180	240- 270	160- 180	240- 270
	%	%	%	%
1 day	60.4	58.0	55.6	53.5
2 days	24.1	23.3	25.2	23.3
3 days	11.3	9.4	11.4	14.7
4 days	2.5	4.7	5.0	4.7
5 days	0.8	1.2	2.3	2.7
6 days	0.9	0.9	0.5	0.5
7 days		0.5		
8 days		2.0		0.6
Over 8 days				
Total	100.0	100.0	100.0	100.0

weight groups remained the same for two consecutive days only about 25% of the time. For less than 10% of the time on both markets, price differences of the two weight groups were unchanged for four or more consecutive days.

The amount of daily price difference change between the two weight groups (160-180 pound and 240-270 pound) and the 200-220 pound group was studied on the St. Louis and St. Joseph markets (Table 15). In over 80% of the time that price relationships changed from day to day, the change was 5 cents or less. In 10% to 15% of the cases, the change was from 5 to 10 cents; and in less than 5% of the cases was the daily price difference change greater than 10 cents.

TABLE 15.--AMOUNT OF DAILY CHANGE IN PRICE DIFFERENCE BETWEEN DIFFERENT WEIGHT GROUPS AND 200-220 POUND HOGS, BY MARKETS, 1937-41

Amount of Changes	St. Louis Weight Group		St. Joseph Weight Group	
	160-	240-	160-	240-
	180	270	180	270
Cents per Cwt.	%	%	%	%
0 - 5	81.5	83.3	87.0	83.4
6 - 10	15.0	12.8	11.3	12.8
11 - 15	2.8	2.7	1.4	2.5
16 - 20	0.6	0.7	0.3	1.0
21 - 25	0.1	0.2		0.2
26 - 30		0.1		0.1
31 over		0.2		
Total	100.0	100.0	100.0	100.0

Daily changing price differences of five cents or less between weight groups on a given market occurred in the majority of the cases. As with the price differences between markets, a seasonal pattern of price differences between weights was only a rough guide to changes to be expected between given weight groups. This seasonal pattern of price difference between weight groups, however, coupled with close observation of the market would aid the farmer in obtaining the best possible price for his hogs.

#### HOG RECEIPTS AND WEIGHTS AT MISSOURI'S TERMINAL MARKETS

**Hog receipts.**—There were five public stockyards within the state and one immediately adjoining which were probably the most important markets serving the Missouri farmer. These, in order of the magnitude of their annual receipts, were East St. Louis in Illinois, St. Joseph, Kansas City, St. Louis in Missouri, Springfield and Joplin. The average annual receipts at those markets and at Chicago, and the

percentage that those receipts were of the total U. S. receipts at public yards are shown in Table 16.

In volume of receipts, Chicago, E. St. Louis, and St. Joseph were among the top ten hog markets in the U. S.; Kansas City also has appeared in that group three times since 1936. Chicago and E. St.

TABLE 16.--HOG RECEIPTS AT SEVEN PUBLIC STOCKYARDS AND PERCENT EACH WAS OF TOTAL U.S. RECEIPTS AT PUBLIC STOCKYARDS, 1936-47

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1936-45
	Receipts in Thousands												
Chicago	4364	3968	4188	4264	5385	4631	5338	5793	6018	3516	3541	3318	4747
E. St. Louis	2474	2265	2412	2626	3265	2896	2982	3335	3456	1878	1904	2561	2759
St. Joseph	852	569	675	822	1131	886	1057	1487	1810	916	1203	1288	1021
Kansas City	738	372	378	519	720	631	711	933	1506	504	675	671	701
Springfield	128	85	141	168	217	185	233	284	223	103	112	135	177
Joplin	89	62	96	122	116	109	99	116	135	60	64	75	100
St. Louis, Mo.	85	74	98	130	137	148	214	549	717	493	262	248	260
U. S.	26399	22660	24801	27974	34556	30659	34415	41077	44511	25342	28465	29953	31239
	Percent of Total U.S. Receipts												
Chicago	16.5	17.5	16.9	15.2	15.6	15.1	15.5	15.0	13.5	13.9	12.4	11.1	15.5
E. St. Louis	9.4	10.0	9.7	9.4	9.5	9.5	8.7	8.1	7.8	7.4	6.7	8.6	9.0
St. Joseph	3.2	2.5	2.7	2.9	3.3	2.9	3.1	3.6	4.1	3.6	4.2	4.3	3.2
Kansas City	2.8	1.6	1.5	1.9	2.1	2.1	2.1	2.3	3.4	2.0	2.4	2.2	2.2
Springfield	.5	.4	.6	.6	.6	.6	.7	.7	.5	.4	.4	.5	.6
Joplin	.3	.3	.4	.4	.3	.4	.3	.3	.2	.2	.3	.3	.3
St. Louis, Mo.	.3	.3	.4	.5	.4	.5	.6	1.3	1.6	1.9	.9	.8	.8
U. S.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Louis have been declining in percentage of total U. S. receipts; St. Joseph and Kansas City have been increasing in the last 10 years. Of the smaller markets, Springfield and Joplin have shown little change; St. Louis, Missouri, however, has sharply increased in relative importance—in 1936 its receipts were only 0.8% of the total U. S. receipts; in 1946 they were 0.9%. In the following discussion only the principal market at E. St. Louis (hereafter referred to as St. Louis), St. Joseph, Kansas City, and Chicago will be discussed.

Hog receipts at terminal markets varied cyclically from year to year. This can be seen from the actual receipts at terminal markets as shown in Figure 18. Years of relatively low receipts were 1937, 1941, and 1945; years of relatively high receipts were 1940 and 1944. These yearly variations were due to the ups and downs of the hog production cycle which was associated with the hog-corn ratio cycle. Generally speaking, high January 1 hog numbers on farms were followed by heavier than average marketings in the following spring and fall while low January 1 numbers were followed by a reduction of marketings the following fall and spring.

Receipts at terminal markets tended to follow a definite pattern but the pattern differed between markets. The seasonal pattern of receipts resulted from the tendency of farrowings to be most concentrated during definite periods of the spring and fall. With fewer

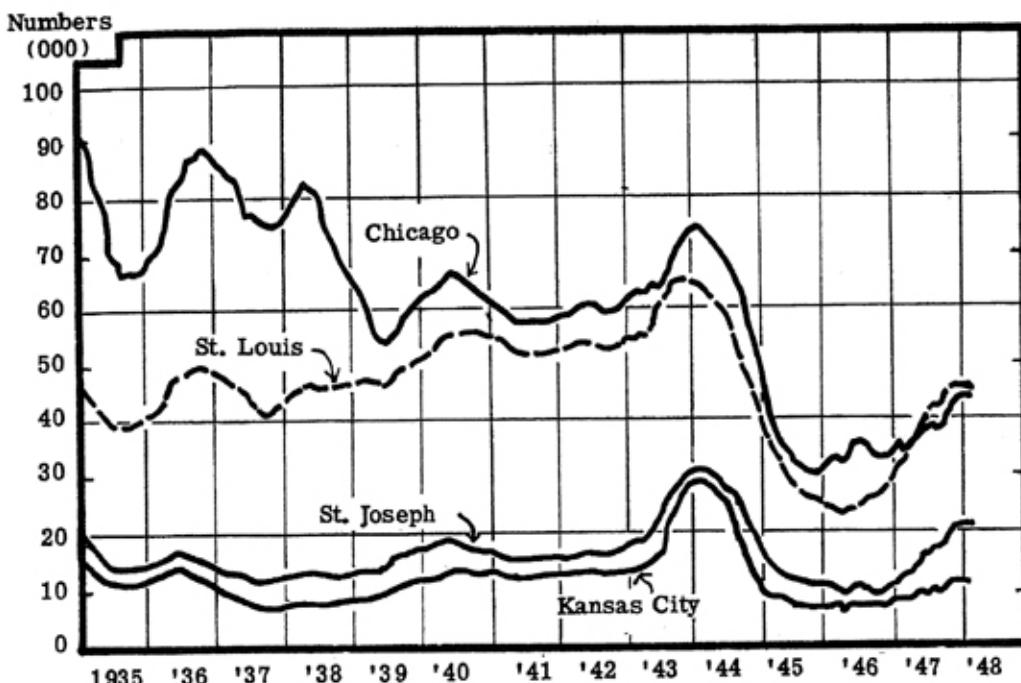


Fig. 18.—Weekly salable receipts of hogs at four markets, 1935-1948. Seasonal variation removed.

litters farrowed during the fall there tended to be a minor increase of receipts in the late spring as the fall farrowed pigs reached the markets, and a major increase of receipts in the late fall and winter as spring farrowed pigs were marketed.

The average seasonal patterns of receipts at the four markets are shown in Figure 19. Though on all markets, the peak of receipts was in the late fall and winter months with a minor increase in the late spring, the seasonal patterns differed among the four markets.

The pattern of receipts at Chicago and St. Joseph were similar and showed the greatest variation. The receipts at these two markets reached their spring peak in May and June; however, this was a minor increase. The receipts declined to yearly lows in July, August, and September before sharply increasing to the yearly highs in November, December and January. The late fall and early winter marketings averaged 30% to 50% more than those during July, August, and September.

The St. Louis and Kansas City markets had a more even seasonal distribution of receipts than did Chicago and St. Joseph. The spring peak in marketing came earlier than on the other two markets. In relation to its average yearly receipts, St. Louis received a greater volume of spring hogs than any of the other four markets. Kansas City received a greater volume during the summer months. The fall

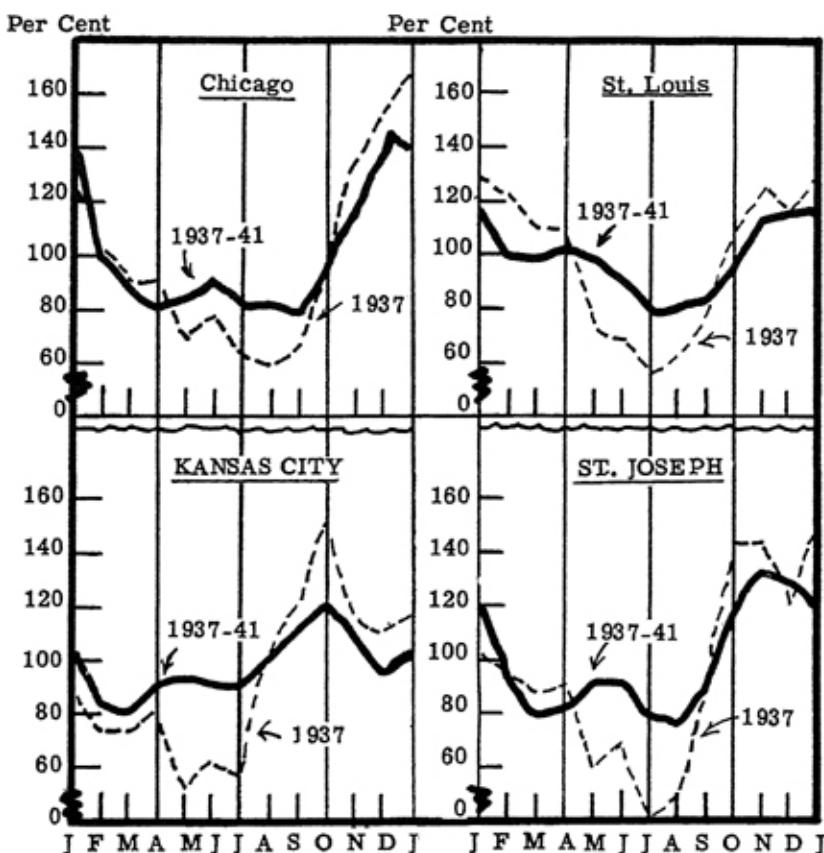


Fig. 19.—Average monthly salable receipts of hogs at four markets, 1937-1941 and receipts during 1937. Receipts are expressed as a percentage of a 53-week moving average.

marketing peak at these two markets was considerably smaller, than it was for the Chicago and St. Joseph markets.

Much of this difference of seasonal pattern among the markets can be explained by the difference in time of farrowing in the areas served by the markets. The per cent of sows that farrowed each month in Missouri and states immediately adjacent are shown in Table 17.

Missouri farrowed 53% of its sows in the spring and 47% in the fall with March, April and September being the peak months. Kansas and Arkansas also had similar distributions of farrowing. However, in Arkansas, a state with milder climate, farrowings were rather equally distributed throughout the year. The almost equally divided spring and fall production of these areas helped explain to a large extent the relatively more uniform receipts of St. Louis and Kansas City. In states of harsher climatic conditions, such as Iowa and Nebraska, almost three-fourths of the total farrowings was during

TABLE 17.--AVERAGE PERCENT OF TOTAL SOWS  
FARROWING MONTHLY, BY STATES, 1935-44

	Missouri	Illinois	Iowa	Nebraska	Kansas	Arkansas
	%	%	%	%	%	%
December	2.7	1.2	0.4	0.7	2.2	6.9
January	3.3	1.8	0.5	0.9	2.8	8.9
February	6.9	5.5	2.4	3.0	6.2	10.2
March	16.3	19.9	15.7	16.1	15.4	11.5
April	15.5	22.0	35.2	32.5	17.5	9.8
May	8.6	11.4	18.9	19.3	10.5	7.5
Dec. - May	53.3	61.8	73.1	72.5	54.6	54.6
June	5.1	3.6	4.7	5.3	5.4	6.4
July	5.0	3.3	2.2	2.5	4.6	7.0
August	8.8	7.4	4.3	3.5	6.7	8.1
September	14.7	14.2	9.8	8.5	15.2	8.6
October	8.9	7.2	5.0	5.8	9.4	8.2
November	4.2	2.5	0.9	1.9	4.1	7.1
June - Nov.	46.7	38.2	26.9	27.5	45.4	45.4
Yearly	100.0	100.0	100.0	100.0	100.0	100.0

the spring months—about 50% were farrowed during the peak months of April and May. Markets which serve these areas received relatively larger shipments during the late fall and early winter months and had only a very minor increase during the spring months. This was illustrated by the seasonal pattern of the Chicago market and, to a lesser extent, by that of the St. Joseph market.

These average seasonal patterns of receipts, similar to average seasonal patterns of price, gave the general pattern of movement during the year but in no case did the pattern of any one year correspond exactly with the average seasonal. The general pattern, however, is fairly representative. In Figure 19 the receipts of the year 1937 have been plotted to show the relationship of a widely fluctuating year to the average. Even here the periods of high and low receipts were in line with the seasonal pattern.

The average pattern of receipts was more closely followed on the Chicago and St. Joseph markets than on the Kansas City and St. Louis markets. On the Kansas City and St. Louis markets the average seasonal pattern of receipts was not followed as regularly during the summer months as during the rest of the year.

The monthly average in itself does not reveal the rather violent fluctuations that occur in receipts from week to week. Figure 20 shows the movement of the weekly receipts for the two years, 1937 and 1938. Receipts changed greatly from week to week. For example, on the St. Joseph market during October 1937, weekly receipts were 146%, 125%, 138% and 162% of the yearly weekly average. In November they were 113%, 151%, 197%, and 111%. Some of the variations were due to short market weeks caused by holidays; re-

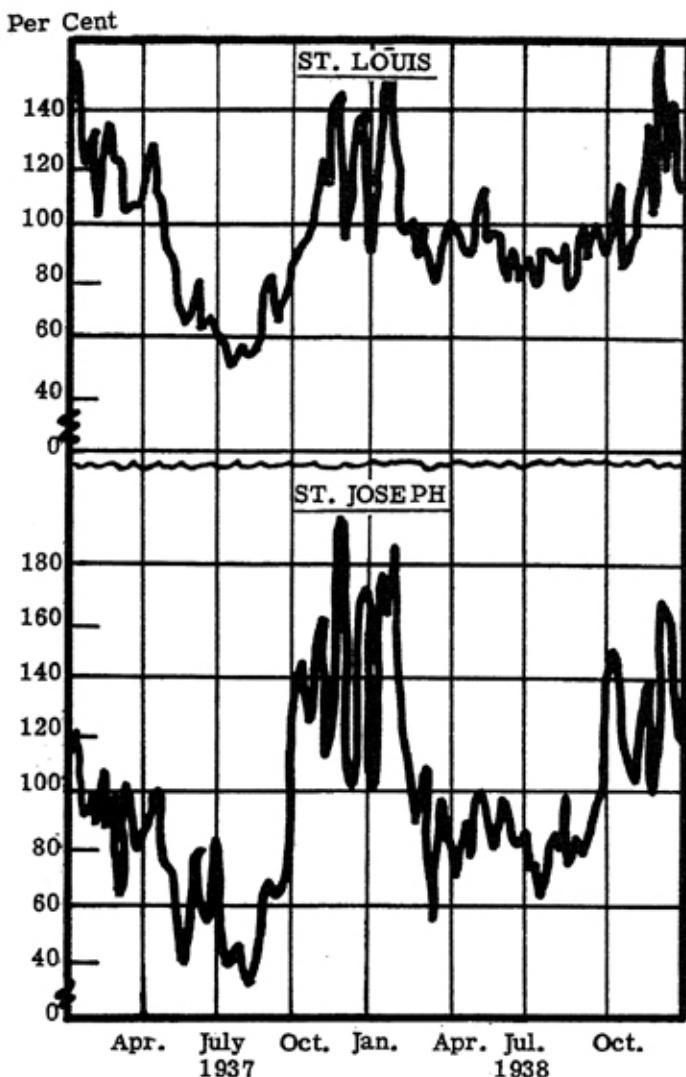


Fig. 20.—Weekly salable receipts of hogs at two markets, 1937-1938. Receipts are expressed as a percentage of a 53-week moving average.

ceipts during the weeks in which Christmas, New Years, and Thanksgiving occurred usually were much below either the week preceding or the week following.

**Hog Weights.**—The trend of the average weights of all hogs received at each of the four terminal markets has been upward since 1934 (Figure 21). This upward trend has been the most pronounced on the Kansas City and St. Joseph (which corresponds closely with Kansas City) markets. Average weights were highest on the Chicago market and lowest on the St. Louis market.

This upward trend was also evident in the average weights of the barrows and gilts received at these markets (Figure 22). Again,

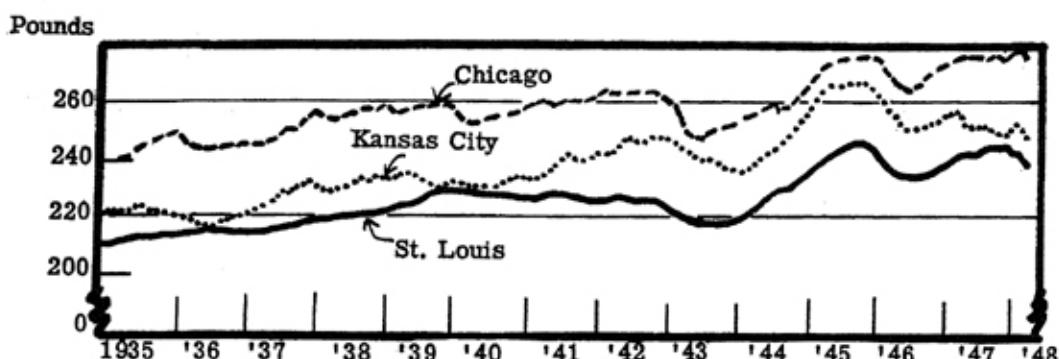


Fig. 21.—Average weight of all receipts of hogs at three markets, 1935-1947. Seasonal fluctuations removed. St. Joseph corresponded closely with Kansas City.

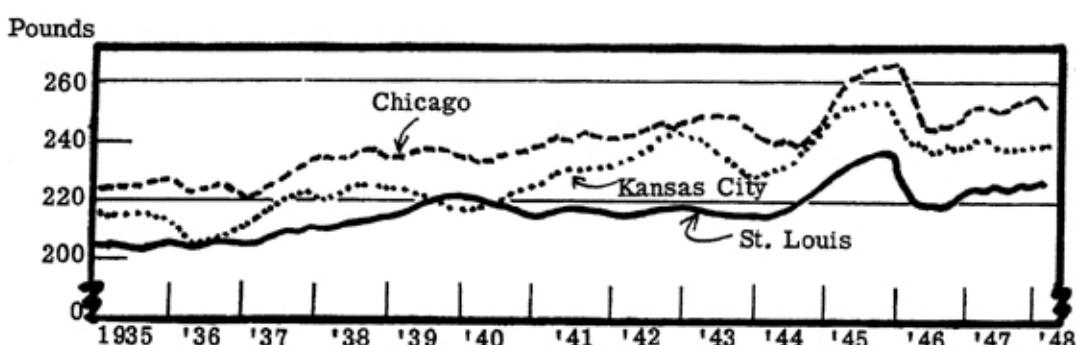


Fig. 22.—Average weight of all barrows and gilts at three markets, 1935-1947. Seasonal fluctuations removed. St. Joseph corresponded closely with Kansas City.

the most distinct upward trend in weight was at Kansas City and St. Joseph. The weight of barrows and gilts was heaviest at Chicago and lightest at St. Louis. For the ten year period, 1935-1944, the weight of barrows and gilts received at St. Louis averaged about 20 pounds below those received at Chicago and about 9 pounds below the weights at Kansas City and St. Joseph.

The average seasonal variation in weights of all receipts, barrows and gilts and sows, are shown in Figure 23. The patterns differed among the four markets with Chicago being similar to St. Joseph and St. Louis being similar to Kansas City. The total receipts at Chicago showed the greatest seasonal variation in weights, reaching a peak during July, August, and September. The average of all receipts at St. Joseph showed a similar, but less pronounced peak. The average weights of all receipts on the St. Louis and Kansas City markets were heaviest during December and January with a minor increase in July.

The average weight reflected the composition of the receipts at various times of the year at the different markets. The weights of

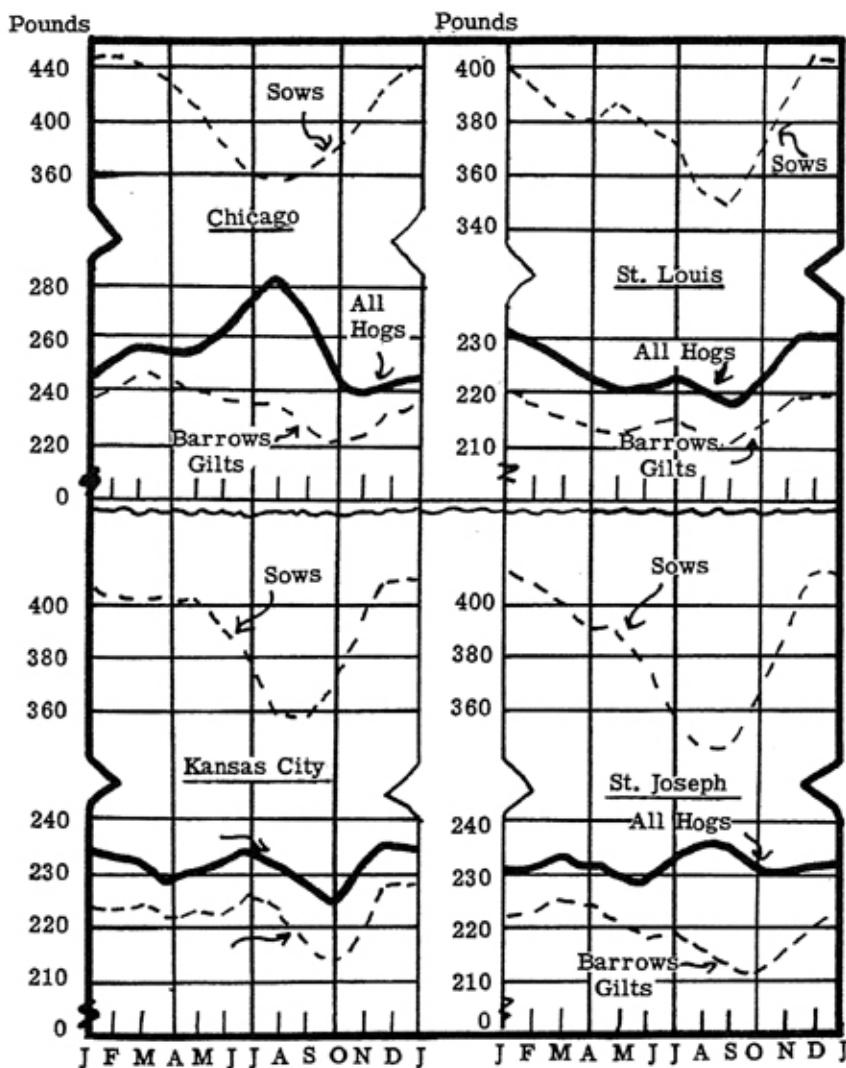


Fig. 23.—Monthly average weight of all hogs, barrows and gilts, and sows, at four markets, 1937-1941. Note that scale is different for Chicago market and between sows and other weight classes.

the barrow and gilt receipts on the Chicago and St. Joseph markets were heaviest in March and declined to a low in October. The receipts on the St. Louis and Kansas City markets reflected the spring and fall litter system in the areas which they served and there was a small increase in weights in July as well as the major increase during September and January.

The variation of sow weights was similar in pattern in all four markets, but most pronounced in the Chicago and St. Joseph markets. Sows were lightest in weight during August and September and

heaviest during December and January. Sow weights on the St. Louis and Kansas City market were relatively heavy until May.

The differences among these markets caused by the differences in hog production practices was shown best by the percent that sow receipts were of total receipts throughout the year. This is shown in Table 18.

TABLE 18.--AVERAGE MONTHLY PERCENT OF TOTAL RECEIPTS THAT WERE SOWS, BY MARKETS, 1935-44

Months	Chicago	St. Joseph	Kansas City	St. Louis
January	5	6	6	7
February	5	6	6	7
March	5	6	5	6
April	5	5	5	5
May	7	5	4	5
June	16	6	5	6
July	31	11	7	7
August	39	19	10	8
September	32	20	12	8
October	18	15	11	7
November	8	10	8	6
December	6	7	7	6
Monthly Average	15	10	7	7

About one-third of the receipts at Chicago during July, August, and September were sows. To a smaller extent this pattern of large sow shipments was true on the St. Joseph market. Sow receipts at Kansas City increased somewhat during this period of the year, while at St. Louis there was little variation throughout the year. These relatively large receipts of heavy sows during the summer months were largely responsible for the seasonal rise of average weights that occurred during this period on these markets. Relative to total receipts, sows were twice as important on the Chicago market as on either the Kansas City or St. Louis markets.

## Summary

Because of the broad nature of this study a general summary of the findings would not be sufficient. Instead, each of the five major sections are summarized individually.

### Areas of Hog Production

1. Hog production was concentrated in areas of heaviest corn production. Missouri, on the edge of the so-called corn-hog belt, did not produce as much corn for each hog raised as did other leading states. The future trends of hog production are directly related to the future trend in corn production and the ability to ship in feed supplies.
2. The importance of Missouri hog production in relation to the U. S. has declined since 1890, but for the past several years Missouri hog numbers have fluctuated around the 4 million level. This was about 6% to 7% of the nation's hog production.
3. Hog production was relatively concentrated in the northern and northwestern sections of the state. In the most heavily concentrated areas over 40 hogs were sold per farm. Approximately 25% of the total hogs of the state were produced in the 16 northwestern counties.
4. Farm slaughter of hogs was of considerable importance throughout the state, varying from 4% to over 40% of the hogs sold. It was of greatest relative importance in the areas of lowest hog production.
5. Some shift in relative hog production in the state has occurred since 1925. The south and southeastern areas produced a greater portion of the total state production during 1935-44 than during 1925-34 while the northern areas produced a smaller portion during 1935-44 than 1925-34.
6. The sale of feeder hogs was an important part of the hog enterprise on the Ozark region farms where over 40% of all the hogs sold were feeders. The most important feeder purchasing areas surrounded St. Louis and Kansas City.

### The Marketing of Missouri Hogs

1. The average number of hogs sold yearly by Missouri farmers was smaller than that sold by producers in other principal hog producing states.
2. Two-thirds of farmers selling hogs marketed only about one-third of the hogs. This group sold in small lots of 10 or less. The other two-thirds of the hogs were marketed by about one-third of the farmers. This latter group sold in lots of more than 10 head.

3. The bulk of Missouri slaughter hogs were lighter in weight than those of other leading hog producing states.
4. Missouri farmers bought 23 hogs for each 100 hogs sold. These purchases were mostly feeder pigs. Most of these feeder pigs were bought by a comparatively small group of large-scale feeders.
5. Missouri farmers sold over three-fifths of their slaughter hogs through the terminal markets, one-fifth direct to packing plants and one-fifth through various other outlets. Terminal market outlets were more important in the northwestern and northeastern regions. The dealers and trucker outlets were more important in southern than in northern Missouri.
6. Three-fourths of the feeder pigs were sold to farmers and dealers or through local auctions. Over 90% of the feeder pigs were purchased from these sources. Other farmers were the most important outlet for sales and the most important source for purchases of feeder hogs.
7. Dealers, auctions and cooperatives drew the bulk of their receipts from a small area of about 25 mile radius; packing plants and concentration yards served a much larger area drawing over two-thirds of their receipts from points 50 or more miles away.

#### Hog Prices

1. Prices of hogs differed between areas in the U. S. and between regions within the state. The highest prices in the U. S. were paid for hogs in the two coastal areas and the lowest in the western plains states. Highest hog prices were received by Missouri farmers in the areas immediately surrounding the St. Louis, Kansas City, and St. Joseph markets and the lowest by those in the southern sections of the state.
2. The level of hog prices were more affected by the general level of all prices than by the volume of hog marketings.
3. Actual prices, purchasing power, and hog numbers on farms tended to move in irregular cycles of from 4 to 7 years and averaging about 5 years. The hog number cycle was inversely related to the purchasing power cycle. The hog-corn ratio also moved in 4 to 7 year cycles and was inversely related to the hog numbers cycle. This ratio was one of the most important factors influencing changes in hog numbers. The long-time average of the Missouri hog-corn ratio was 11.4. A higher than average ratio encouraged expansion of hog numbers; a lower than average ratio encouraged contraction.
4. The average seasonal pattern of hog prices has a minor peak in March and a minor low in May and June; a major peak in Septem-

ber and a major low in December. In general, the pattern for light, medium, and heavy hogs at both the St. Louis and Kansas City markets were similar. The seasonal pattern was followed 50% to 100% of the time; the reliability varying between different periods of the year.

5. The direction of movement of the level of hog prices greatly affected the seasonal pattern of hog prices. A declining level of hog prices made the normal spring price decline more severe, the fall rise less pronounced and likely to come sooner. A rising level of hog prices made the spring decline less severe and the fall rise more pronounced.

#### Hog Price Differences

1. Generally, hog prices at western markets have strengthened in relation to Chicago prices. Prices at St. Louis, St. Joseph, and Kansas City for almost all weight groups have become stronger in relation to Chicago since 1930.
2. Annual price differences between markets varied widely from year to year. Freight rates between markets were not closely associated with either the actual amount or changes in amount of price differences between markets.
3. There was a seasonal pattern of price differences of specific weight groups between markets. The months of greatest and least price difference differed between weight groups. The pattern was only a fair guide to actual price difference changes, and its value as a guide to the changes varied at different periods of the year for each weight group.
4. Price differences between markets fluctuated weekly and daily. During a five-year period, price differences changed daily over 75% of the time. Daily price difference changes tended to be small; in over half of the daily changes they were less than 5¢ per cwt.
5. Annual price differences between weight groups on a particular market varied widely. Light hogs tended to sell to the best advantage on the St. Louis market. Heavier weight groups and sows tended to sell to the best advantage on the Kansas City and St. Joseph markets.
6. There was a seasonal pattern of price differences between weight groups on a given market. This pattern was followed with significant regularity only during part of the year. It was only a rough guide to actual relative price behavior between weight groups on a given market.
7. Daily changes in price differences between weight groups occurred more than 50% of the time. Daily difference changes were more

frequent on the St. Louis markets than on the St. Joseph market; more frequent in light weight groups than in the heavier weights. The changes tended to be small; in over 80% of the times they were less than 5¢ per cwt.

8. Relative hog prices, both between markets and between weight groups, were continually changing in an attempt to reflect changes in supplies or in an attempt to adjust supplies and any average pattern was a poor substitute for close market study as a guide to marketing.

#### Hog Receipts and Weights at Missouri's Terminal Markets

1. Five large public markets were within the state and one immediately adjacent. Two of these markets, St. Louis and St. Joseph and sometimes a third, Kansas City, were among the top ten hog markets of the country.
2. Hog receipts varied from year to year. High January 1 hog numbers tended to be followed by heavier than average receipts the following spring and fall; low January 1 numbers were followed by lighter receipts the following spring and fall.
3. Receipts varied seasonally with peak receipts in late fall and winter and a minor increase in the spring. Much of the difference in seasonal variation between various markets was associated with differences in the times of farrowings. Receipts also varied widely from week to week as well as from month to month.
4. The trend of hog weights at the three principal markets since 1934 has been upward. Average weights of barrows and gilts were lightest on the St. Louis markets—20 pounds below Chicago, 9 pounds below Kansas City and St. Joseph.
5. Average weights of all hogs, barrows and gilts, and sows varied seasonally. The variations in average weight of all receipts reflected the variation in the per cent of the total receipts that were sows during the year. St. Louis and Kansas City had the most even distribution of sow receipts during the year; they also had the least marked seasonal variations in weights. Of the three markets, St. Joseph had the heaviest average sow receipts.

# Appendix

TABLE 19.--PERCENTAGE CONTRIBUTIONS OF MISSOURI HOGS AND CORN TO  
U.S. TOTAL PRODUCTION, AND BUSHELS OF CORN PRODUCED IN  
MISSOURI PER HOG ON FARM, 1867-47

Year	Hogs	Corn	Corn Per Hog	Year	Hogs	Corn	Corn Per Hog
	%	%	Bu.		%	%	Bu.
1867	3.9	6.4	36	1907	6.1	9.2	66
1868	5.3	6.3	29	1908	6.2	7.9	67
1869	6.3	6.6	30	1909	6.2	7.3	62
1870	6.8	8.4	35	1910	9.2	8.6	43
1871	6.0	7.6	43	1911	8.1	7.7	55
1872	6.4	8.3	35	1912	8.1	8.3	43
1873	6.7	7.0	40	1913	7.6	5.7	60
1874	6.8	4.3	27	1914	8.0	6.2	31
1875	5.8	8.8	22	1915	7.5	6.8	37
1876	5.3	6.9	68	1916	7.4	5.4	43
1877	6.5	6.8	40	1917	7.4	8.3	31
1878	6.0	5.9	40	1918	7.1	5.6	54
1879	6.4	8.1	33	1919	7.2	6.2	29
1880	5.9	9.3	54	1920	6.5	6.8	41
1881	6.1	7.5	61	1921	7.0	6.3	52
1882	9.6	9.7	23	1922	7.4	6.6	42
1883	9.0	9.8	44	1923	7.3	6.8	35
1884	8.9	10.2	40	1924	7.3	6.5	41
1885	8.9	9.6	47	1925	6.9	6.5	39
1886	9.2	8.1	47	1926	6.9	6.5	54
1887	9.1	8.8	37	1927	7.2	5.8	44
1888	9.0	9.0	37	1928	6.9	6.3	39
1889	11.7	9.5	39	1929	7.3	4.9	42
1890	10.6	10.6	43	1930	6.7	4.6	33
1891	9.7	8.7	38	1931	6.4	6.4	27
1892	10.3	8.0	44	1932	6.9	6.1	40
1893	9.3	8.3	37	1933	7.5	6.0	38
1894	8.0	7.2	43	1934	7.0	2.2	34
1895	7.5	9.4	33	1935	6.1	3.2	13
1896	6.5	6.6	55	1936	6.4	2.6	26
1897	6.0	7.5	58	1937	6.1	4.4	15
1898	5.8	6.6	55	1938	5.9	4.3	45
1899	5.7	6.2	52	1939	6.3	4.9	35
1900	5.2	6.8	61	1940	6.4	5.0	32
1901	8.8	3.8	42	1941	6.7	4.2	34
1902	6.6	9.5	21	1942	6.5	4.7	29
1903	6.3	8.1	87	1943	6.7	4.6	30
1904	6.1	5.6	65	1944	6.5	5.1	26
1905	5.9	6.9	49	1945	6.7	3.5	41
1906	6.6	7.5	58	1946	6.2	5.0	43
				1947	6.3	4.1	27

TABLE 20.--INDEXES OF AVERAGE SEASONAL VARIATION OF ST. LOUIS HOG PRICES BY WEIGHT GROUPS DURING YEARS OF DECLINING PRICES, RISING PRICES, AND THE LONG-TIME AVERAGE<sup>1</sup>

Month	160-180 lb. Group			200-220 lb. Group			400-450 lb. Sows		
	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>
January	109	81	95	108	83	94	111	81	92
February	109	88	98	109	91	98	114	87	98
March	111	88	100	111	93	100	116	90	102
April	103	91	98	103	93	98	108	93	100
May	96	91	96	96	93	96	99	94	99
June	98	98	99	98	97	99	96	98	100
July	108	106	108	107	106	108	96	103	103
August	104	119	111	104	115	111	95	113	105
September	103	123	110	106	116	112	105	118	110
October	94	108	101	95	106	101	97	109	103
November	85	101	93	85	101	93	87	106	97
December	80	105	91	80	105	91	78	108	91

1. The index for each month for each year was calculated on the basis of the yearly price average = 100.  
Monthly indexes were then averaged for the average seasonal pattern.

2. Includes years 1927-42 inclusive.

TABLE 21.--INDEXES OF AVERAGE SEASONAL VARIATION OF KANSAS CITY HOG PRICES BY WEIGHT GROUPS DURING YEARS OF DECLINING PRICES, RISING PRICES, AND THE LONG-TIME AVERAGE<sup>1</sup>

Month	160-180 lb. Group			200-220 lb. Group			400-450 lb. Sows		
	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>	Declining Prices	Rising Prices	Long-Time Average <sup>2</sup>
January	109	81	95	108	83	94	110	82	92
February	110	88	98	110	89	97	110	87	96
March	111	91	101	111	93	99	113	90	100
April	104	92	99	103	93	98	105	92	99
May	96	92	97	96	93	96	97	94	97
June	98	97	99	98	97	100	96	97	99
July	108	104	108	107	105	108	97	103	101
August	104	119	111	104	115	110	95	117	103
September	103	123	110	106	117	112	102	118	108
October	93	106	100	95	106	101	95	107	101
November	84	104	93	85	101	93	85	107	96
December	79	105	91	79	105	91	76	110	93

1. The index for each month for each year was calculated on the basis of the yearly price average = 100.  
Monthly indexes were then averaged for the average seasonal pattern.

2. Includes years 1927-42 inclusive.

TABLE 22.--AVERAGE MONTHLY PRICE DIFFERENCE BETWEEN KANSAS CITY AND ST. LOUIS, 1937-41, AND TIMES PATTERN OF MONTHLY CHANGE WAS FOLLOWED

	Amount Kansas City Below St. Louis					Times Average Pattern of Changes Was Followed*				
	Weight Group					Weight Group				
	160-180	180-200	200-220	240-270	400-450	160-180	180-200	200-220	240-270	400-450
	Cents per cwt.					Number of years out of 15				
January	32	36	31	15	12	8	7	7	8	10
February	31	40	37	21	27	9	12	12	12	13
March	17	24	21	12	25	12	11	11	12	8
April	18	20	17	13	17	8	8	8	8	8
May	16	21	18	12	8	8	5	5	7	7
June	21	24	22	16	17	9	8	8	6	8
July	34	30	28	18	15	11	10	10	11	8
August	28	25	24	19	16	9	5	5	9	9
September	32	23	21	21	20	8	8	8	6	9
October	43	28	22	18	19	6	5	5	7	6
November	37	26	23	18	9	11	8	6	0	10
December	39	34	29	17	3	9	9	9	9	9

\* Number of years pattern of change from previous month was followed; for example, listing for February was times pattern was followed from January to February etc.

TABLE 24.--AVERAGE MONTHLY WEIGHTS OF ALL HOGS, BARROWS AND GILTS,  
AND SOWS AT FOUR SPECIFIC MARKETS, 1937-41

Market and Classes	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Pounds											
St. Louis:												
All Hogs	230	229	225	222	220	221	223	220	218	221	227	230
Barrows, gilts	219	217	215	213	212	213	214	212	210	213	217	219
Sows	402	391	381	379	385	378	371	352	349	365	387	404
Kansas City:												
All hogs	235	233	232	229	230	231	234	232	228	224	230	236
Barrows, gilts	225	223	224	222	223	222	226	223	217	213	219	225
Sows	408	404	401	401	401	392	381	359	358	369	393	409
St. Joseph:												
All hogs	232	232	234	232	230	228	233	235	234	231	230	231
Barrows, gilts	223	223	225	224	222	218	218	216	212	211	215	220
Sows	411	407	401	390	390	378	359	345	346	362	389	411
Chicago:												
All hogs	244	250	255	253	253	262	275	282	265	244	239	243
Barrows, gilts	235	241	246	243	241	236	235	234	224	220	224	231
Sows	445	447	440	431	414	378	358	356	363	374	401	430

TABLE 23.--AVERAGE MONTHLY HOG PRICE DIFFERENCES BETWEEN  
THREE SPECIFIC MARKETS AND CHICAGO, 1937-41<sup>1</sup>

Weight Group	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Cents per cwt.											
St. Louis measured from Chicago:												
160-180 lb.	3	0	+ 1	0	0	+ 3	0	4	+12	+17	+11	+ 6
180-200 lb.	+ 6	+ 4	2	5	4	+ 3	+ 1	6	3	+ 2	+ 4	+ 6
200-220 lb.	+ 6	+ 1	7	8	8	0	3	11	10	5	0	+ 5
240-270 lb.	0	7	13	8	13	1	3	5	13	10	5	0
400-450 lb.	9	7	7	9	20	3	+ 7	+ 3	+ 5	7	17	7
Kansas City measured from Chicago:												
160-180 lb.	34	35	25	29	25	21	32	31	28	25	25	33
180-200 lb.	29	35	26	25	25	21	29	31	26	25	22	28
200-220 lb.	25	36	28	25	26	21	31	36	31	27	23	24
240-270 lb.	15	28	24	21	25	17	21	24	34	28	24	17
400-450 lb.	21	34	33	27	28	20	8	12	15	26	26	10
St. Joseph measured from Chicago:												
160-180 lb.	31	32	21	22	22	18	33	29	19	23	24	31
180-200 lb.	29	36	26	24	24	21	31	38	26	26	24	29
200-220 lb.	25	36	29	26	27	22	32	39	33	29	25	26
240-270 lb.	14	30	26	24	28	19	23	33	35	31	25	18
400-450 lb.	18	28	28	25	28	20	10	17	17	28	25	9

1. All figures represent cents per cwt. below Chicago prices unless noted by a plus sign in which case price was above Chicago.