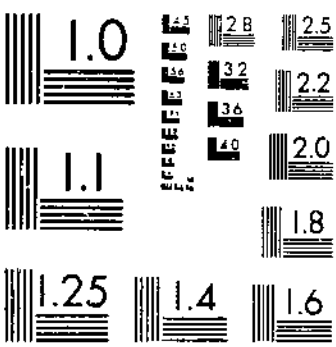
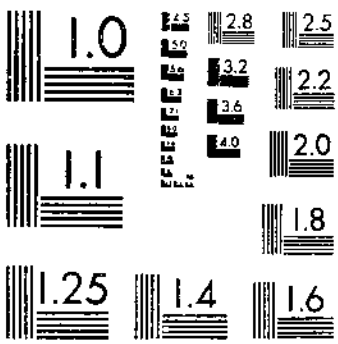
START



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TECHNICAL BULLETIN No. 33 DECEMBER, 1927

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

COSTS AND METHODS OF FATTENING BEEF CATTLE IN THE CORN BELT, 1919-1923

By R. H. WILCOX, *Agricultural Economist*, R. D. JENNINGS, *Associate Agricultural Economist*, and G. W. COLLIER, *Assistant Agricultural Economist, Bureau of Agricultural Economics*, and W. H. BLACK, *Animal Husbandman*, and E. W. MCCOMAS, *Assistant Animal Husbandman, Bureau of Animal Industry*

The United States Department of Agriculture, in cooperation with the Agricultural Experiment Stations of the States of Illinois, Indiana, Iowa, Missouri, and Nebraska

CONTENTS

This bulletin contains information concerning the costs of fattening beef cattle in five representative feeding districts of the Corn Belt and shows the influence of different methods and practices upon costs and returns. The study was begun in the fall of 1918 and was continued during five consecutive feeding seasons. The districts chosen for study were located in eastern Nebraska, southwestern Iowa, west-central Missouri, northern Illinois, and various counties of central and northern Indiana. Each season approximately 100 records of feeding operations were obtained from farmers in each of these districts. An effort was made to obtain all the details of management from the time the feeder cattle were bought until the fat cattle were marketed. The effect of the kind and quantity of feed available upon methods of handling and rations used was

50944°—27——1

given special attention. The location of the districts studied and the territory to which the data on cattle feeding apply are shown in Figure 5.

IMPORTANCE OF THE CATTLE-FATTENING INDUSTRY

Farm roughages and feed grains in the Corn Belt are marketed chiefly through the fattening of cattle. Over 25 per cent of the corn produced in this area is fed to beef cattle. Beef cattle are well adapted to the utilization of coarse roughages and legume hay, which must have a place in a well-balanced crop rotation. These roughages when fed with corn in the ration produce a higher grade of beef than that which is produced on grass alone.

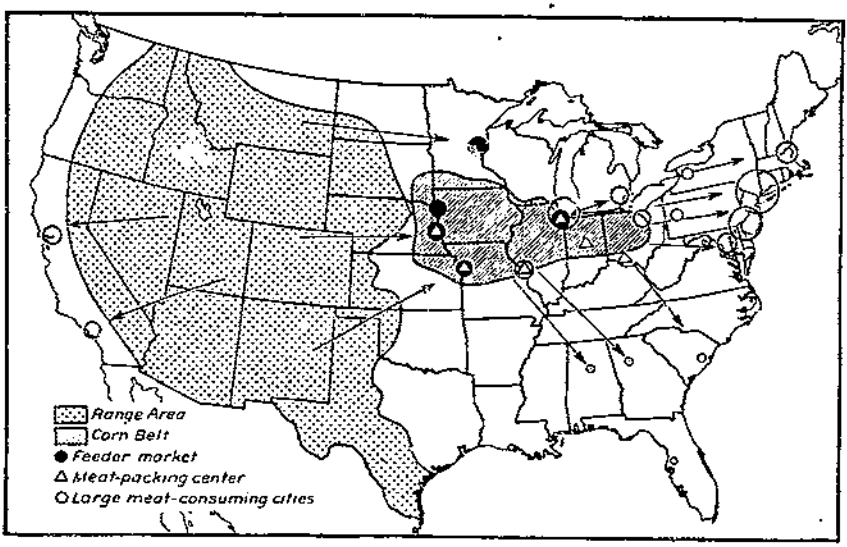


FIG. 1.—MOVEMENT OF BEEF FROM THE RANGE

The steps in beef production are as follows: (1) Growing stockers, feeders, and grass-fat cattle on the range; (2) fattening stockers and feeders in the Corn Belt feed lots; (3) slaughter, packing, and delivery to retail dealers by packers; and (4) retailing to consumer.

Both geographically and economically the Corn Belt is located between the range beef-producing area and the eastern beef-consuming cities. (Fig. 1.)

Probably three-fourths of the beef cattle sold from the range are marketed during the last five months of the year. About one-third of them are usually shipped out to the feed lots of the Corn Belt as stockers and feeders. The marked seasonal variations in the receipts of all cattle, the shipments of stockers and feeders, and the price of feeder cattle are shown in Figure 2. Besides improving the quality and condition of a large number of cattle from the range, the fattening of steers in the Corn Belt tends to equalize the number of cattle slaughtered at different times of the year.

The high value of Corn Belt land for crop purposes has led many farmers to the conclusion that they can not afford to use tillable pasture land to keep a breeding herd of beef cattle to raise calves. Instead they make a practice of buying feeder steers from western ranch-

men and from farmers in the vicinity who have cheaper pasture. Only a few of the cattle included in this study were raised by the same men who fattened them. A large part of the purchased steers came originally from the range States or from Canada.

There is a tendency to market cattle from the range at a younger age and at a lighter weight than formerly. As this tendency becomes more marked, the fattening of beef cattle in the Corn Belt may be expected to become increasingly important because the younger cattle do not fatten so well on the range as do the steers over 2 years of age. If the Corn Belt land is to produce the necessary corn and roughage to finish these steers it will mean using more tillable land for grain and hay production and less for pasturing cows to raise calves. There are possibilities of raising beef calves economically on tillable Corn Belt

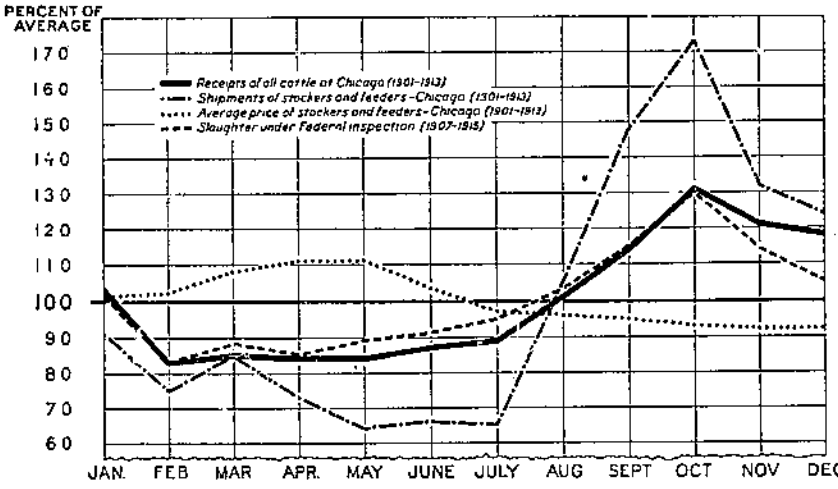


FIG. 2.—CATTLE MOVEMENT AND PRICES

The purchase of stocker and feeder cattle in the fall tends to equalize the number of cattle slaughtered throughout the year.

land by increasing the carrying capacity of pastures by the use of clovers and other legumes, but the fattening of beef cattle that have been purchased from the ranges as feeders will continue to be a very important enterprise in the Corn Belt.

PURPOSES OF THE STUDY

The principal purposes of this study of cattle feeding were: (1) To determine from the operations on a large number of farms the quantities of feed, labor, and other cost factors involved in fattening cattle of various ages and weights; (2) to analyze the feed-lot performance of cattle of various ages and weights with respect to rate of gain, length of time fed, and the ability to utilize different kinds of feed; (3) to determine the spread in buying and selling prices or margins necessary to meet the cost of feeding cattle of different weights for different lengths of time with varying prices of feed and of cattle; (4) to find the cost of production and to study the variations in costs with a view to determining the most profitable feeding methods and practices to follow under different price levels in different sections of the Corn

Belt; and (5) from the results of feeding operations during the time of this study to present information that will aid the cattle feeder in planning and following the most profitable methods in cattle feeding.

DEFINITION OF TERMS AND METHODS OF COMPUTATION

For those who may be interested in making a more detailed study of the figures in the tables of this bulletin it was thought advisable to define the terms used more fully than has been done thus far and to show just how the figures were derived.

Initial weight of cattle is the market weight at time of purchase or the estimated weight at the farm at the beginning of the period covered by the record.

The number or percentage of cattle applies to those sold unless otherwise specified.

The weight classes of feeder cattle have been defined in the text.

The year 1919, sometimes called 1918–19, designates the feeding season beginning during the fall of 1918 and extending through the following summer.

In nearly all instances averages are computed from total figures rather than by averaging averages. For instance, in Table 6 the average initial weight of cattle in Nebraska for the five years was obtained by dividing the total weight of all cattle by the total number of cattle.

Total weight ÷ 17,162 = 856.

The average quantity of grain used in making 100 pounds of gain during the five years in Nebraska (817 pounds) was obtained by dividing the total quantity of grain used by the total gain made by the 17,162 head fed.

Methods of handling cattle, such as strictly dry-lot feeding and fattening on grass, are defined in text.

The final weight per head is the average weight of the cattle that were sold and of those that died, or, in other words, the sum of the weights of the cattle sold and of those that died divided by the total number of cattle bought.

Gain per head is the difference between the initial weight per head and the final weight per head.

The number of days on farm is that length of time between the average date of arrival and the average date out of the lot of all cattle, including also the cattle that died.

The average daily gain per head is obtained by dividing the total gain on cattle sold and on those that died by the total days on the farm.

In some places days on feed have been used to designate the length of time on grain feed.

Grain is practically entirely corn but also includes other cereal crops, especially oats and barley.

Protein concentrates include linseed meal and cottonseed meal.

Prepared feeds are manufactured feeds in which varying proportions of alfalfa, oat hulls, cottonseed meal, molasses, and other feeds are usually combined.

Legume hay includes, besides clover and alfalfa, a very small quantity of cowpea and soy-bean hay.

Other hay means wild hay, timothy, millet, or Sudan-grass hay.

Corn stover is fodder from which the corn has been removed.

The number of pasture days is that length of time during which cattle obtained a significant proportion of their feed from grazing.

Pork credit is the number of pounds or value of gain in live weight of hogs following the cattle. This was credited to the cattle after allowing for gains due to extra feed given to the hogs.

Manure is another feed-lot by-product credited to the cattle-feeding enterprise.

All feed prices used are the farm prices for those feeds, except that silage is charged to cattle at the farm price of corn plus the cost of putting it in the silo.

The initial cost of the cattle and the sale price per 100 pounds of cattle and hogs are on a farm-price basis.

The margin received is the difference between the initial cost and the sale price per 100 pounds.

The necessary margin is that amount at which cattle must sell above the initial cost per 100 pounds to pay all charges for feed, labor, depreciation, and other items. (Net cost per head divided by sale weight per head minus initial cost per 100 pounds.)

The feed cost per 100 pounds gain is computed by dividing the total feed cost for the group by the total number of pounds gained by cattle that were sold and by those that died.

Feed cost per head is obtained by dividing the total feed cost by the number of head sold.

Return per bushel of corn fed is the value of the corn fed at the farm price of corn plus or minus the profit or loss per head divided by the number of bushels of corn fed.

The sale price per 100 pounds is the sale price per head divided by the final weight.

ECONOMIC CONDITIONS AFFECTING CATTLE FEEDING DURING THE PERIOD STUDIED

In the fall of 1918, when this study was begun, prices of all commodities were abnormally high, because of the unusual conditions of the war period. Figures 3 and 4, by the use of price indices, show the relation of feed prices to the prices of beef cattle, hogs, and all commodities. Considering the prices which existed from 1909 to 1913, inclusive, as a base, or 100, the price index of all commodities for the period of high prices, including the two years 1918 and 1919, was about 205 per cent of the pre-war average, that of beef cattle about 210, that of hogs 227, that of corn 270, and that of linseed meal 175. Thus the price of corn during the first two years of the study was considerably higher than the average price of all commodities, while the price of linseed meal remained relatively lower than that of other things. The index numbers of prices of hogs and of beef cattle were slightly higher than the index number of wholesale prices of all commodities during this period.

The wholesale prices of most products started downward in June, 1920. The price index of all commodities [1] fell from a peak of 252 in

[1] This index number is derived from the monthly index number published by the Bureau of Labor Statistics. The figures as published are on a 1913 base, but have been converted to a five-year base, 1909–1913, by dividing by 0.98. See UNITED STATES DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS. INDEX NUMBERS OF WHOLESALE PRICES IN THE UNITED STATES AND FOREIGN COUNTRIES. U. S. Dept. Labor, Bur. Labor Statis. Bul. 284, 350 p., illus. 1921. (Revision of Bul. 173.)

May, 1920, to 148 in May, 1921. Prices of agricultural products did not begin to dip downward until September, 1920. The price index of beef cattle dropped from 212 in September, 1920, to 116 in May, 1921, while the index of hog prices fell from 205 to 108, that of corn from 217 to 100, that of linseed meal from 175 to 106, that of cottonseed meal from 196 to 111 per cent of the pre-war average in the same period of time.

Unemployment in this country in 1921 and a weak foreign market situation caused by unemployment and depreciated currency abroad lessened the demand for beef and pork so that by December, 1921, the indices of the prices of these products dropped to 98 and 90, respectively. Record-breaking crops of corn in 1920 and 1921 caused a surplus which pushed down the corn price to a figure which in December, 1921, was only 78 per cent of its pre-war average. Improved industrial conditions in 1922 strengthened the prices of all agricultural

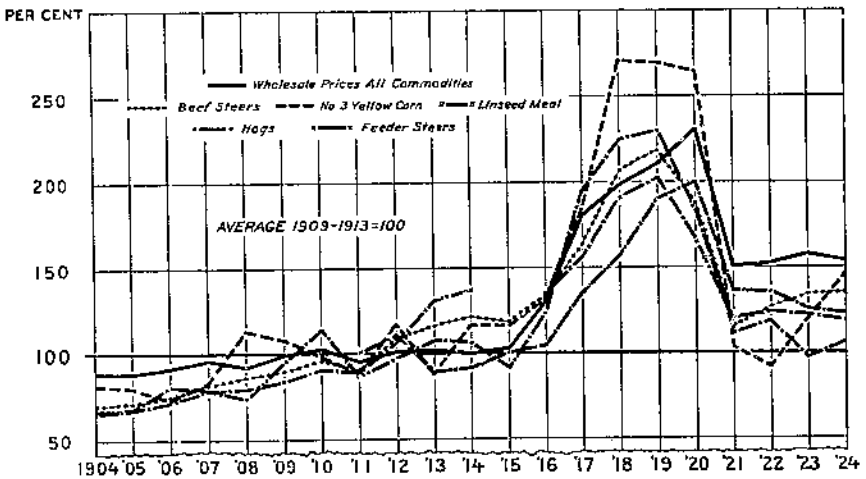


FIG. 3.—INDEX OF AVERAGE YEARLY PRICES, 1904–1924

The price of corn was much higher than the price of other things from 1918 to 1920. After 1921 the prices of cattle, corn, and hogs were all below the general price level.

products. Higher prices for hogs in 1922, together with the surplus of corn from the two preceding years, caused an expansion of the hog enterprise which brought the price of hogs to its lowest point in eight years. During the last half of 1923 and the first half of 1924 the price of hogs was only 92 per cent of the 1909–1913 average. Beef-cattle prices improved steadily in 1922 and 1923, but in competition with cheap pork in 1924 they fell off noticeably.

Drought in the range area in 1918 and 1919, together with the high prices that had prevailed since the beginning of the war, explain the large market receipts of beef cattle in those years. These two years were the only ones in which over 5,000,000 stockers and feeders were shipped annually to Corn Belt feed lots for fattening. The low prices for beef cattle in 1921 kept a large number from being marketed during that year. The cattle that were held on farms and ranges in 1921 on account of low prices helped to increase the receipts in 1922 and 1923 almost to the high point reached in 1918. In 1922 there was

a drought over a large part of the southwest range area which caused a large number of cattle to be marketed at lighter weights than is customary.

The price situation that existed while this study was being made created an opportunity to learn which feeding methods were the best to use at different price levels. The five years of this study divide naturally into three periods: One of high price levels, one of low price levels, and an intermediate year when deflation took place. The period of high prices includes the feeding seasons of 1918–19 and 1919–20; the period of low prices includes the seasons of 1921–22 and 1922–23. In the feeding year 1920–21 cattle were bought on a high price level and were sold in the spring at a figure which was but little above the 1909–1913 average. In this bulletin the analysis and discussion

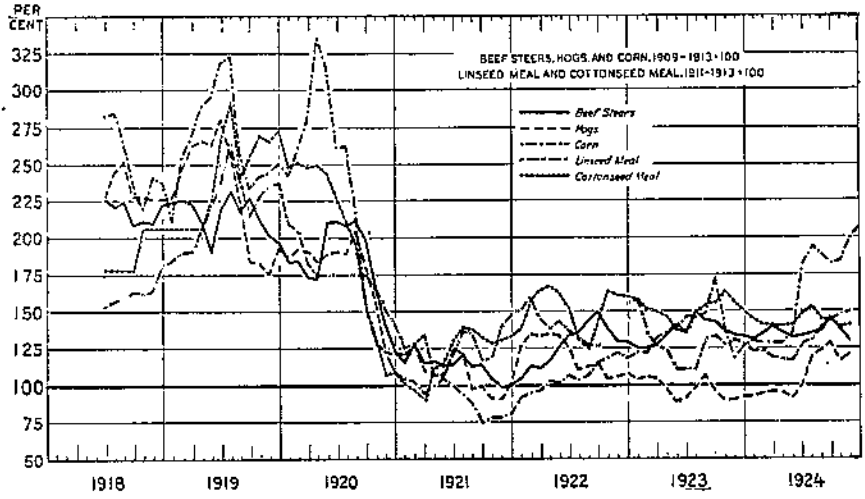


FIG. 4.—INDEX OF AVERAGE MONTHLY PRICES, 1918–1924

Relations between the prices of feed, beef cattle, and hogs that existed during the study.

of feeding operations will be treated separately for each period because there was too great a difference in prices to make it desirable to average the years.

DISTRICTS STUDIED AND KINDS OF CATTLE FED

Most of the cattle that are fattened with grain are fed in the western half of the Corn Belt, as this is a surplus corn-producing area located at a considerable distance from market. (Fig. 5.) The extent of cattle feeding in the several parts of the Corn Belt depends upon the farm price of corn as compared with farm prices of corn in other parts of the Corn Belt and upon the quantity and kind of roughage available. These factors, together with the amount of pasture available, the age and quality of cattle fed, and the time of purchase, largely determine the method of handling feeder cattle in the Corn Belt.

Cattle feeding may be said to fall into two distinct systems of handling: (1) Fattening in dry lot and (2) fattening on grass. For the purpose of study and comparison the cattle under observation

in this study that were fattened in dry lot have been subdivided into three groups: (1) Cattle that were fattened strictly in dry lot; (2) cattle that were pastured during the fall previous to being fattened in the dry lot; and (3) cattle that were summer-pastured and later finished in dry lot. A typical cattle-feeding layout is shown in Plate 1, Figure 1. Most of the cattle fattened on grass were bought during the fall and carried through the winter previous to fattening, but about one-fifth of the cattle fattened on grass were purchased during the spring at, or just previous to, the time the grass was ready for pasturing.

The percentages of cattle of various weights that were bought each year are given in Table 1. Medium-weight feeders, weighing between

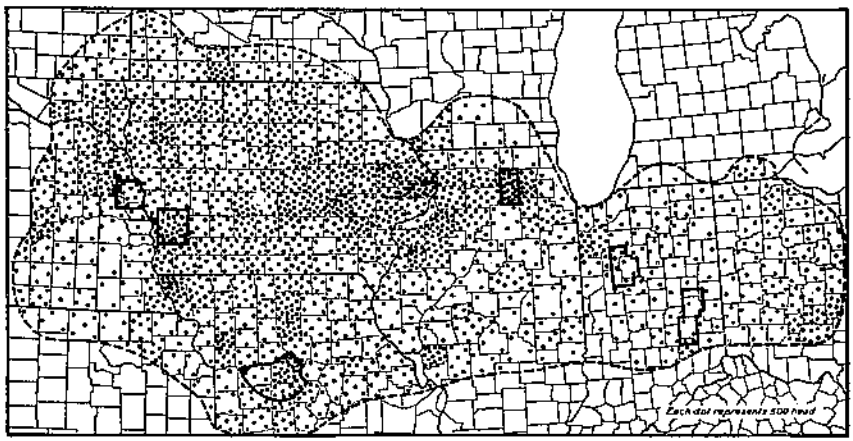


FIG. 5.—NUMBER OF 2-YEAR-OLD STEERS ON FARMS JANUARY 1, 1920

Most beef steers are fattened in the western part of the Corn Belt. The districts where the studies reported in this bulletin were carried on are outlined in each State.

750 and 1,000 pounds when purchased, made up 53 per cent of all the cattle of the study. Feeder cattle weighing between 500 and 750 pounds, called yearlings in this bulletin, were the next largest group.

TABLE 1.—*Initial weight of cattle—Percentage of cattle in various weight classes, by years*

Year	Calves (500 pounds and under)	Yearlings (501 to 750 pounds)	Medium-weight cattle (751 to 1,000 pounds)	Heavy cattle (over 1,000 pounds)
	Per cent	*Per cent*	*Per cent*	*Per cent*
1919	15	29	51	5
1920	7	25	59	9
1921	5	20	56	19
1922	12	25	45	18
1923	8	21	55	16
5-year average	9	24	53	14

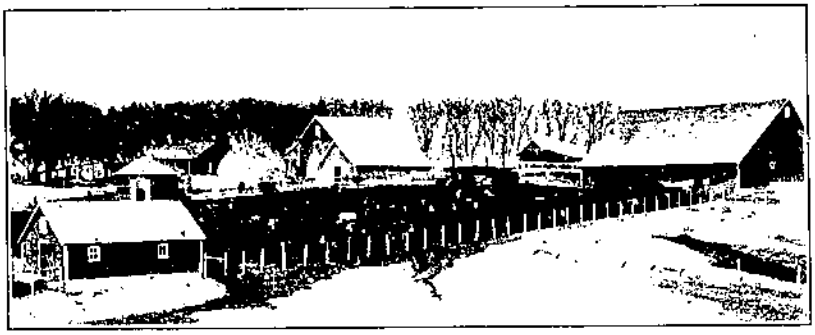


FIG. 1. A TYPICAL CORN-BELT FEED LOT

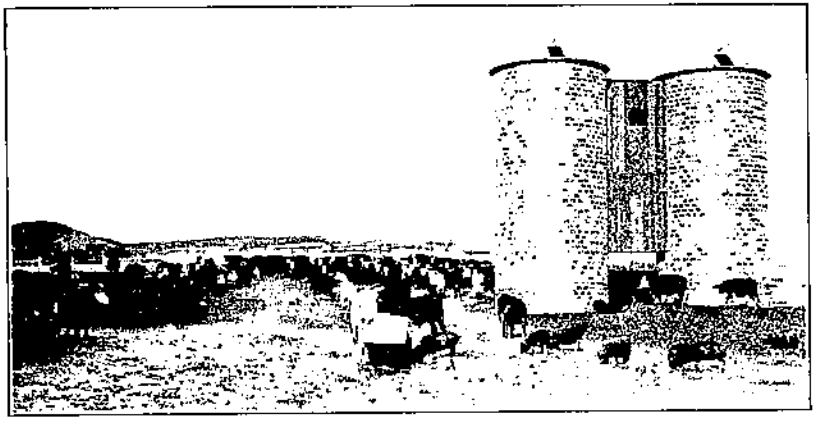


FIG. 2.—A PERMANENT TYPE OF SILO USED FOR CATTLE FEEDING

All cattle that weighed less than 500 pounds when bought are termed calves in this bulletin and all that weighed more than 1,000 pounds at the beginning of the feeding period are called heavy cattle. A slightly larger percentage of calves and yearlings was fed on the farms under study during the first two years, whereas a distinctly larger percentage of heavy cattle was fed during the last three years. The Nebraska farmers bought the largest percentage of heavy cattle, Indiana and Iowa farmers fed the largest percentage of calves, and Illinois and Missouri farmers had the largest percentage of cattle in the medium-weight group, as shown in Table 2.

TABLE 2.—*Initial weight of cattle.—Percentage of cattle in various weight classes, by districts*

District in which the cattle were fed	Calves (500 pounds and under)	Yearlings (501 to 750 pounds)	Medium-weight cattle (751 to 1,000 pounds)	Heavy cattle (over 1,000 pounds)
	Per cent	*Per cent*	*Per cent*	*Per cent*
Nebraska	9	23	48	20
Iowa	11	25	48	16
Illinois	4	26	60	10
Indiana	15	20	48	17
Missouri	8	25	59	8

EASTERN NEBRASKA

The district in which cattle-feeding records were taken in eastern Nebraska is located just west of the Missouri River, midway between Sioux City, Iowa, and Omaha, Nebr. It includes parts of Burt, Dodge, and Cuming Counties. The land is level to rolling and, according to the census figures, 93 per cent of it is improved land. Corn, oats, wheat, and alfalfa are the principal crops, and hogs and cattle are the most important kinds of livestock. With the exception of wheat, practically all the crops produced there are fed to livestock. The farms of the district average about 186 acres in size, of which about 65 acres are in corn. The average yield of corn for the four years 1919 to 1922 was 40 bushels per acre.

Almost all the cattle to be fattened in this district are bought at the Omaha livestock market between August and December, inclusive. (Table 3 and fig. 6.) The average length of time the cattle spent on the farm during the five years studied was 170 days. The fat cattle are usually sold in Omaha, although about 13 per cent of the cattle in this study were shipped to Chicago. (Table 4.) The steers included in this study that were fed in this district were of better quality than those in any other district studied. A greater percentage of feeders that weighed over 1,000 pounds was fed in Nebraska than was common in the other States, the usual practice being to buy these heavy feeders in September and sell them in December or January. The bulk of the fed cattle are marketed during the period from February to May. Corn and alfalfa hay is the standard ration. There are very few silos in the district, and because of the large amount of alfalfa that is available very little linseed meal or cottonseed meal is bought. Fifty-nine per cent of the cattle were fattened in dry lot without any pasture, 34 per cent were pastured during

the fall on grass or cornstalks, and 6 per cent were pastured during the summer previous to being fattened in the dry lot. (Table 5.) This eastern Nebraska district is probably as well adapted to the winter fattening of beef cattle as is any section of the Corn Belt.

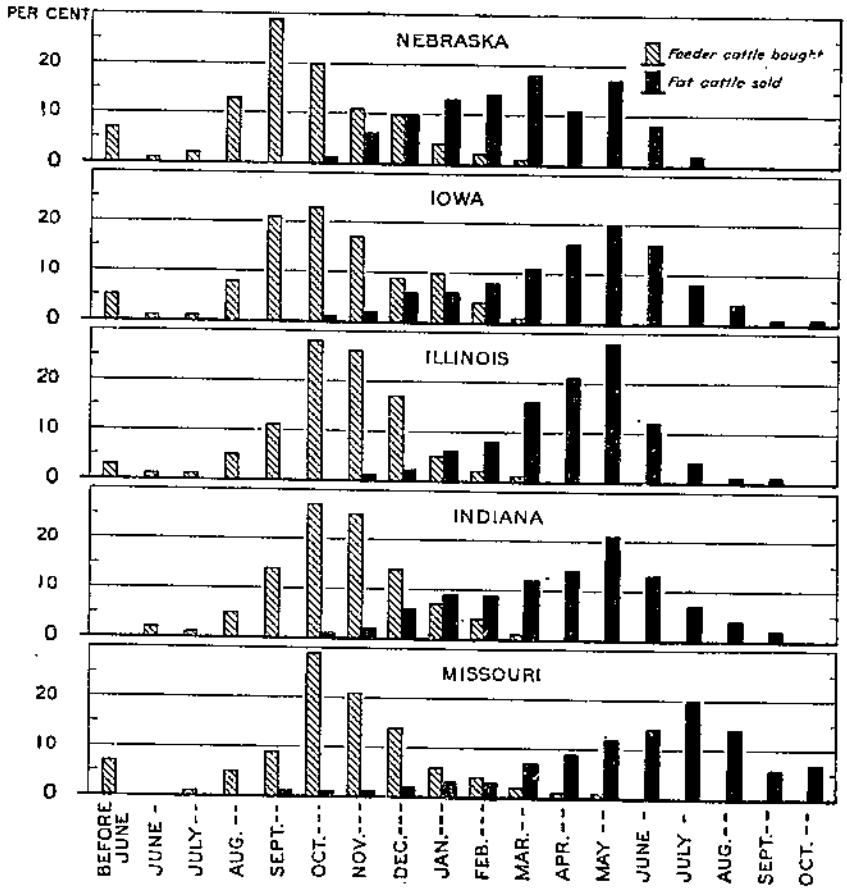


FIG. 6.—TIME OF PURCHASE AND OF SALE OF CATTLE

Most feeder cattle are purchased during the fall, and the fat cattle are sold during the winter and spring.

TABLE 3.—*Percentage of the feeder cattle under study bought at different markets, 1919–1923*

State in which cattle were fed	Market in which cattle were bought									
	Omaha	Kansas City	St. Louis	Sioux City	Chicago	St. Paul	Indianapolis	Cincinnati	Local markets	Other markets
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Nebraska	80	2	----	1	----	----	----	----	15	2
Iowa	78	3	----	----	----	1	----	----	16	1
Illinois	5	6	----	2	17	35	----	----	25	10
Indiana	3	12	----	----	39	4	18	2	17	5
Missouri	----	55	15	----	----	----	----	----	23	7

TABLE 4.—*Percentage of fat cattle sold at different markets, 1919–1923*

State in which cattle were fed	Market at which cattle were sold							
	Omaha	Kansas City	St. Louis	Chicago	Indianapolis	Cincinnati	Local markets	Other markets
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Nebraska	85			13			2	
Iowa	58			36			6	
Illinois				86			12	2
Indiana				23	51	5	20	1
Missouri		28	41	15			16	

TABLE 5.—*Percentage of cattle handled by various methods, 1919–1923*

Method	Nebraska	Iowa	Illinois	Indiana	Missouri	All districts
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Cattle fattened in dry lot:						
Strictly dry-lot fed	59.3	45.7	53.0	45.8	11.4	43.8
Pastured during fall or winter and finished in dry lot	33.7	40.7	41.7	42.5	27.3	37.2
Cattle pastured during summer and finished in dry lot in fall or winter	6.3	6.8	3.1	4.2	2.7	4.7
Total finished in dry lot	99.3	93.2	97.8	92.5	41.4	85.7
Cattle fattened on grass:						
Carried through winter and fed out on pasture the following spring or summer	.1	3.9	.8	5.2	47.9	10.8
Cattle turned directly on grass and fed out	.6	2.9	1.4	2.3	10.7	3.5
Total finished on grass	.7	6.8	2.2	7.5	58.6	14.3

SOUTHWESTERN IOWA

The Iowa district chosen for study consists of parts of Pottawattamie and Shelby Counties and is located south and east of the Nebraska district on the opposite side of the Missouri River. The land is rather rolling, although practically all of it can be cultivated. About 37 per cent of the total farm area is usually devoted to corn, which yields about 43 bushels per acre. Wheat, oats, and hay are the other principal crops. Alfalfa and sweet clover grow very abundantly in the western half of Pottawattamie County. In the eastern half of the county more red clover and mixed hay are raised. The farm organization is similar to that found in the Nebraska district. The farms are usually quarter sections. As a rule all of the crops except wheat are marketed through livestock.

The principal cattle ration consists of corn and a legume hay, usually alfalfa. There are more silos than in the Nebraska district, but silage makes up a relatively unimportant part of the ration. Only 17 per cent of the cattle in the survey were fed silage. Very little protein concentrate is bought for cattle in this district. Some molasses and molasses feeds were fed during the last two years of the study. Ninety-three per cent of all the cattle bought were fattened in the dry lot; about 46 per cent had no grass, and 47 per cent were pastured during the fall or summer previous to being finished in the dry lot. Only the remaining 7 per cent were fattened on grass.

Almost all the feeder cattle in this district come from the western and southwestern range States, for there are comparatively few beef cows in this locality. The Omaha livestock market furnishes a majority of the feeder cattle. (Table 3.) As shown in Table 4,

58 per cent of the fat cattle in this study were shipped back to Omaha and 36 per cent went to Chicago. The month in which the largest number of feeder steers was bought during the five years was October, and the largest percentage was sold in the month of May. The average length of time on the farm was 182 days, varying from 135 days for the heavy cattle to 220 days for the calves. The average weight of cattle fed was slightly less than that of the cattle of any of the other four districts. The quality of cattle fed in this district was above the average quality of cattle fattened in the Corn Belt.

NORTHEASTERN ILLINOIS

The district studied in Illinois is in De Kalb County, in the northeastern part of the State and about 60 miles west of Chicago. The slightly rolling land found in this district is usually divided into farms of 160 acres and is almost entirely tillable. Aside from feeding cattle, dairying is the most important enterprise. Corn is the principal crop, and oats, wheat, barley, and hay rank next in importance. Corn makes a good yield, the average having been 45 bushels per acre during four years of this study. Most farms in the county have one or more silos, and about 15 per cent of the corn was cut for silage. Silos are usually of concrete, brick, or other permanent type of construction. In contrast to the practice over a rather large area south and east of this county little corn was marketed as grain. About 70 per cent of the hay produced in De Kalb County was mixed hay (clover and timothy), 21 per cent was timothy alone, and only 3 per cent of the total hay acreage was in alfalfa. High yields of alfalfa were obtained on some farms, but to get a good stand of alfalfa in this district requires more attention than is needed in some other parts of the Corn Belt, such as western Iowa and eastern Nebraska.

Inasmuch as little permanent pasture was available on the farms under study, 98 per cent of the feeder cattle handled were finished in dry lot. About one-half of this number received no grass; the other half had been pastured on cornstalks, second-growth clover, or other forage during the fall or summer previous to being finished in dry lot. The principal ration used in fattening the cattle consisted of corn, silage, mixed hay, and protein meal. Eighty-five per cent of the cattle received silage and 56 per cent were given a protein concentrate in the ration. (Table 9.) The principal market from which feeder cattle were brought to this area was South St. Paul, which in turn drew its feeders from Minnesota, the Dakotas, Montana, and Canada. The Chicago market, because of its proximity, furnished some of the feeder cattle and received practically all the shipments of fat cattle. October and November are the principal months in which feeders are bought, and the largest percentage of them are sold the next May. (Fig. 6.) Sixty per cent of the purchased feeder cattle weighed between 750 and 1,000 pounds each. They were usually in thinner condition and of poorer quality than the feeder cattle bought in any of the other districts studied, with the possible exception of the Missouri district.

CENTRAL INDIANA

The cattle-feeding districts in which records were taken in Indiana are shown in Figure 5. The farms in these districts average somewhat smaller in size than those in the other districts described thus far. As in the other States, corn is the most important crop. The average

yield of corn is usually between 40 and 45 bushels per acre. Wheat is an important cash crop, and oats have an important place in the rotation. Hay is a more uncertain crop than it is in any of the other districts studied. Only a little alfalfa is grown, and clover is not so sure a crop as in some other parts of the Corn Belt. Most of the hay is mixed clover and timothy, 25 per cent is timothy alone, and 18 per cent is clover alone. Silos are almost as common in these sections as in northern Illinois, and in some parts a considerable quantity of corn is fed in the form of fodder to provide sufficient roughage for the cattle.

Eighty-one per cent of the Indiana cattle in this study received some silage, and 50 per cent were fed nonlegume hay, straw, or stover as the principal dry roughage. Forty-three per cent of the droves had a ration supplemented by a protein concentrate. Most of the feeder cattle were bought in October and November, and the fat cattle were sold largely in April and May of the following year. Chicago, Indianapolis, and Kansas City are the most important livestock markets in which feeders were bought for this district. Fat cattle are usually shipped from this district to Indianapolis, although about one-fourth of the cattle in this study were sold in Chicago. Ninety-two per cent of the cattle were fattened in dry lot; about half of them had pasture during the fall and summer previous. The other 8 per cent were fattened with corn while on grass during the summer. Cattle feeding is a major enterprise on many farms in Indiana, but fewer steers are bought for feeding purposes in this State than in the western half of the Corn Belt.

WEST-CENTRAL MISSOURI

The Missouri district chosen for study extends from 60 to 90 miles east of Kansas City, just south of the Missouri River. It consists principally of parts of Saline, Lafayette, and Pettis Counties. Eighty-seven per cent of the land in farms in these three counties is improved land, according to the census figures of 1920. The average size of farm was 138 acres, and the average value of land and buildings in 1920 was $149 per acre. About one-third of the improved land is usually planted to corn, and an equal acreage is in pasture. Wheat is another important crop, occupying 27 per cent of the improved land in farms. Oats and hay are less important. The tendency since the World War has been to decrease the acreage of wheat, partly because wheat has been none too profitable to the district and partly because it has been difficult to control losses from chinch bugs in corn that is grown where wheat had been grown extensively before. The average yield of corn for these three counties is about 34 bushels per acre. As it has corn and grass in such abundance, it is evident that this district is well adapted to the production of beef cattle. During some seasons considerable additional corn is shipped in for feeding purposes.

The fact that about one-third of the farm acreage is in grass pasture is an important element in determining the method of handling feeder cattle in this district. Most of the feeder cattle under study were bought during October and November, carried through the winter on corn fodder, silage, and hay, and then fattened on corn and grass the following summer. Only 11 per cent of the cattle were fattened in dry lot without any pasture, whereas almost 60 per cent were fat-

tened while on grass. The remainder were pastured before they were finished in dry lot. More silage was fed to steers in this district than in either the Nebraska or Iowa districts but not so much as was fed in Illinois and Indiana. In the last two years of this study many silos were left unfilled. Forty-three per cent of the cattle finished in dry lot received silage. (Table 9.) About 28 per cent were given a protein concentrate as a supplement to corn. Considerable molasses and molasses feeds were also used in the ration. About one-half of the hay fed to cattle was clover or alfalfa.

Of the cattle that were fattened on grass, 83 per cent were carried through the winter and 17 per cent were purchased in the spring at about the time grass was ready for pasturing. Sixty-five per cent of the cattle which were carried through the winter received corn all the time while on pasture, 18 per cent received little or no corn while on pasture, and 17 per cent were fed corn during the last few weeks before they were sold. The largest number of fat steers were sold in July. Of those marketed later than that date many were fed until September or October. The average length of time spent on the farm in this district was 224 days, or almost two months longer than the length of time spent on the farm in any other district studied. The Kansas City market is the source of a large proportion of the feeder cattle shipped into western Missouri, although a considerable number are driven in from southern Missouri and northern Arkansas. Those driven in are often 3 or 4 years old and usually of a less desirable type than those bought at Kansas City. Of the fat cattle sold, 41 per cent were shipped to St. Louis, 28 per cent to Kansas City, and 15 per cent to Chicago. The other 16 per cent were sold locally to buyers, who probably shipped to these markets in similar proportions. (Tables 3 and 4.)

BASIC REQUIREMENTS AND COSTS OF FATTENING BEEF CATTLE

The kinds of feed available in a district determine to a large extent the kind of rations which are commonly used in feeding cattle in that district. The prices of these feeds largely determine the proportions in which they are fed at any stated time. The way in which these two factors influenced the rations fed in the different districts during the five years of this study is shown in Table 6 by the quantities of feed required to make 100 pounds of gain.

In the Nebraska and Iowa districts, where alfalfa is plentiful, more of this hay was used in making 100 pounds of gain than in the other districts. Largely on account of this fact, fewer pounds of protein concentrates and less silage, corn stover, and straw were fed in the Iowa and Nebraska districts than in the other districts. Cattle feeders in the Illinois and Indiana districts, where less legume hay was available than in Nebraska and Iowa, fed more mixed hay, timothy, corn stover, and straw and decidedly more protein concentrates in fattening their cattle. About one-fourth of the corn given to cattle in the Illinois and Indiana districts was fed in the form of silage. In the Nebraska and Iowa districts practically all of the corn was fed as grain.

The relative adaptability of each district to the growing of legume hay is an important reason for these differences in feeding. Another reason is the greater danger of frost damage to corn in northern Illinois than in the other districts studied. Ordinarily, corn is some-

what higher in price in Illinois and Indiana than in the western part of the Corn Belt, because these States are nearer to the Chicago grain market and eastern cities. This price would explain the feeding of larger quantities of silage there than is common in districts where corn is somewhat lower in price. The cattle fed in Indiana did not receive quite as large a proportion of silage as those of the Illinois district, but the quantity of nonlegume hay, straw, and corn stover used in making 100 pounds of gain was larger there than in any other district studied. The average feed requirements for 100 pounds of gain on the Missouri cattle, as shown in Table 6, suggest the cattle-feeding methods practiced and rations used in that district. The use of grass pasture is much more important there than in any of the other four States. Considerable quantities of protein concentrates and prepared feeds are usually fed to cattle in this district, and in wintering cattle to be fattened on grass, a common practice in this region, considerable quantities of corn stover and silage are used.

TABLE 6.—*Quantities of feed and labor used, and manure and pork obtained*

State	Feeding season	Number of cattle	Initial weight of feeders	Gain per head	Feed consumed per 100 pounds of gain			
					Grain	Protein concentrates	Prepared feeds and molasses	Legume hay
			Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Nebraska	1919	2,163	712	295	755	12	5	498
	1920	3,608	800	269	766	4	1	454
	1921	2,814	871	310	905	3	----	393
	1922	4,276	826	331	825	----	----	340
	1923	4,211	876	316	818	1	4	338
Total or average		17,162	826	306	817	3	2	378
Iowa	1919	3,711	739	271	752	35	48	151
	1920	4,175	785	323	812	4	16	205
	1921	5,519	842	350	860	5	9	216
	1922	4,851	701	340	871	1	3	212
	1923	4,888	788	346	919	1	13	210
Total or average		23,144	793	320	845	7	15	203
Illinois	1919	2,713	780	294	524	77	3	110
	1920	4,517	819	245	537	58	15	153
	1921	3,631	849	252	565	50	4	81
	1922	4,339	779	243	646	14	2	103
	1923	4,780	831	205	648	22	8	140
Total or average		20,001	813	259	590	41	7	120
Indiana	1919	1,582	673	338	400	70	59	43
	1920	2,937	703	282	532	43	16	59
	1921	3,321	801	277	661	41	1	62
	1922	4,954	842	245	857	15	1	24
	1923	3,900	793	264	767	12	16	61
Total or average		16,694	798	271	683	33	15	49
Missouri	1919	3,513	732	284	278	105	66	65
	1920	4,936	809	252	548	46	16	157
	1921	5,139	843	341	677	42	5	152
	1922	4,956	766	330	730	5	18	89
	1923	5,766	803	324	614	5	30	142
Total or average		24,310	795	307	562	33	24	125

TABLE 6.—*Quantities of feed and labor used, and manure and pork obtained*—Con.

State	Feeding season	Feed consumed per 100 pounds of gain—Con.			Pasture period	Labor		Feed-lot by-products	
		Other hay	Stover and straw	Silage		Man	Horse	Pork[1]	Manure
		Pounds	*Pounds*	*Pounds*	*Days*	*Hours*	*Hours*	*Pounds*	*Loads*
Nebraska	[2] 1919	98	5	142	13	4.9	3.9	21.0	0.8
	1920	43	0	33	7	3.0	2.1	28.5	1.2
	1921	72	17	37	10	2.9	2.1	21.5	.6
	1922	44	9	------	10	2.3	1.1	23.2	.6
	1923	22	9	6	8	2.2	1.1	22.7	.5
Total or average	------	52	10	42	11	2.8	1.8	23.5	.7
Iowa	1919	28	124	433	11	3.1	2.7	26.8	.7
	1920	74	39	334	15	2.5	2.1	36.6	.9
	1921	21	42	77	17	2.3	1.5	25.3	.5
	1922	39	36	77	12	2.2	1.1	24.4	.5
	1923	44	56	51	13	2.1	1.5	22.0	.5
Total or average	------	40	54	163	14	2.4	1.7	26.8	.6
Illinois	1919	169	87	1,736	10	6.9	4.0	16.0	2.1
	1920	126	151	2,097	9	5.6	3.1	18.8	2.3
	1921	122	161	1,685	11	4.7	2.8	12.3	1.9
	1922	108	118	1,460	9	4.6	2.4	16.3	1.6
	1923	132	118	1,184	15	3.5	2.3	16.1	1.6
Total or average	------	130	128	1,612	11	4.9	2.8	16.1	1.9
Indiana	1919	84	85	1,392	9	4.3	1.1	16.0	1.1
	1920	45	225	1,428	12	4.8	1.5	23.9	1.5
	1921	30	258	1,193	12	4.6	1.8	22.8	1.3
	1922	28	365	1,064	14	4.0	3.1	37.7	1.6
	1923	21	346	815	13	3.5	2.1	37.4	1.4
Total or average	------	37	280	1,139	12	4.2	2.1	23.8	1.3
Missouri	1919	42	196	804	43	3.7	5.1	10.1	.1
	1920	26	174	764	38	3.6	3.7	22.2	.4
	1921	17	115	509	38	3.1	3.2	25.6	.2
	1922	35	105	162	41	2.8	3.6	22.6	.3
	1923	87	247	185	46	2.4	3.1	18.3	.4
Total or average	------	43	166	420	43	3.0	3.6	20.6	.3

[1] Used for convenience instead of gain in live weight of hogs following the cattle.
[2] The feeding season 1919 signifies the winter of 1918–19.

The quantity of pork[2] produced with each 100 pounds of gain on steers was smallest in the case of the cattle fed in the Illinois district, where silage made up a large part of the ration. The quantity of pork varied almost directly with the amount of corn fed as grain, except in the districts of Indiana, where a large proportion of bundle corn, especially in the last two feeding seasons of the study, increased considerably the quantity of pork produced with each 100 pounds of beef. The quantity of manure produced as a by-product in cattle feeding was greatest in the Illinois and Indiana districts, where the most silage was fed. The man and horse labor requirements for each unit of gain were also greatest where silage was fed most extensively. The average daily gain per steer was highest in Nebraska and Iowa and lowest in Missouri. (Table 19.)

The farm prices of the feeds used by the cattle under study in each State during the five years and the farm prices of the cattle and hogs are shown in Table 7. The farm price of corn tended to be lower in

[2] This expression is used for convenience. More exactly it stands for the gain in live weight of the hog following the cattle attributable to the feed undigested or missed by the cattle.

the Nebraska and Iowa districts than in those in Illinois and Indiana, and Missouri had the highest priced corn of all the districts during each of the five years of the study. This higher price of corn in the Missouri district is partly due to the seasonal advance in the price of corn during the summer, when a large part of the corn is fed to cattle, and partly to the fact that this is not a surplus corn-producing district. The variations in the price of protein concentrates from one district to another are due principally to the differences in analysis or grade. The price of all farm-grown feeds, except silage, is based on the local market price minus the cost of hauling, whereas the cost of hauling to the farm was added to the amount paid for commercial feeds. In some districts the local price was often as high as the market price because of local competition among cattle feeders for corn and hay. This was true more often in Iowa, Nebraska, and Missouri than elsewhere, and explains the price variation from district to district, especially the variation in the price of hay. The price assigned to silage in the winter of 1918–19 was the farmers' estimate of its value in the silo. For the last four years the cost of filling the silo on each farm was added to the value of corn in the field and then divided by the number of tons in the silo, to obtain the rate at which silage should be charged to cattle.

TABLE 7.—*Prices of feed, cattle, and hogs in districts studied*

State	Feeding season	Feed								
		Corn	Protein concentrates	Prepared feed and molasses	Legume hay	Other hay	Straw	Stover	Silage	Pasture
		Per bushel	*Per ton*	*Per ton*	*Per ton*	*Per ton*	*Per ton*	*Per ton*	*Per ton*	*Per day*
Nebraska	1919	$1.34	$60.74	$46.53	$25.03	$18.81	$5.22	$11.49	$8.23	$0.05
	1920	1.37	79.70	52.15	16.55	12.39	4.16	5.17	7.23	.06
	1921	.46	56.03	----------	10.53	8.93	2.13	3.64	5.32	.05
	1922	.33	45.00	----------	5.74	5.07	1.07	1.49	----------	.04
	1923	.50	58.35	20.01	12.32	10.07	2.10	2.26	4.50	.04
Iowa	1919	1.46	63.25	46.27	26.50	22.98	5.66	8.04	9.90	.06
	1920	1.25	87.10	45.87	22.75	19.64	3.50	5.60	10.44	.06
	1921	.48	49.50	40.75	12.05	12.02	2.14	3.04	6.44	.05
	1922	.39	51.60	25.00	9.17	8.02	2.25	2.53	3.58	.03
	1923	.56	51.21	24.10	13.86	9.29	2.93	2.27	5.19	.04
Illinois	1919	1.46	64.54	52.64	20.83	20.02	3.93	9.02	8.84	.05
	1920	1.41	80.20	54.07	22.18	22.76	3.99	4.13	11.06	.05
	1921	.53	49.44	22.97	14.81	13.78	2.38	1.76	5.99	.06
	1922	.45	50.70	35.67	12.14	11.52	1.97	2.11	4.12	.04
	1923	.64	55.04	31.49	9.18	10.94	2.18	1.76	5.83	.04
Indiana	1919	1.46	65.55	48.98	19.68	14.47	4.86	4.57	8.60	.07
	1920	1.42	79.12	56.04	21.45	23.15	4.70	4.67	10.26	.06
	1921	.53	47.17	40.00	12.87	13.05	3.11	2.50	6.13	.06
	1922	.42	47.68	32.67	10.41	10.24	3.02	4.02	4.01	.04
	1923	.66	53.16	47.01	9.58	10.20	2.82	2.74	5.39	.04
Missouri	1919	1.47	60.69	51.80	24.70	23.80	3.57	6.59	9.90	.06
	1920	1.43	78.15	50.34	23.13	21.32	3.58	6.52	11.06	.08
	1921	.59	36.66	39.28	13.77	13.95	2.76	2.98	6.70	.06
	1922	.49	44.58	29.82	11.02	9.46	2.17	2.51	5.01	.05
	1923	.78	48.21	35.37	11.96	9.98	1.33	1.94	6.42	.05

TABLE 7.—*Price of feed, cattle, and hogs in districts studied*—Continued

State	Feeding season	Cattle			Hogs sale price	Manure estimated value
		Initial cost	Sale price	Margin		
		Per 100 pounds[1]	*Per 100 pounds*	*Per 100 pounds*	*Per 100 pounds*	*Per load*[2]
Nebraska	1919	$9.82	$14.43	$4.61	$18.21	$1.52
	1920	10.09	12.49	2.40	13.55	1.42
	1921	9.04	8.88	−.16	8.44	.89
	1922	6.06	7.78	1.72	8.56	.67
	1923	6.97	9.11	2.14	7.34	.96
Iowa	1919	10.09	14.14	4.05	18.35	1.55
	1920	9.83	12.94	3.11	13.12	1.76
	1921	8.88	8.53	−.35	7.91	1.10
	1922	5.98	8.06	2.08	9.03	.93
	1923	6.02	9.27	2.05	7.24	.96
Illinois	1919	10.36	14.52	4.16	18.46	1.48
	1920	9.45	12.26	2.81	14.50	2.15
	1921	7.90	8.04	.14	8.46	1.00
	1922	5.40	7.58	2.18	8.96	.87
	1923	6.37	8.65	2.28	7.50	.90
Indiana	1919	11.15	14.47	3.32	19.00	1.59
	1920	10.18	12.63	2.45	15.58	2.34
	1921	8.50	8.27	−.23	8.54	1.32
	1922	6.00	7.58	1.58	9.78	1.49
	1923	6.63	8.84	2.21	7.99	1.40
Missouri	1919	9.80	13.40	3.60	17.84	1.09
	1920	9.48	11.85	2.37	14.53	1.89
	1921	8.04	7.68	−.36	8.10	1.00
	1922	5.94	8.36	2.42	9.31	1.36
	1923	6.16	8.72	2.56	7.46	1.24

[1] Details of initial cost of cattle by weight classes, districts, and years are shown in Tables 27, 28, and 29.
[2] A load was approximately 1 ton.

The purchase price of feeder cattle is the cost delivered at the farm, and the sale price of the fat steers is the net sale price at the farm obtained by subtracting any marketing expenses from the gross returns. The cattle which were fed in the Illinois and Missouri districts had the lowest initial cost per 100 pounds delivered at the farm. This suggests that they were cattle of lower quality than those fed in the other districts. The Indiana cattle generally cost about as much or a little more than those fed in Nebraska and Iowa, but a larger proportion of the original cost per 100 pounds is made up of shipping expense, because Indiana is farther from the supply of feeder cattle.

The average weight of feeder cattle bought was greatest in the fall of 1920 in most districts. In the Indiana district heavier steers were purchased during the following year. The cattle that averaged the lightest in weight of any bought during the five years were fed in 1918–19. The lighter average weight of cattle fed during the first two years of the study was doubtless due in part to drought conditions. The demand during the World War for lighter cuts of beef may have had some effect on the weight of steers purchased for feeding purposes in 1918. In the fall of 1920 large numbers of the young cattle were held on the range in the hope of better prices the next year. This probably accounts for the greater weight of feeder cattle in the Corn Belt feed lots in 1920–21.

The wide variation in the prices of feed during the five years was responsible for most of the differences in the proportionate quantities

of different feeds required to make 100 pounds of gain from year to year. For instance, the quantity of corn which was used in making 100 pounds of beef during the first two years was much less in all districts than the quantity used during the next two years. Protein concentrates, which were relatively cheaper than corn in 1918 and 1919, were fed more liberally in those years than when the relation of the price of corn to the price of protein concentrates was reversed in the later years of the study. Larger quantities of molasses and prepared feeds were substituted for corn in the first two and in the last feeding seasons than in 1920–21 and 1921–22. A slightly larger proportion of dry roughage and considerably more silage was fed when corn was high in price than during the period of cheap corn.

In the Illinois and Indiana districts about one-third less silage was used for each 100 pounds of beef produced when corn was worth about 50 cents per bushel than when it was valued at $1.50 per bushel. This situation is perhaps best explained by the fact that the expenses of filling the silo, other than the value of the corn itself, make up a larger percentage of the total cost of silage when corn is cheap than when it is high in price. In the fall of 1921 when corn was valued at 33 cents per bushel in the field, the silo-filling expenses, including labor, equipment charges, etc., made up 49 per cent of the total cost of silage. No doubt this factor had a great deal of influence on the quantity of silage fed during the last three years. A slightly smaller proportion of cattle feeders used silage in the ration during this period, and its use was limited more nearly to roughage requirements than during the feeding seasons of 1918–19 and 1919–20.

The cost of 100 pounds gain depends largely on the prices at which feed, labor, and other items of cost are charged. The cost of gain was lowest in all States during the season of 1921–22, when corn was very cheap. Naturally the highest cost of gain occurred during the first two years of the study. In 1920–21 the feed cost was greatly reduced from that of the previous year but the costs other than feed remained practically the same. During the last two years of the study the costs other than feed were also much lower than they had been during the two years of high prices. In a comparison of the various districts, Figure 7 shows that the cattle fed in the Illinois district had the highest cost of gain during each of the five years. Cattle in the Nebraska and Iowa districts usually ranked lowest in this respect. The charges for feed, labor, and use of equipment were all somewhat higher in the Illinois district than in the other districts.

IMPORTANCE OF VARIOUS ITEMS OF COST

In the fattening of beef cattle, feed is the most important item in the cost of gain. Approximately 84 per cent of the total cost of 100 pounds of gain is made up of feed, 6 per cent is made up of interest on investment in cattle and equipment, 5.5 per cent is labor, and the remaining 4.5 per cent is made up of other costs, such as depreciation of equipment, taxes, veterinary charges, and incidental expenses. These cost relationships change most when the price of feed changes. Thus, feed made up 84 per cent of the total cost of gain during the feeding season ending in the spring of 1919, 86 per cent in 1920, 76 per cent in 1921, and 78 per cent in 1922. Costs other than feed

remained about the same or decreased only slightly in 1921 and 1922, but their relative importance increased because the price of corn dropped so noticeably. In 1922–23 the price of corn had increased somewhat over the prices of the two preceding years, and with labor and interest charged at somewhat lower rates feed again made up 84 per cent of the total cost of gain. On the average, 16 per cent of the total cost will cover the charges for labor, equipment, interest, veterinary services, and other costs aside from feed. It should be borne in mind that this is 16 per cent of the total cost and not of the feed cost. The total cost of gain can be roughly calculated by adding 19 per cent of the feed cost to the feed cost.

There seems to be no significant variation in the relation of feed cost to total cost of gain in calves as compared with older cattle. While the cost of gain increases directly with the increase in weight

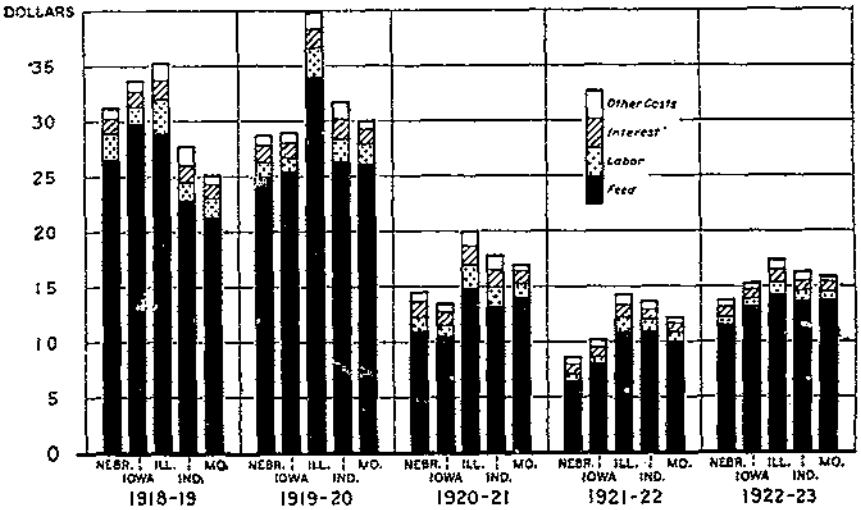


FIG. 7.—FEED-LOT COST PER 100 POUNDS GAIN ON CORN-FED CATTLE, 1918–1923

The cost depends largely upon the price of feed.

of cattle, the different items of cost apparently increase in the same proportion. A heavy steer eats more feed than a calf, requires more labor to feed it, and has a higher interest charge, so that the relation of the items of cost to each other remain approximately the same.

The relation of feed cost to total cost of gain varied considerably in the various districts. In Missouri, Iowa, and Nebraska the relative cost of feed was greater than in Indiana and Illinois. The cost of items other than feed seemed to be mainly responsible for this fact. There was a higher labor cost in connection with the feeding of silage and bundle corn to the cattle in the Indiana and Illinois districts, and the cattle in those districts also had more expensive equipment than the cattle of west-central Missouri, western Iowa, and eastern Nebraska. The higher charges for labor and equipment in the former districts evidently decrease the ratio of the cost of feed to the total cost of gain, in spite of somewhat higher priced feed in those districts.

RETURNS FROM FATTENING BEEF CATTLE IN THE CORN BELT

The financial returns from fattening beef cattle can be expressed in several ways, one of the most common of which is to measure the returns on the per steer basis. In Figure 8 the sale value per steer is compared with the cost of the feeder animal plus the per head costs of feed, labor, interest, equipment, and other costs, for each district, during each year of the study. The value of pork and manure produced behind the cattle has been deducted from the total value of feed to obtain the net feed cost. It will be noticed that the feed cost per head during the last three years was less than half as great as in the first two years, while the original cost of the feeder animal was reduced by about one-fourth. The cattle fed in Illinois and Missouri in

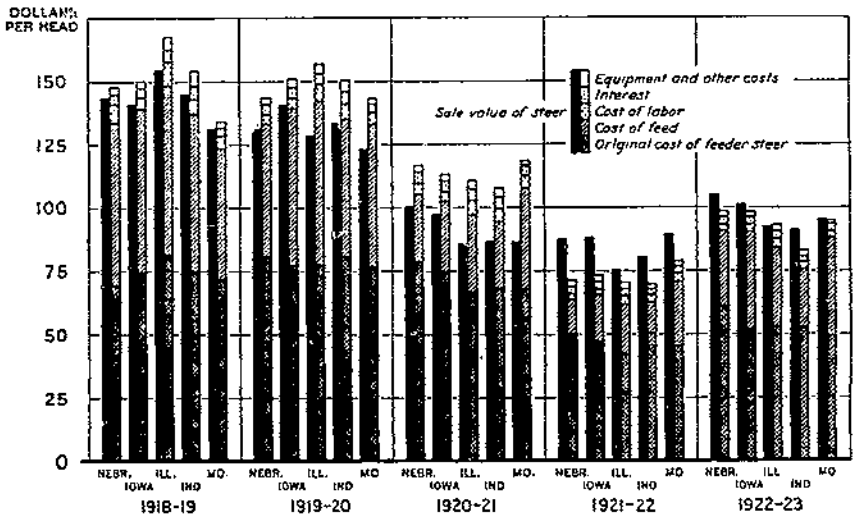


FIG. 8.—COSTS AND RETURNS PER HEAD FROM FATTENING BEEF CATTLE IN THE CORN BELT, 1919-1923

The steer-fattening enterprise made greater returns when feed was cheap.

1919–20 and in Illinois, Missouri, and Indiana in 1920–21 were the only groups which did not return the total value of the feed, besides the original cost of the feeder animal, during the years studied. There were many cases, however, especially in 1920–21, where there was no return for labor, interest, use of equipment, and other costs after the feed was charged at the farm price.

Figure 9 illustrates clearly the differences in returns to steer feeders during the five years of study. It is based on the return per $100 of fattening costs aside from the original cost of the animal. It shows the great losses in 1920–21 and the profits of the last two years. In 1920–21 the average returns from cattle feeding in the different districts ranged from $37 to $58 per $100 worth of feed, labor, and other costs, whereas in the following year the returns ranged from $118 to $176 for each $100 of these costs. Figure 9 shows that cattle in the

Nebraska and Iowa districts did the best; the Illinois cattle returned the least for each unit of cost with the exception of the Missouri cattle in 1920–21. They returned only $37 for each $100 of feed-lot costs.

The return for each bushel of corn fed to cattle is often a better measure of income than the returns per $100 of expenses, when feed is charged at farm prices. This measure of returns as applied to each district under study during the five years is shown in Figure 10. In obtaining the figure for the return per bushel of corn fed, all labor, interest, equipment, and other charges, including the value of all feed other than corn, is deducted from the gross return above the original cost of the feeder animal, and the remainder is divided by the number of bushels of corn fed. For the cattle feeder who feeds his own crop to

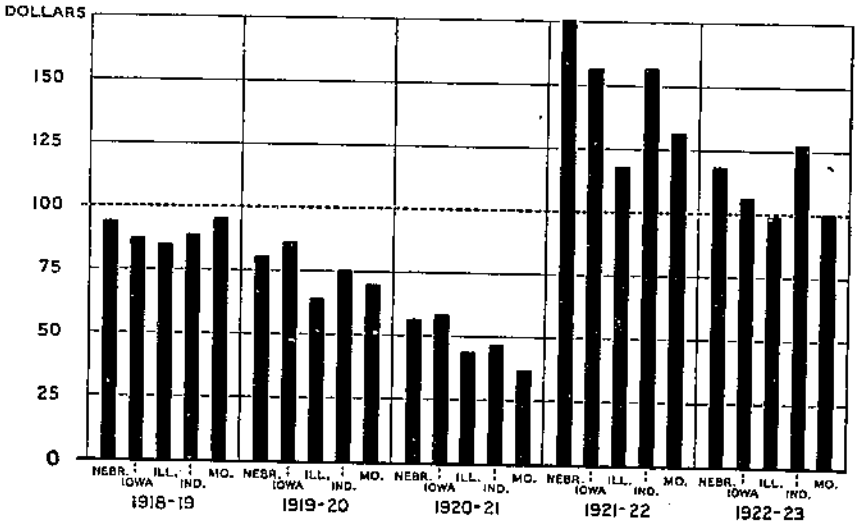


FIG. 9.—RETURNS PER $100 OF FATTENING COSTS

Fattening costs represent the farmer's feed cost and his labor and equipment charges.

his steers and buys little additional corn, this is a good way to measure the returns from the cattle feeding. It is also a valuable measure of returns when the farm price of corn is changing considerably from year to year. Thus, during the feeding season 1918–19, when the cattle fed in all districts showed a loss with corn charged at farm prices, the return made by cattle for a bushel of corn ranged from $0.99 to $1.27. In the winter of 1921–22, however, which was the most profitable year for cattle feeding during this study if corn is charged at farm prices, the return for corn ranged from 63 to 73 cents per bushel. In the same way, when the returns for the seasons 1921–22 and 1922–23 are compared the cattle fed in the latter season did not return quite as much profit per head or per $100 in costs, but they made a greater return per bushel of corn fed than the cattle fed in the former season.

Although labor and land rentals were higher in 1918 than in 1921, it is no doubt true that the corn for which cattle paid about $1.15 per bushel in 1918–19 was marketed at a profit if the feeder raised his own corn. On the other hand, the corn which was charged to steers at 40 cents in 1921–22 could probably not have been produced at this cost. The return per bushel of corn fed can be best used where corn makes up the largest part of the feed cost. In the Nebraska and Iowa districts it is very useful in expressing the returns from feeding beef cattle, but in Illinois and Indiana, where a smaller proportion of the corn is fed as grain, and in Missouri, where grass makes up a large percentage of the feed cost, it is not so satisfactory a measure.

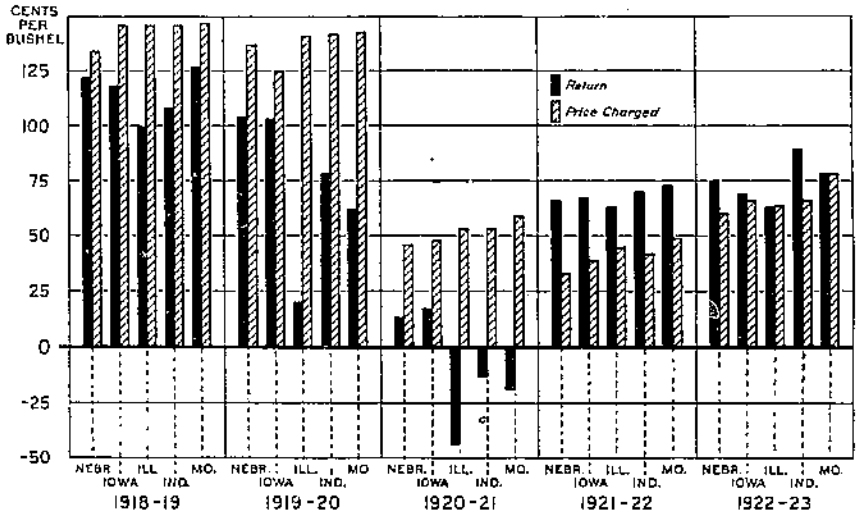


FIG. 10.—RETURN PER BUSHEL OF CORN FED

Feeders who raised their own corn received more for it during the first two years than during the last two years. Individuals might have made still more if they had sold it instead of feeding it.

COMPARISON OF METHODS OF HANDLING AND RATIONS

VARIATION IN RATE AND NET COST OF GAIN

In all tables shown thus far the figures given for the cost and rate of gain have been averages for all the cattle fed in a certain district or in a certain year. In each case there was a rather wide variation in these factors even when the same weight of cattle and the same period of time were considered. Thus, the rate of gain made by heavy steers varied from 0.4 to 4.4 pounds per day, and in the case of medium-weight cattle the variation was from 0.4 to 4.2 pounds per day. The cost of a pound of gain made by medium-weight cattle in 1918–19 ranged from 2 cents to 58 cents, and in 1922–23, when the average cost of a pound of gain was 13.8 cents, the variation in cost was from 6 to 34 cents per pound. (See figs. 11 and 12 for ranges involving 1 per cent or more of the cattle and Tables 30–33 for details and extreme ranges observed.)

These variations in the cost and rate of gain for cattle of the same initial weight and during a given feeding season are largely due to differences in feeding practices, methods of handling, and rations used, but the quality of cattle and the differences in feed prices from district to district are other important reasons for variation.

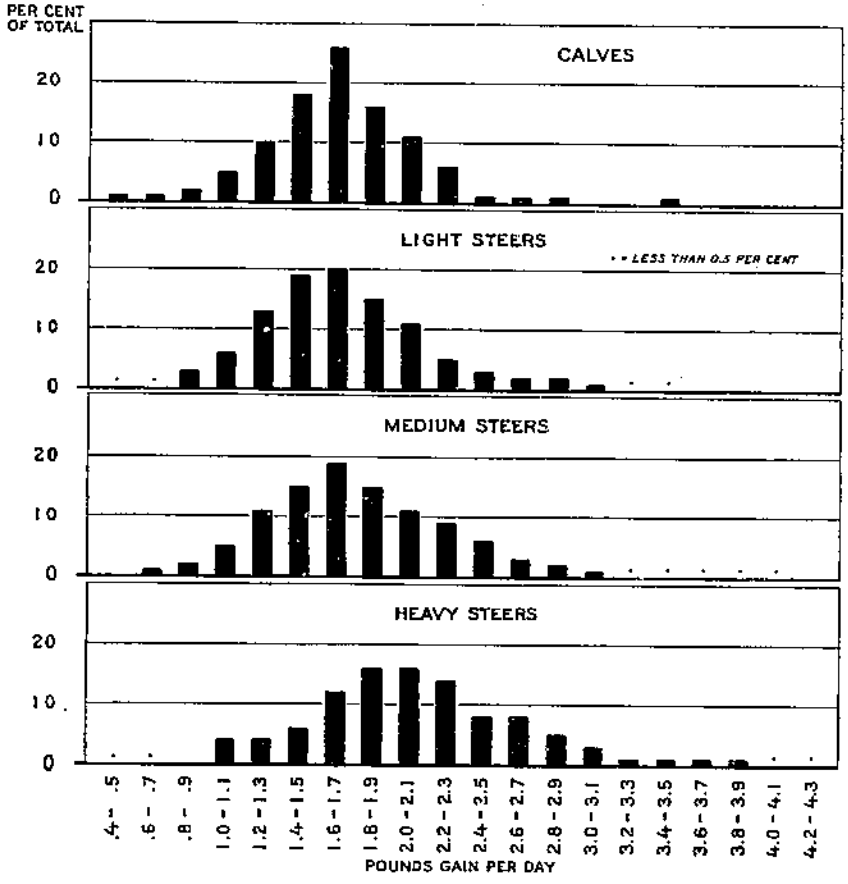


FIG. 11.—VARIATION IN DAILY GAIN MADE PER STEER

Some lots of cattle gain three times as rapidly as others.

The classification of the ordinary methods of handling feeder cattle, as given on page 8, should be remembered in connection with this section of the bulletin.

The differences between these principal methods of handling feeder cattle are shown in Table 8, which gives the basic feed requirements per 100 pounds of gain and per head, together with a few other items for comparison. The initial weight and the rate of gain of the cattle fed in dry lot with practically no pasture were greater, and the length of time on the farm was shorter than for any other group except the

cattle which were purchased in the spring and fed out on the grass. To produce 100 pounds of gain, the dry-lot cattle required more grain,

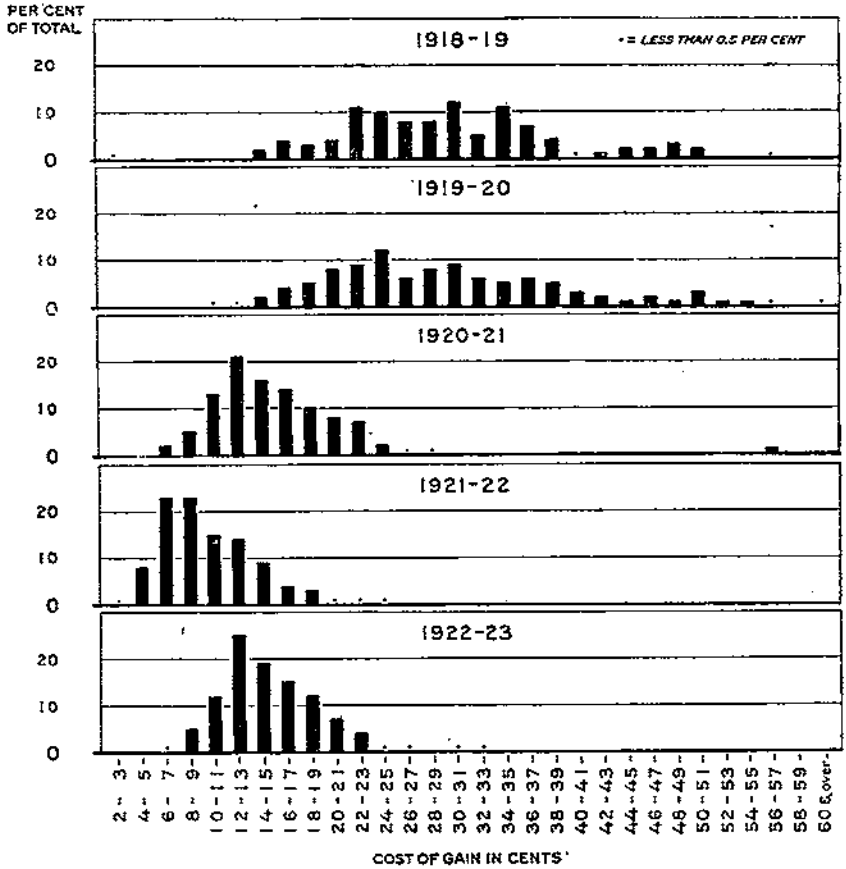


FIG. 12.—VARIATION IN NET COST PER POUND OF GAIN

The cost of gain even for cattle of the same initial weight varies widely.

silage, and dry roughage than the cattle handled by any other method. The quantity of pork and manure produced per unit of gain was also greatest in the case of the cattle fed in dry lot.

TABLE 8.—*Results of different methods of feeding: Averages for all weights of cattle in all districts studied*

Item	Cattle fattened in dry lot			Cattle fattened on grass	
	Strictly dry-lot fed	Fall-pastured	Summer-pastured	Carried through the winter	Purchased in spring
Days on farm	146	188	308	255	130
Daily gain...pounds	1.84	1.63	1.38	1.36	1.36
Initial weight...do	823	794	681	802	881
Final weight...do	1,092	1,100	1,104	1,140	1,134
Gain in weight...do	269	306	423	347	253
Labor per head:					
Man...hours	10	10	11	19	6
Horse...do	6	7	8	12	7
Feed per head:					
Corn...bushels	36.9	39.7	42.2	38.2	29.8
Protein meal...pounds	74	61	30	90	51
Prepared feeds and molasses...do	38	31	55	69	58
Legume hay...do	531	588	760	385	33
Mixed hay...do	167	177	338	180	76
Stover and straw...do	258	266	364	708	81
Silage...do	2,174	1,916	1,303	1,051	311
Pasture...days	3	55	161	160	130
By-products per head:					
Pork...pounds	68	68	78	73	58
Manure...loads	3	3	3	1	----
Feed per 100 pounds gain:					
Corn...pounds	768	726	559	616	660
Protein meal...do	28	20	7	26	20
Prepared feeds and molasses...do	14	10	13	20	23
Legume hay...do	216	102	181	111	13
Mixed hay...do	62	58	80	52	30
Stover and straw...do	96	87	86	204	32
Silage...do	808	626	308	303	123
Pasture...days	1	18	38	46	51
By-products:					
Pork...pounds	25	22	18	21	23
Manure...loads	1	1	1	----	----

The steers which were wintered and fattened on grass were the only ones that required any more labor per unit of gain than the dry-lot cattle. The fall-pastured steers were slightly lighter in weight when bought, gained a little less rapidly, and remained on the farm 42 days longer than the strictly dry-lot cattle. In producing 100 pounds of gain by this method, 17 days more pasture and a smaller quantity of all other feeds were required than were necessary for the cattle which received practically no pasture. The 17 days of pasture displaced 58 pounds of grain or its equivalent in concentrates, 37 pounds of dry roughage, chiefly legume hay, and 182 pounds of silage. This gives each day of fall pasture a value approximately equal to 3.4 pounds of grain, 2.2 pounds of dry roughage, and 10.7 pounds of silage. Inasmuch as a large share of the fall pasture was second-growth clover or cornstalk pasture which would probably not have been utilized in any other way, it would seem that this method of handling feeder cattle is even more advantageous than it is usually considered. It is especially well adapted to the use of thin cattle. Steers that are in good condition when bought usually gain more rapidly and maintain their finish more readily if turned directly into the feed lot and fed grain than if they are pastured from one to two months on grass or cornstalks. The fall-pastured cattle, together with the strictly dry-lot steers, made up 80 per cent of all the cattle studied.

The summer-pastured steers that were fattened in dry lot during the following winter were lighter in weight when bought and were on

the farm longer than were the steers used in any other type of feeding. Only 5 per cent of the cattle studied were handled this way. Because of their lighter weight and their long pasture period they required less grain per unit of gain than any other group under consideration. As a result their credit for pork produced per unit of gain was the lowest of all the groups.

The cattle which were wintered and fattened on grass the following summer were on the farm for eight and one-half months, on the average, and had the lowest rate of gain of any of the five feeding-method groups. The large quantity of straw and stover utilized by these cattle during the winter explains the high labor requirement per unit of gain. This method of handling feeder cattle was very common in Missouri, where 48 per cent of the cattle studied were handled in that way.

The steers purchased in the spring for fattening on grass were the heaviest cattle when bought and had the highest rate of gain and the shortest feeding period. They naturally used the highest proportion of pasture per unit of gain and a very small quantity of roughage. Silage and hay were fed just before the grass was ready for pasturing in the spring. Their grain requirement was rather high because of their greater original weight and because it is the usual practice to feed grain liberally while the cattle are on grass. The fact that the cattle that were handled by this method were heavier when purchased than those handled by any other method is probably explained by the tendency of older cattle to fatten more easily on grass than do younger steers. All the cattle which were fattened on grass received a considerable quantity of protein concentrates and more prepared feeds and molasses than the cattle finished in dry lot. (Table 8.)

RATIONS USED BY CATTLE FATTENED IN DRY LOT

The rations used in a certain district depend upon the quantity and kind of feed available for cattle feeding. The kind and quantity of feed available depend largely upon climatic and soil conditions. The general farm organization in regard to the number of cattle to be fed, the number of other livestock to be kept, crop rotations, etc., has its influence upon the kind and quantity of feed available for steer feeding and the proportions in which it will be used in the ration. The current prices of farm-grown and purchased feeds also have an effect upon the ration to be used.

Table 9 shows the percentage of droves finished in dry lot that received various rations and feeds. Fifty-eight per cent of all the droves finished in dry lot received a nonsilage ration. In this group the roughage consisted almost entirely of legume and mixed hay.

TABLE 9.—*Percentages of droves finished in dry lot that received various rations and feeds* [1]

Kind of ration	Nebraska	Iowa	Illinois	Indiana	Missouri	Average
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Nonsilage rations	98	83	15	19	57	58
Silage ration	2	17	85	81	43	42
Ration containing:						
Legume hay	76	59	26	11	52	48
Mixed hay	22	35	61	39	37	38
Stover and straw	2	6	13	50	11	14
Protein concentrates	8	13	56	43	28	28

[1] The preparation of corn for various classes of cattle in the different areas is shown in Tables 36 and 37.

CORN AND HAY RATIONS FOR BEEF CATTLE

Legume hay has a very important place in the organization of Corn Belt farms, not only from the standpoint of crop rotation and maintenance of soil fertility but because of its value as a feed for livestock. The ability of beef cattle to utilize this roughage in the fattening ration to good advantage makes it possible for the cattle-feeding enterprise to adjust itself so well to the organization of many Corn Belt farms.

Most of the cattle that received a corn and hay ration were fed in eastern Nebraska and western Iowa, where a great deal of alfalfa is grown and where clover hay is plentiful. Alfalfa is an especially dependable source of roughage where good stands can be obtained without undue expense and where soil conditions are well adapted to it. With a sufficient and dependable supply of legume hay available for steer feeding there is little need for a silo. Only 2 per cent of the feeders in the Nebraska district and 17 per cent of the Iowa farmers fed any silage.

The average daily corn and hay ration for 129 droves of cattle[3] weighing 891 pounds when bought was 19 pounds of shelled corn and 9 pounds of legume hay. These cattle gained 2.19 pounds per day for 131 days and required 45 bushels of corn and 1,150 pounds of legume hay per head for the entire feeding period. Each steer fed this simplest of all rations can be credited with 77 pounds of pork.

The importance of legume hay in the western Iowa and eastern Nebraska feeding districts is shown in Table 10, which gives the average daily ration, costs, and returns for the cattle fed in those districts during the period of the study. The small quantity of protein concentrates and prepared feeds used in connection with the corn and legume hay is especially noticeable.

TABLE 10.—*Results of cattle feeding in Nebraska and Iowa*[a]

CATTLE OF OVER 750 POUNDS INITIAL WEIGHT

Item	Nebraska					Iowa				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	27	82	74	83	83	37	68	87	75	70
Initial weight, pounds	862	896	938	981	955	885	895	947	942	911
Days on farm	147	138	157	150	139	154	176	188	152	168
Daily gain, pounds	1.82	1.83	1.95	2.05	2.09	1.66	1.86	1.84	2.07	1.96
Cost per pound gain, cents	27.6	24.0	12.3	6.4	12.2	30.4	23.4	11.2	7.6	13.4
Purchase price per 100 pounds, dollars	10.59	10.19	9.23	6.09	6.97	10.48	10.07	9.24	5.96	6.70
Sale price per 100 pounds, dollars	15.15	12.32	8.58	7.47	8.82	14.16	12.88	8.22	7.57	8.95
Profit per head, dollars	5.88			16.83	7.51				15.04	4.61
Loss per head, dollars		10.70	17.69			9.32	9.54	20.26		
Daily ration:	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Grain	18.2	15.3	18.5	18.5	18.0	12.5	16.6	16.7	19.1	19.2
Protein concentrates	.2	.1	.1		0	.3	0	.1	0	0
Prepared feeds	.2				.1	1.0	.1	.2	.1	3.5
Legume hay	7.2	8.2	7.6	7.7	7.5	2.4	7.9	4.2	4.9	4.2
Mixed hay	1.4	.7	1.4	.9	.7	.4	.10	.3	.6	1.0
Straw and stover		.2	.3	.3	.1	2.6	.7	.9	.8	1.0
Silage	4.1	.8	.9		.2	8.9	5.0	.9	1.0	.5
Feed per 100 pounds gain:										
Grain	999	836	950	899	860	752	890	908	920	970
Protein concentrates	9	5	4		1	48	1	5		
Prepared feeds	9				5	60	5	12	4	18
Legume hay	393	447	389	375	358	146	425	228	236	216
Mixed hay	75	38	69	42	34	22	55	17	20	49
Straw and stover	1	10	16	13	6	159	36	49	40	50
Silage	222	44	48		9	535	269	51	47	27

[a] Details are shown in Tables 43 and 44.

[3] These figures apply to the total number of medium-weight cattle receiving a corn and legume-hay ration during the five years studied.

TABLE 10.—*Results of cattle feeding in Nebraska and Iowa*—Continued

CATTLE OF 750 POUNDS OR LESS INITIAL WEIGHT

Item	Nebraska					Iowa				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	33	34	17	37	22	36	40	41	40	33
Initial weight, pounds	586	560	609	588	599	530	600	571	561	588
Days on farm	208	221	209	221	219	172	200	217	212	225
Daily gain, pounds	1.58	1.44	1.62	1.67	1.87	1.76	1.59	1.66	1.78	1.66
Cost per pound gain, cents	25.4	21.8	12.0	6.2	10.6	24.8	21.2	9.9	7.7	12.6
Purchase price per 100 pounds, dollars	9.34	9.94	8.54	6.16	7.08	9.51	9.36	7.02	6.31	6.46
Sale price per 100 pounds, dollars	14.00	12.30	8.20	7.80	8.87	13.78	12.45	7.98	8.41	8.98
Profit per head, dollars				14.97	3.25				14.17	.39
Loss per head, dollars	11.19	17.35	14.77			11.86	9.09	5.39		
Daily ration:	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Grain	9.4	9.1	12.1	12.2	13.3	13.3	11.0	12.4	14.4	13.8
Protein concentrates	.4	.03	.02		.01	.3	.2	.1	.01	.03
Prepared feeds	.03	.05				.6	.5	.01	.04	.1
Legume hay	6.3	6.6	6.7	4.9	5.0	2.9	5.6	3.1	3.2	4.5
Mixed hay	2.0	.7	1.2	.8	1.0	.6	1.7	.5	1.1	.6
Straw and stover	.1	.1	.4	.01	2.9	1.4	.5	.3	1.0	1.1
Silage	1.8	2.8				5.2	6.1	1.9	2.3	1.4
Feed per 100 pounds gain:										
Grain	595	630	748	731	711	758	691	746	812	830
Protein concentrates	26	2	1			20	10	4	1	2
Prepared feeds	2	4				35	34	1	8	7
Legume hay	398	460	413	292	272	184	351	185	179	273
Mixed hay	126	50	75	48	60	32	108	30	60	36
Straw and stover	7	8	25	1	16	82	33	19	28	64
Silage	113	194				297	381	114	132	84

PLACE OF SILAGE IN THE BEEF-CATTLE RATION

Forty-two per cent of all the cattle in this study that were finished in dry lot were fed silage. This percentage varied widely from one district to another, ranging from 85 per cent in Illinois and 81 per cent in Indiana to 2 per cent in the Nebraska district. Over three-fourths of the silage-feeding records were obtained from cattle feeders in Illinois and Indiana. The most important factors which influence the quantity of silage fed to steers in a given locality are (1) the amount of legume hay and other dry roughage available, (2) the price of corn, and (3) the danger of frost damage to immature corn.

The silage rations were divided into two groups—heavy silage and light silage rations. A heavy feed of silage was one of more than 30 pounds per day for heavy cattle, more than 25 pounds per day for medium-weight feeders, more than 20 pounds for yearlings, and more than 15 pounds for calves. The average daily silage consumption for the total number of days on feed was used in making this classification. About twice as many droves received a heavy silage ration as received a light feed of silage.

Seventy-eight per cent of the silos from which beef cattle were fed, in this study, were of concrete, brick, or tile construction. (Table 41.) The Illinois silos were considerably larger than those found in the Indiana districts. The most common size in Illinois was 14 by 50 feet, whereas in Indiana more of the silos were 12 by 40 feet and 12 by 35 feet than any other sizes. (Table 42.) A typical feed lot where silage feeding is practiced is shown in Plate 1, figure 2.

The average initial cost of building the silos that were filled on these farms during the last three years of this study was $655. To fill the average silo it was necessary to cut 13.6 acres of corn yielding 47.5 bushels per acre. This made a total of 646 bushels of corn in the silo. The average quantity of fodder put into the silo was 104 tons, or 7.6 tons per acre. This is equivalent to the capacity of a 14-by-38-foot silo in which the silage has settled 5 feet. Since in many of the silos some silage remained from the previous year, the total tonnage fed from the average silo was somewhat more than the quantity mentioned above.

The average length of time required to fill a silo approximately 14 by 40 feet in size was 187 man-hours and 242 horse-hours. This is equivalent to the following crew shown in Table 11 which is typical of Corn Belt conditions.

TABLE 11.—*Typical Corn Belt silo-filling crew*

Operation	Number of men	Number of horses	Number of hours per unit	Operation	Number of men	Number of horses	Number of hours per unit
Cutting corn with binder	1	3	20	Tramping in silo	2		15
Hauling fodder	6	12	15	Feeding silage cutter	1		15
Loading wagons (extra men)	2		15	Tending engine	(1)		(1)

[1] The engineer was usually hired with the engine.

If all of the labor used in filling the silo had been obtained by exchange with neighbors it would have kept two men and a team busy for two to three weeks. Usually, however, some of the labor was hired by the day or obtained from neighbors who had no silos in exchange for some other kind of work. The time of silo-filling usually came when no other farm work except the preparation of ground for winter wheat was pressing.

The cost of silage on the farms on which it was fed to beef cattle was obtained for the last four years of the study. For the three seasons, 1920, 1921, and 1922, a detailed analysis of these costs can be made. In determining the cost of silage, charges for labor and equipment and other items used in filling the silo were added to the value of corn in the field. The value of corn in the field was considered to be the farm price of corn minus the cost of husking, plus a nominal charge of about $1 an acre for the stalks Wherever possible the approximate capacity of the silo was obtained by weighing samples of silage as it was fed to the steers.

The per ton costs of silage for the three feeding seasons 1921–1923 are shown in Table 12. In the average ton of silage there were more than 6 bushels of corn each year. The value of corn made up between 50 and 65 per cent of the total cost of silage. The variation in the ratio of filling costs to total cost of silage may have had some effect on the amount of silage put up during the last three years of this study. The cost of silo filling in the fall of 1920 amounted to $2.44 per ton. If it is assumed that these filling costs were the same in 1918 and 1919, when no cost data were used (and it is reasonable to suppose that they would not have been any higher in those years), and if corn was

worth about $1.35 per bushel in the field during those two years, the filling costs would have made up only 23 per cent of the total cost of silage. In 1921 the filling cost had decreased to $1.95 per ton, but with the price of corn at the low point of 33 cents per bushel it cost practically as much to put the corn in the silo as it was worth in the field.

TABLE 12.—*Cost of silage per ton on certain farms in the Corn Belt, 1920–1922*

Item	1920	1921	1922
Number of records	140	153	133
Corn in silage, bushels	6.2	6.1	6.1
Man labor, hours	1.9	1.7	1.8
Horse labor, do	2.5	2.3	2.2
Price of corn per bushel	$0.53	$0.33	$0.53
Cost of silage, per ton:			
Corn	3.31	2.01	3.49
Man labor	.70	.47	.48
Horse labor	.43	.28	.29
Twine	.07	.05	.05
Fuel	.08	.07	.06
Miscellaneous	.03	.03	.01
Depreciation and repairs	.70	.04	.60
Interest on equipment	.43	.41	.42
Total	5.75	3.96	5.40
Costs other than corn	2.44	1.95	1.91
Cost of silage, without labor and interest on equipment	4.19	2.80	4.21

This does not mean that silage is merely a substitute for corn, for it also displaces a considerable amount of roughage. At the Purdue University Agricultural Experiment Station the average of eight years of feeding trials showed a replacement of 4.6 bushels of corn and 613 pounds of clover hay per ton of silage fed to 2-year-old steers in a ration of shelled corn, cottonseed meal, clover hay, and silage, as compared with a ration of shelled corn, cottonseed meal, and clover hay. The average daily feed consumed by these steers weighing 983 pounds and fed the approved silage ration for an average of 158 days in the feeding trials was as follows: Shelled corn, 13.3 pounds; cottonseed meal, 2.8 pounds; clover hay, 3.2 pounds; and silage, 27.4 pounds.

Tables 13 and 14 give summaries of the results obtained by farmers in Indiana and Illinois when feeding different quantities of silage and when feeding no silage. It will be noticed that farmers did not feed as large a quantity of protein supplement in any of the years as was fed at the experiment station in the experiment cited above. This was no doubt due to the high price of cottonseed meal as compared with corn, especially during the last three years of the study.

TABLE 13.—*Results of feeding silage to cattle of over 750 pounds initial weight in Illinois and Indiana* [1]

ILLINOIS

Item	1918–19			1919–20			1921–22			1922–23		
	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage
Number of droves	9	6	17	5	21	37	7	23	18	13	17	21
Initial weight, pounds	881	900	845	942	885	909	907	895	921	908	905	942
Days on farm	146	170	165	136	186	148	127	134	134	136	153	135
Daily gain, pounds	1.02	1.72	1.78	1.54	1.55	1.52	1.95	1.58	1.65	1.00	1.57	1.78
Cost per pound gain, cents	28.5	31.1	34.8	36.8	34.2	38.7	11.6	14.1	10.0	15.8	18.9	20.2
Purchase price per 100 pounds, dollars	10.57	10.45	10.63	9.97	10.10	9.51	5.74	5.05	5.74	7.14	6.43	6.45
Sale price per 100 pounds, dollars	14.88	15.22	14.85	12.46	12.86	12.12	7.74	7.72	7.75	9.40	8.74	8.58
Profit per head, dollars	5.38						11.04	5.93	4.04	7.26		
Loss per head, dollars		.90	21.21	27.55	35.36	33.85					1.60	5.88
Daily ration:	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Grain	17.0	11.3	10.8	20.7	9.7	6.9	17.6	11.7	12.0	17.1	12.2	11.3
Protein concentrates	.8	1.5	1.9	.1	1.0	1.2	.2	.1	.2	.3	.6	.4
Other concentrates				.3	.2	.2					.2	.1
Legume hay	4.0	2.0	1.9	5.3	1.8	2.6	5.3	1.0	1.8	4.7	2.9	1.9
Mixed hay	2.4	2.3	2.4	.5	2.2	2.2	2.1	2.1	2.1	2.3	2.4	1.6
Nonlegume hay			.1		.6	.1	.3		.1			.8
Straw and stover	6.2	1.3	1.3	14.6	2.4	1.8	2.1	1.9	1.5	4.8	1.5	2.1
Silage		25.0	43.0		28.0	40.0		24.0	40.0		21.0	41.0
Feed, per 100 pounds gain:												
Grain	885	657	607	1,344	626	454	903	740	714	900	777	634
Protein concentrates	42	87	107	6	64	79	16	0	12	16	38	22
Other concentrates				19	13	13					13	6
Legume hay	208	116	107	344	116	171	272	101	107	247	185	107
Mixed hay	125	134	135	32	142	145	108	133	125	121	153	90
Nonlegume hay			6		39	7	15		6			45
Straw and stover	323	76	73	948	155	118	103	120	50	253	96	118
Silage		1,454	2,416		1,807	3,026		1,519	2,381		1,337	2,303

INDIANA

Item	1918–19			1919–20			1921–22		
	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage
Number of droves	1	6	6	6	8	32	15	7	16
Initial weight, pounds		812	851	915	854	888	1,050	926	922
Days on farm		175	183	142	146	137	118	122	143
Daily gain pounds		1.94	1.99	1.62	1.05	1.84	1.64	1.89	1.80
Cost per pound gain, cents		24.3	34.7	31.8	28.8	30.2	8.3	8.8	10.5
Purchase price per 100 pounds, dollars		11.46	11.59	10.74	10.02	10.33	6.26	6.27	5.91
Sale price per 100 pounds, dollars		16.18	14.90	12.74	11.86	12.37	7.07	7.63	7.61
Profit per head, dollars		9.49					14.72	10.83	10.02
Loss per head, dollars			38.90	22.42	20.18	19.72			
Daily ration:		*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Grain		9.8	7.8	18.8	10.0	8.6	19.5	17.7	13.2
Protein concentrates		2.0	2.2	.1	.7	1.1			.4
Prepared feeds		1.0	.2	.6	1.1	.3			.1
Legume hay			.7	.3	1.1	.8	.4	.9	.6
Mixed hay		1.2	3.0	.8		.5	.5		.2
Nonlegume hay		.3		.3		.1	.1	.9	.1
Straw and stover		3.0	.2	12.1	3.3	5.1	0.8	4.8	3.6
Silage		20.0	45.0		24.0	41.0		18.0	36.0
Feed per 100 pounds gain:									
Grain		505	392	1,160	606	467	1,189	936	733
Protein concentrates		103	110	6	42	60			22
Prepared feeds		51	10	37	67	16			5
Legume hay			35	19	67	43	24	48	33
Mixed hay		62	151	49		27	30		11
Nonlegume hay		15		19		5	6	48	5
Straw and stover		155	10	746	200	277	508	254	200
Silage		1,405	2,261		1,455	2,228		952	2,000

[1] Detailed results of feeding different rations may be found in Tables 49 to 51.

TABLE 13.—*Results of feeding silage to cattle of over 750 pounds initial weight in Illinois and Indiana*—Continued

INDIANA

Item	1922–23			Shock-corn records					
				1921–22			1922–23		
	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage
Number of droves	1	8	9	10	14	10	8	14	10
Initial weight, pounds		914	989	1,050	912	946	951	972	942
Days on farm		156	117	122	141	130	132	138	124
Daily gain, pounds		1.83	1.90	1.72	1.86	1.78	2.11	2.03	2.04
Cost per pound gain, cents		13.0	15.1	7.5	7.7	10.4	11.3	12.3	13.9
Purchase price per 100 pounds, dollars		6.94	6.79	6.25	6.27	5.94	6.81	6.91	7.03
Sale price per 100 pounds, dollars		9.18	8.39	7.66	7.82	7.47	8.93	9.04	8.74
Profit per head, dollars		11.86	4.90	17.46	15.06	8.44	13.78	11.83	3.58
Loss per head, dollars									
Daily ration:		*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Grain		13.5	10.4	21.4	20.8	14.6	23.0	23.3	21.2
Protein concentrates		.6	.3		.1	.3	.1		
Prepared feeds			.2						.3
Legume hay		1.8	.9	.4	.7	.5	1.2	.4	.9
Mixed hay		.2	.3	.4	.1	.2	.0	.6	.3
Nonlegume hay				.1	.4	.3	.1		
Straw and stover		5.0	2.8	12.4	10.1	4.8	15.6	13.4	11.4
Silage		10.0	33.0		18.0	35.0		14.0	32.0
Feed per 100 pounds gain:									
Grain		738	547	1,244	1,118	820	1,327	1,148	1,039
Protein concentrates		33	16		5	17	5		
Prepared feeds			10						15
Legume hay		98	47	23	38	28	57	20	44
Mixed hay		11	16	23	5	11	43	30	15
Nonlegume hay				6	22	17	5		
Straw and stover		273	147	721	543	270	739	660	559
Silage		1,038	1,737		968	1,960		690	1,569

TABLE 14.—*Results of feeding silage to cattle of 750 pounds or less initial weight in Illinois and Indiana* [1]

ILLINOIS

Item	1918–19		1919–20			1921–22			1922–23, heavy silage
	No silage	Light silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	
Number of droves	2	15	1	7	6	2	12	15	9
Initial weight, pounds		644		512	685		578	671	631
Days on farm		178		183	154		192	161	164
Daily gain, pounds		1.68		1.34	1.46		1.49	1.59	1.56
Cost per pound gain, cents		28.9		29.2	30.6		11.5	13.0	15.2
Purchase price per 100 pounds, dollars		9.56		8.41	7.96		5.26	5.36	6.13
Sale price per 100 pounds, dollars		13.46		12.42	11.77		7.79	7.58	8.62
Profit per head, dollars							4.61	2.97	
Loss per head, dollars		17.20		15.84	15.12				.64
Daily ration:		*Lbs.*		*Lbs.*	*Lbs.*		*Lbs.*	*Lbs.*	*Lbs.*
Grain		5.8		4.3	4.3		8.6	8.9	7.0
Protein concentrates		1.2		.7	1.1		.3	.1	.4
Other concentrates		.2		.2	.2		.2		
Legume hay		2.1		1.6	2.2		1.2	1.3	3.1
Mixed hay		3.1		1.1	1.2		1.6	1.5	1.2
Nonlegume hay		.3		.2	.7			.2	
Straw and stover		.4		2.5	1.3		3.7	.4	.3
Silage		36.0		26.0	30.0		10.0	35.0	24.0
Feed per 100 pounds gain:									
Grain		345		321	295		577	559	449
Protein concentrates		71		52	75		20	6	26
Other concentrates		12		15	14		13		
Legume hay		125		119	151		80	82	199
Mixed hay		185		82	82		107	94	77
Nonlegume hay		18		15	48			12	
Straw and stover		24		187	89		248	25	19
Silage		2,143		1,940	2,071		1,275	2,201	1,538

[1] Detailed results of feeding different rations may be found in Tables 49 and 51.

TABLE 14.—*Results of feeding silage to cattle of 750 pounds or less initial weight in Illinois and Indiana*—Continued

INDIANA

Item	1918–19		1919–20			1921–22			1922–23	
	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Light silage	Heavy silage	No silage	Heavy silage
Number of droves	8	8	1	8	7	1	7	7	2	8
Initial weight, pounds	525	616	.....	635	678	.....	475	600	.....	439
Days on farm	206	177	.....	159	144	.....	214	130	.....	153
Daily gain, pounds	1.76	1.87	.....	1.72	1.35	.....	1.46	1.59	.....	1.76
Cost per pound gain, cents	19.2	21.2	.....	21.5	30.3	.....	9.4	10.5	.....	12.1
Purchase price per 100 pounds, dollars	11.12	10.48	.....	9.67	9.31	.....	6.69	5.48	.....	5.93
Sale price per 100 pounds, dollars	13.88	13.42	.....	11.95	11.45	.....	8.54	6.78	.....	8.48
Profit per head, dollars			.....			.....	9.41	3.00	.....	4.78
Loss per head, dollars	.75	7.46	.....	13.15	28.01	.....			.....	
Daily ration:	*Lbs.*	*Lbs.*		*Lbs.*	*Lbs.*		*Lbs.*	*Lbs.*		*Lbs.*
Grain	5.9	7.2	.....	9.0	6.5	.....	9.2	8.2	.....	7.6
Protein concentrates	1.4	1.2	.....	.4	.8	.....	.5	.....	.....	.2
Prepared feeds	.8	1.1	.....	.....	.3	.....	.....	.....	.....	1.0
Legume hay	1.4	2.8	.....	.8	2.2	.....	.6	.3	.....	.9
Mixed hay	1.2	.2	.....	.6	.....	.....	.4	1.4	.....	.2
Nonlegume hay	.....	.2	.....	.....	.4	.....	.....	.....	.....	.....
Straw and stover	2.0	1.8	.....	4.6	4.8	.....	3.9	3.5	.....	4.5
Silage	18.0	30.0	.....	21.0	40.0	.....	13.0	27.0	.....	23.0
Feed per 100 pounds gain:										
Grain	335	385	.....	523	481	.....	630	510	.....	432
Protein concentrates	70	64	.....	23	58	.....	35	.....	.....	11
Prepared feeds	45	59	.....	.....	21	.....	.....	.....	.....	57
Legume hay	79	150	.....	47	162	.....	41	19	.....	51
Mixed hay	68	11	.....	34	.....	.....	28	88	.....	11
Nonlegume hay	.....	11	.....	.....	29	.....	.....	.....	.....	.....
Straw and stover	114	96	.....	267	356	.....	267	219	.....	256
Silage	1,023	1,604	.....	1,221	2,962	.....	890	1,003	.....	1,307

Farmers fed considerably more silage per head per day than is usually considered good practice, as indicated by the large proportion of heavy silage records. Aside from the group that fed large quantities of shock corn, they did not feed quite as much grain per day in connection with their silage ration as did the experiment station.

The dry roughage in Indiana consisted principally of corn stover and the quantity of legume hay fed was negligible. In Illinois much more hay was fed especially in the nonsilage ration and a much larger proportion of it was legume hay. The kind and quantity of hay available for feeding cattle is probably the most important factor in determining the place of corn silage and protein supplements in the fattening ration for beef cattle in the Corn Belt.

In Indiana, the silage-fed cattle of more than 750 pounds initial weight, gained more rapidly than those with a nonsilage ration whose principal roughage was corn stover. In the Illinois district in three out of the four feeding seasons under consideration the steers that received a nonsilage ration consisting principally of shelled corn and legume hay made more rapid gains than those that received either a light or a heavy silage ration. In cost per pound of gain and net returns per head, the corn and hay ration in Illinois and the shock-corn ration in Indiana were more advantageous than the silage rations when charged at farm prices prevailing for feed during the period of study. In both districts, using the heavy silage ration gave a higher cost of gain and a lower net return per head than did using the light silage ration in nearly all instances.

A much larger proportion of the cattle weighing less than 750 pounds when purchased than of the steers that weighed more than 750 pounds was fed silage. In Indiana, 53 out of 57 droves of cattle that weighed less than 750 pounds, and 64 out of 69 droves of like weight in Illinois, received a silage ration. This is evidence of the opinion of feeders that silage is an especially valuable feed for light cattle. A comparison of the rate of gain of lightweight steers fed a heavy silage ration and the rate of gain of those fed a light silage ration showed no consistent difference. For steers weighing over 750 pounds a light silage ration was more advantageous than a heavy silage ration in cost of gain and net return.

The fact that farmers persist in using a silage ration when these cost figures show, in the same district, a lower cost per pound of gain and higher net return per head if some other ration is used, indicates that all the reasons for the extensive use of a ration can not be explained by limited cost data. Corn silage is a very dependable source of roughage, and in districts where winter-killing, dry summers, and acid soils make the growing of clover hazardous, the use of corn silage is often a necessity to the cattle feeder. In seasons when corn does not mature on account of early frosts or unfavorable weather conditions, the silo is valuable in conserving the grain as well as in changing the stalk into a palatable feed. Even in the average season, when most of the corn matures, the farmer can cut his latest maturing corn and minimize the possible damage from frost.

The organization of the farm influences the quantity of silage used in cattle feeding. As a rule the number of cattle that can be fed for market is limited by the quantity of roughage available. Shelled corn can nearly always be purchased from other farms, but the buying of hay is usually expensive and inconvenient. Hence, the silo has an especially important place on farms where more roughage is needed than can be supplied as hay. A feeder who makes a specialty of feeding cattle in large numbers throughout the year is more likely to use silage than the feeder who handles only 20 to 25 head. The number of cattle per drove in the different districts and the number in the weight classes is shown in Tables 34 and 35.

Some feeders buy low-grade cattle in the fall, when such cattle are cheap in comparison with other grades and, after giving them a heavy silage ration with little corn, sell them in the spring, when such cattle sell to better advantage than at any other time of the year. Inasmuch as the feeders do not try to get a high finish on these cattle it seems that corn silage might well have an even greater place in the feeding of these low-grade cattle than it has in the feeding of higher grade steers.

The best time to use the silage in the fattening of beef cattle that are to be highly finished is during the first part of the feeding period, when large quantities of roughage can be used to greatest advantage. During the last half of the feeding period, a full feed of grain should be given in conjunction with the silage in order that a better gain and finish on the cattle may be obtained. In composition, corn silage is deficient in protein; therefore to make the best use of the feed and obtain faster gains and a smoother finish, a protein concentrate should be fed to balance the ration, provided the cost per ton is not so high that the advantage of using it would be questionable.

PLACE OF SHOCK CORN IN THE BEEF-CATTLE RATION

The feeding of shock corn in a strictly dry-lot ration was usual in certain sections of Indiana. It was also rather usual in central Missouri, where a large proportion of the cattle to be fed were carried through the winter to be fattened while on grass the following summer.

The greatest use of shock-corn feeding is found where there is a lack of other roughage. In some districts where there is considerable risk in growing clover, shock corn fills the need for some dry roughage, as a supplement to silage. In other districts where it is possible to grow clover regularly in the rotation, the clover is used principally for pasturing hogs and cattle so that but little hay is available for use in winter feeding. Some feeders, who usually depend upon a corn and hay ration, cut shock corn only when weather conditions have reduced the hay crop. In some cases feeders utilize their silage during the early spring and summer in connection with feeding on grass and use shock corn for roughage during the fall and winter.

Shock-corn feeding also has an important place on farms where considerably more corn is fed to livestock than is produced on the farm. In these cases, which are very common in cattle-feeding communities, it may be necessary to utilize all available hay, silage, and shock corn to furnish the roughage that is necessary when a large proportion of purchased corn is used.

Another advantage of both shock corn and silage feeding is that the ground can be cleared for seeding winter wheat and a much better seed bed obtained than if the seed were drilled in the standing corn. Following corn with wheat is a common practice in districts where oats are a less profitable crop in the rotation than wheat.

Where shock corn is to be fed almost exclusively it is well to bear in mind that feeders of 800 pounds and over make better use of this feed than do lighter cattle. Its greatest feeding value is realized during the fall and early winter, before it has deteriorated much from weathering. When fed in the feed lot the uneaten stalks make good bedding and help considerably in keeping the lot dry.

The principal disadvantage of shock-corn feeding is the large amount of labor involved in hauling in the fodder from the field, often in a snowy and frozen condition, and in hauling out the manure containing the long cornstalks. Some farmers have overcome this objection by feeding the shock corn in the pastures or by allowing the stalks to rot before hauling them out of the feed lot.

FATTENING ON GRASS

In the Missouri district, 59 per cent of the cattle fed were fattened while on grass. Less than 8 per cent of the cattle fed in any of the other districts were handled in this way. (Table 5.) About four-fifths of the cattle that were fattened on grass in the Missouri district were bought during the previous fall and carried through the winter on shock corn, hay, corn silage, and stalk pasture. The other one-fifth was bought in the spring and was turned directly out on grass.

With a large acreage of good pasture and a considerable quantity of corn, it is evident that the Missouri district is well adapted to the fattening of beef cattle. Since most of the feeder cattle come on the market during the fall and can be bought cheaper at that time than in the spring and since a large quantity of cheap roughage is available

FIG. 1.—FATTENING STEERS ON GRASS

FIG. 2.—A DROVE OF FINISHED STEERS OF GOOD QUALITY

in the district, the practice of carrying feeders through the winter to fatten on grass during the following summer has become very common. (Pl. 2, fig. 1.)

The question naturally arises as to the most desirable weight of feeder cattle to be handled in this way. Calves are too small to be carried through the winter on coarse roughages, and unless they are given a full feed of grain they do not show enough finish to be free from market competition with grass-fat cattle when sold in the late summer or early fall.

Table 15 shows the results of carrying cattle through the winter and feeding them out on grass the next summer. In this table all feeder cattle that weighed over 900 pounds are called heavy, and all those that weighed from 501 to 900 pounds are classified as medium. The table shows that the feeder cattle weighing from 501 to 900 pounds when purchased made a greater daily gain, required less feed per unit of gain, and in all cases made a greater return, per head and per bushel of corn fed, than did the heavier steers. The smaller daily gain and the consequent greater feed requirement per unit of gain, in the cattle weighing over 900 pounds as feeders, is explained by the fact that they already had their growth and any gain that they made had to be made by fattening. Their greater weight at time of purchase was responsible for a part of their greater feed requirement.

TABLE 15.—*Results of feeding heavy and medium-weight cattle that were wintered and fattened on grass the next summer*

Item	Average of two years 1919 and 1920		1921		Average of two years 1922 and 1923	
	Medium-weight cattle (501 to 900 pounds)	Heavy cattle (over 900 pounds)	Medium-weight cattle (501 to 900 pounds)	Heavy cattle (over 900 pounds)	Medium-weight cattle (501 to 900 pounds)	Heavy cattle (over 900 pounds)
Number of droves	47	14	34	27	79	36
Number of cattle	2,033	623	1,627	1,562	4,543	2,378
Initial weight per head	741	949	783	959	760	936
Gain in weight	311	296	371	350	365	327
Days on farm	229	242	253	260	266	261
Average daily gain	1.37	1.11	1.43	1.39	1.38	1.25
Feed per 100 pounds gain:						
Grain, pounds	415	410	636	749	661	739
Protein concentrates, pounds	63	64	35	52	6	1
Molasses and prepared feeds, pounds	23	99	2	3	23	19
Legume hay, pounds	72	210	114	149	114	125
Mixed hay, pounds	50	38	23	4	65	70
Straw and stover, pounds	173	273	163	140	241	284
Silage, pounds	476	819	327	597	179	88
Pasture, days	47	59	45	48	44	48
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed cost per 100 pounds gain	17.40	23.44	12.15	13.21	11.60	13.67
Initial cost per head	71.33	92.39	61.13	80.28	46.16	57.44
Feed cost per head	54.90	63.03	45.30	47.32	42.63	44.73
Other miscellaneous costs	11.49	13.73	11.47	11.43	7.09	8.11
Total cost per head	137.72	169.15	117.90	139.53	96.48	110.28
Manure and pork credits	10.26	6.39	8.22	8.55	7.68	8.32
Net cost per head	127.46	162.76	109.68	130.98	88.80	101.96
Sale price per head	134.37	162.32	83.20	97.35	98.47	109.48
Profit per head	6.91				9.67	7.52
Loss per head		.44	26.48	33.63		
Initial cost per 100 pounds	9.62	9.73	7.81	8.37	6.07	6.13
Sale price per 100 pounds	12.77	13.36	7.21	7.39	8.75	8.07
Margin necessary to break even	2.49	3.67	1.69	1.55	1.81	1.94
Margin received	3.15	3.63	−.60	−.98	2.68	2.54
Returned per bushel of corn fed	1.75	1.43	−.05	−.13	.89	.84
Farm price of corn per bushel	1.45	1.45	.58	.58	.67	.67

Inasmuch as the winter ration most commonly used in this district does not often contain enough grain to be very fattening, heavy feeder cattle often go to pasture in the spring weighing very little more than when they were bought in the fall. Lighter cattle, on the other hand, grow out very well when fed on hay or silage and stover with little corn during the winter, and are ready to be fattened with a liberal feed of corn while on grass the following summer. In this way they go to market at a time when there are not many corn-fed cattle leaving the feed lots, and they are sold at a premium above the price paid for grass-fat cattle without the corn finish.

To have made the same amount of money per head from the heavier steers as from the medium-weight cattle, it would have been necessary to have bought the heavier steers for about 80 cents less per 100 pounds in 1919 and 1920 than was actually paid for them. To have made the same return per head as was made by the medium-weight steers, it would have been necessary to have paid 75 cents per 100 pounds less for the heavier feeders in 1921 and 23 cents per 100 pounds less in 1922 and 1923 than was actually paid for them. The heavy cattle might have made a better showing if they had been fed out with considerable grain in dry lot during the winter over a shorter feeding period, but this study indicates that medium-weight feeders are better adapted to being carried through the winter for fattening on grass than are steers weighing over 900 pounds when bought.

There is considerable variation in the details of the usual system of wintering cattle to be fed out on grass the following summer. Some cattle are "roughed" through the winter very cheaply on stalk pasture, hay, and stover, whereas others receive a substantial grain ration during the winter. There is also a difference in the quantity of grain fed to cattle after they are turned on pasture; some are fed liberally, whereas others receive little or no corn during the pasture period. Although there are several gradations in these two variables—the quantity of corn fed during the winter season and the quantity fed while on pasture—an effort has been made in Table 16 to compare two fairly well-defined methods of wintering and fattening cattle in west-central Missouri. One of these methods consists of roughing the cattle through the winter on cheap roughages and feeding them liberally on grain while on grass the next summer. The other method uses little or no corn while the cattle are on pasture. Cattle handled in this way are called "well wintered."

TABLE 16.—*Results of feeding medium-weight cattle (751 to 1,000 pounds) by different methods, in the Missouri district, in 1922 and 1923*

Item	Well-wintered cattle finished on grass with little or no corn	Winter-roughed cattle corn-fed on summer pasture	Item	Well-wintered cattle finished on grass with little or no corn	Winter-roughed cattle corn-fed on summer pasture
Number of droves	9	9		*Dollars*	*Dollars*
Number of cattle	436	474	Net cost per 100 pounds gain	14.79	12.12
Initial weight per head, pounds	883	920	Initial cost per head	54.32	57.09
Gain in weight per head, pounds	299	331	Feed cost per head	42.71	39.74
Days on farm	263	266	Other miscellaneous costs	7.89	7.40
Average daily gain, pounds	1.14	1.25	Total cost per head	104.92	104.23
Feed, per head—			Manure and pork credits	6.21	6.96
Grain (shelled-corn basis), bushels	39	34	Net cost per head	98.71	97.27
Protein concentrates, pounds	18		Net sale price, at farm	100.45	111.00
Molasses and prepared feeds, pounds	8		Profit per head	1.74	13.73
Legume hay, pounds	478	275	Initial cost per 100 pounds	6.15	6.14
Mixed hay, pounds	466	295	Sale price per 100 pounds	8.50	8.81
Straw and stover, pounds	840	404	Margin received	2.35	2.67
Silage, pounds	544	357	Margin necessary to break even	2.20	1.58
Pasture, days	144	202	Return per bushel of corn fed	.71	1.08
			Farm price of corn per bushel	.67	.67
			Price of silage per ton	6.00	6.00
			Price of hogs per 100 pounds	8.50	8.50

Although these well-wintered cattle received 5 bushels more corn per head during the winter than the cheaply wintered cattle were given during the whole time they were on the farm their rate of gain was slower than that of the steers which were wintered cheaply and received a liberal feed of corn on grass. On this account the cost of gain on the well-wintered cattle was greater, and they required 62 cents more margin [1] than the winter-roughed cattle. They actually received a margin of 32 cents per 100 pounds less than the other group. In this case the winter-roughed steers returned 37 cents more per bushel of corn fed to them than did the cattle that received little or no corn during the pasture season.

This would tend to substantiate the claim of many cattle feeders that it is not often advisable to pasture cattle on grass without corn after they have received considerable corn in their winter ration. In certain instances, steers actually lost weight for one or two months after being turned on grass when this practice was followed. It seems, therefore, that it would be more satisfactory to winter the cattle economically with roughages, thus saving the corn for summer feeding on grass, or, after bringing them out of the winter in good shape, to continue the feeding of grain until the cattle are marketed.

To determine if this were true four groups of cattle that were fed during the seasons of 1919–20 and 1922–23 are compared in Table 17. One comparison may be made for the first two years of the study, when prices were on a high level, and another for the last two years, when lower prices prevailed. All four groups of cattle, during both periods, were well wintered, with considerable corn and silage in their ration, until the grass was ready for pasturing in the spring. After this time one group received very little or no other feed when on grass, whereas the other group was finished with corn during the whole pasture period.

[1] Margin is the difference between the purchase price and the sale price, per 100 pounds.

TABLE 17.—*Results of feeding medium-weight steers well wintered, with and without corn while on summer pasture*

Item	Average of two years, 1919 and 1920		Average of two years, 1922 and 1923	
	Cattle finished on grass with little or no other feed	Cattle finished on grass with corn throughout pasture period	Cattle finished on grass with little or no other feed	Cattle finished on grass with corn throughout pasture period
Number of droves	8	8	9	27
Number of cattle	369	358	436	1,557
Initial weight per head, pounds	871	830	883	872
Gain in weight per head, pounds	259	320	299	373
Days on farm	254	227	263	234
Average daily gain, pounds	1.02	1.42	1.14	1.61
Feed per head:				
Grain (shelled-corn basis), bushels	22	33	39	44
Protein concentrates, pounds	93	115	18	100
Molasses and prepared feeds, pounds	44		8	12
Legume hay, pounds	70	327	478	496
Mixed hay, pounds	49	77	466	142
Straw and stover, pounds	344	294	840	746
Silage, pounds	3,035	2,448	544	612
Pasture, days	153	125	144	131
	Dollars	*Dollars*	*Dollars*	*Dollars*
Net cost per 100 pounds gain	28.82	23.66	14.70	10.71
Initial cost per head	79.01	84.55	54.32	53.39
Feed cost per head	73.07	83.63	42.71	41.95
Other miscellaneous costs	12.46	11.99	7.89	8.06
Total cost per head	164.54	180.17	104.92	103.40
Manure and pork credits per head	10.39	19.41	6.21	9.81
Net cost per head	154.15	160.76	98.71	93.59
Net sale price at farm	137.05	161.40	100.45	109.27
Profit per head		.64	1.74	14.68
Loss per head	17.10			
Initial cost per 100 pounds	9.07	10.18	6.15	6.12
Sale price per 100 pounds	12.13	14.03	8.50	8.70
Margin received	3.06	3.85	2.35	2.58
Margin necessary to break even	4.57	3.80	2.20	1.40
Return per bushel of corn fed	.68	1.47	.71	1.01
Farm price of corn per bushel	1.45	1.45	.67	.67
Price of silage per ton	11.00	11.00	6.00	6.00
Price of hogs per 100 pounds	15.00	15.00	8.50	8.50

In 1919 and 1920 the group that was given corn while on grass gained 320 pounds per head in 227 days whereas the cattle pastured on grass without corn gained 259 pounds in 254 days. Therefore the cattle that were corn-fed while on grass gained 61 pounds more per head than did the cattle pastured without grain, during a pasture period 27 days shorter than the pasture period of the cattle that were not fed grain. The corn-finished steers were fed 11 bushels more corn per steer than the grass-finished cattle. The quantity of roughage used by the two groups was practically the same although the corn-finished steers received somewhat less silage and received more dry roughage than did the group which was finished on grass with little or no other feed. The feed cost of 100 pounds gain was $2.06 less for the corn-finished steers at a time when the price of corn was high in comparison with the price of other feeds.

With a greater daily gain and a lower cost per unit of gain, the corn-finished cattle required a margin over the purchase price per 100 pounds, smaller by 77 cents than that necessary for the other group. Actually they sold at a premium of 79 cents per 100 pounds above the margin received by the cattle finished on grass without corn. Expressed in terms of the amount returned per bushel of corn

fed, the corn-finished steers paid $1.47 for each bushel of corn given to them, whereas those finished on grass alone returned 68 cents per bushel for their winter corn, at a time when the farm price of corn was $1.45 per bushel.

The same comparisons may be made with the cattle that were fed during the last two years of the study. With corn cheaper than in 1919 and 1920 it was probably even more important to feed corn to steers that were being fattened on grass. As was the case in the first two years, the steers that received corn during the whole pasture period made a greater daily gain at a lower cost per pound, required a smaller margin over the purchase price per hundredweight, and sold at a margin greater than that received for the steers which were finished on grass alone. The difference in returns amounted to $12.94 per head.

This study indicates that when cattle have once received considerable corn in their ration, it is more economical to continue the feeding of corn while the cattle are on grass even though corn is relatively high in price. Table 16 indicates that with a limited amount of corn available, it is better to winter the steers as cheaply as possible and save the corn for feeding on grass than to feed them well on grain during the winter and then turn them out to pasture and give them no more grain.

Another fairly common method of handling cattle that are fattened on grass is to winter them well, then to withhold grain while the grass is good in the spring, and to finish them with a heavy feed of corn during the last few weeks before selling. (Table 18.) The cattle that were fed in this way sold at a wider margin over the purchase price and returned 11 cents more per bushel of corn fed than did the well-wintered steers which received little or no corn on pasture. But the withholding of grain in the spring lowered their rate of gain and thereby increased the cost of gain to the point that they were not nearly so profitable as the steers which were fed corn during the whole pasture period.

On many farms in the Missouri district a considerable quantity of molasses and molasses feeds is ordinarily fed to steers that are being fattened on grass. Table 18 shows that corn and molasses or molasses feed, when fed during the whole pasture period, proved to be almost as profitable as corn alone on grass. The steers that received corn and molasses on grass made slower and more expensive gains, but they brought a wider margin over the purchase price because of an advantage of 98 cents per 100 pounds in sale price. This would indicate a somewhat smoother finish on the molasses-fed steers. The fact that the molasses-fed steers cost 64 cents more per 100 pounds when bought may suggest that they were better quality steers and sold at a higher price for this reason. Feeding experiments indicate that molasses can be used advantageously to replace corn when its price per pound is as low as that of corn.[5] Molasses feed mixtures are worth more per pound for feeding cattle than corn when they contain a considerable proportion of concentrated protein and a small proportion of low-grade roughage.

[5] EVVARD, J. M., and CULBERTSON, C. C. CANE VERSUS BEET MOLASSES FOR FATTENING 2-YEAR-OLD STEERS, 120 DAYS. Iowa Agr. Expt. Sta. [Prelim. Rpt.], 5 p. [Mimeographed.]
CULBERTSON, C. C., SHARP, L. B., and BURNS, R. H. CANE VERSUS BEET MOLASSES FOR FATTENING 2-YEAR-OLD STEERS. Iowa Agr. Expt. Sta. [Prelim. Rpt.], 2 p. [Mimeographed.]

TABLE 18.—*Results of feeding medium-weight and heavy cattle by different methods, 1922 and 1923*

Item	Medium-weight cattle, 751 to 1,000 pounds					Medium weight cattle—	Heavy cattle over 1,000 pounds—
		Well-wintered					
	Winter-roughed, corn-fed on summer pasture	Finished on grass with little or no other feed	Finished on grass with corn throughout pasture period	Finished on grass with corn and molasses throughout pasture period	Finished on grass, fed heavily last few weeks only	Bought in spring and finished on grass with corn throughout pasture period	
Number of droves	9	9	27	11	9	11	8
Number of cattle	474	436	1,557	825	875	476	450
Initial weight per head, pounds	929	883	872	871	845	905	1,068
Gain in weight per head, pounds	331	299	373	349	339	291	172
Days on farm	268	263	234	253	300	148	93
Average daily gain, pounds	1.25	1.14	1.61	1.38	1.10	1.99	1.85
Feed, per head							
Grain shelled-corn basis, bushels	34	39	44	46	48	49	24
Protein concentrates, pounds	----------	18	100	2	30	----------	----------
Molasses and prepared feeds, pounds	----------	8	12	291	42	----------	----------
Legume hay, pounds	275	478	496	248	244	38	89
Mixed hay, pounds	295	400	142	447	227	----------	----------
Straw and stover, pounds	404	840	746	820	1468	128	124
Silage, pounds	357	544	612	98	176	55	----------
Pasture, days	202	144	131	133	193	143	93
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Net cost per 100 pounds gain	12.12	14.79	10.71	13.15	14.17	13.45	19.31
Initial cost per head	57.09	54.32	53.39	53.88	48.07	56.79	70.80
Feed cost per head	39.74	42.71	41.95	48.86	47.00	41.26	19.94
Other costs per head	7.40	7.89	8.06	8.42	7.98	6.22	3.25
Total cost per head	104.23	104.92	103.40	116.16	103.05	104.27	93.99
Manure and pork credits per head	6.96	6.21	9.81	11.36	6.93	7.82	5.46
Net cost per head	97.27	98.71	93.59	104.80	96.12	96.45	88.53
Sale price per head	111.00	100.45	108.27	118.14	102.85	95.81	87.84
Profit per head	13.73	1.74	14.68	13.34	6.73	----------	----------
Loss per head	----------	----------	----------	----------	----------	.64	.69
Initial cost per 100 pounds	6.14	6.15	6.12	6.76	5.69	6.28	6.63
Sale price per 100 pounds	8.81	8.50	8.70	9.08	8.69	8.01	7.68
Margin received	2.67	2.35	2.58	2.92	3.00	1.73	.45
Margin necessary to break even	1.58	2.20	1.40	1.83	2.43	1.78	.51
Return per bushel of corn fed	1.08	.71	1.01	.96	.82	.66	.64
Farm price of corn per bushel	.67	.67	.67	.67	.67	.67	.67
Price of silage per ton	6.00	6.00	6.00	6.00	6.00	6.00	----------
Price of hogs per 100 pounds	8.50	8.50	8.50	8.50	8.50	8.50	8.50

The results of feeding, on Missouri farms, two groups of steers which were bought in the spring and fattened on grass pasture are also shown in Table 18. The small quantity of dry roughage found in their requirements was that fed to some droves which were bought some time before the grass was ready for pasturing in the spring. The medium-weight group was fed more heavily than the large cattle and gained somewhat more rapidly, but neither group made as great a return as did the cattle bought the previous fall. The cattle purchased in the spring gained much faster and probably more economically because pasture made up a larger proportion of their feed cost and because they did not need to be wintered, but their purchase price per pound was higher than that of the cattle purchased in the fall, and their sale price indicates that they were cattle of poor quality or that they were very thin when bought. Although they made

cheaper and more rapid gains, they brought such a narrow margin over the purchase price that they were less profitable than the fall-purchased steers. Unless insufficient feed is available for wintering cattle, it is probably better to buy during the fall a higher grade of steers at a little lower price per pound than can be bought the following spring for fattening on grass.

RESULTS OF FATTENING CATTLE OF DIFFERENT WEIGHTS

Feeders are much interested in the problem of deciding what weight feeder cattle to buy. Although the larger number of the cattle fattened in the Corn Belt weigh between 751 and 1,000 pounds when bought and most of the feeders available for fattening are between these weights, yet the farmer has the choice of buying calves and yearlings that weigh 750 pounds or less or heavy feeders weighing more than 1,000 pounds. The adaptability of various weights of cattle to different rations has already been mentioned. Factors other than rations will now be considered with respect to the way in which they influence the choice of feeder cattle of a certain weight. Among these factors, which vary with the weight of cattle, are the cost and rate of gain, the quantity of feed required per unit of gain, the kind of feed used, purchase price of the feeder animal per 100 pounds and per head, the length of time on the farm, quantity of pork produced, and the returns as influenced by these other factors, together with market conditions at a given time.

One of the most striking differences in the performances of feeder cattle of different weights in the feed lot is in the quantity of feed consumed. The average daily ration of all the heavy steers in this study which received a corn and legume-hay ration in dry-lot feeding was 22.4 pounds of grain and 9.8 pounds of hay. The other classes of cattle that were fed the same ration consumed the following quantities per day: Medium-weight cattle, 19.2 pounds of grain and 8.9 pounds of hay; yearlings, 17.6 pounds of grain and 8 pounds of hay; calves, 13.3 pounds of grain and 6.2 pounds of hay. These figures are typical of the differences in the quantity of feed used daily by steers of different weights when any other ration is considered.

The heavy steers made the greatest average daily gain, but this advantage was not enough to offset the larger quantity of feed consumed per day. This is emphasized in Table 19, which gives the average quantities of feed required per 100 pounds of gain in each district studied. The saving in grain consumed by the lighter-weight cattle as compared with the heavier steers was relatively greater than the saving of roughage. This is also shown in Table 20, in which the feed requirements for the four weight groups of dry-lot cattle are expressed in feed units of concentrates, dry roughage, and silage. To produce a given amount of gain, calves required only 64 per cent as many feed units as did heavy steers. Gain on yearlings was produced with 75 per cent as much feed and on medium-weight feeders with 87 per cent as much feed as was necessary for heavy cattle. The average feed requirement of 92 droves of heavy cattle that were getting a corn and legume-hay ration in dry lot was 9.6 pounds of corn and 4.2 pounds of hay for each pound of gain. Medium-weight cattle that were getting the same ration required 8.8 pounds of grain and 4 pounds of hay to produce a pound of beef. For yearlings, 8.5 pounds of grain

and 3.9 pounds of hay were necessary for a pound of gain, and for calves only 7.2 pounds of grain and 3.3 pounds of hay were required to produce a pound of gain.

TABLE 19.—*Basic requirements of feed and labor and feed-lot by-products in making 100 pounds gain on cattle of various weights, 1919–1923*

District and weight group	Number of cattle	Initial weight of cattle	Gain per head	Daily gain[1]	Time on farm	Feed			
						Grain	Protein concentrates	Prepared feeds and molasses	Legume hay
Nebraska:		*Pounds*	*Pounds*	*Pounds*	*Days*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Heavy cattle	3,455	1,066	272	2.21	124	931	2	5	402
Medium weight cattle	7,899	881	295	1.91	155	875	3	1	383
Yearlings	3,787	646	356	1.64	210	699	4	2	369
Calves	1,423	427	351	1.72	209	645	1	-------	299
Iowa:									
Heavy cattle	3,609	1,071	292	2.16	136	1,011	5	15	246
Medium weight cattle	10,764	870	329	1.83	181	873	8	17	184
Yearlings	5,534	641	338	1.71	199	769	4	6	168
Calves	2,422	410	370	1.71	222	726	11	29	310
Illinois:									
Heavy cattle	1,917	1,072	244	1.68	146	823	40	9	188
Medium weight cattle	11,283	804	254	1.54	166	637	48	5	132
Yearlings	4,966	658	286	1.45	199	443	33	11	114
Calves	873	433	286	1.38	212	452	28	3	56
Indiana:									
Heavy cattle	2,705	1,109	207	1.82	114	1,086	11	6	22
Medium weight cattle	7,748	876	274	1.67	165	719	37	12	51
Yearlings	3,101	638	302	1.56	196	517	36	15	71
Calves	2,492	413	319	1.47	222	490	37	20	41
Missouri:									
Heavy cattle	1,915	1,029	265	1.60	166	786	27	48	104
Medium weight cattle	14,222	874	319	1.35	237	619	35	21	123
Yearlings	5,924	657	305	1.42	215	552	29	22	138
Calves	1,964	417	296	1.38	220	424	33	30	104

District and weight group	Feed—Continued				Feed-lot by-products		Labor	
	Other hay	Stover and straw	Silage	Pasture	Pork	Manure	Man	Horse
Nebraska:	*Pounds*	*Pounds*	*Pounds*	*Days*	*Pounds*	*Loads*	*Hours*	*Hours*
Heavy cattle	28	7	-------	5	26.1	0.6	2.8	1.4
Medium weight cattle	55	11	51	10	25.4	.8	2.7	1.8
Yearlings	63	12	77	18	20.1	.8	2.9	2.1
Calves	62	1	-------	8	16.5	.5	2.5	1.4
Iowa:								
Heavy cattle	33	50	95	7	30.9	.6	2.3	1.7
Medium weight cattle	34	60	155	14	29.5	.7	2.4	1.8
Yearlings	48	55	237	19	23.0	.6	2.4	1.7
Calves	61	24	83	12	20.7	.5	2.2	1.2
Illinois:								
Heavy cattle	107	141	1,324	9	19.8	2.1	5.0	2.9
Medium weight cattle	138	142	1,709	9	17.3	2.0	5.3	3.1
Yearlings	116	91	1,538	15	13.5	1.6	4.3	2.4
Calves	66	64	1,379	11	7.7	1.4	4.2	1.2
Indiana:								
Heavy cattle	29	405	870	12	52.0	1.7	5.8	3.3
Medium weight cattle	26	326	1,302	12	32.5	1.5	4.6	2.2
Yearlings	59	171	1,149	16	20.0	1.3	4.2	1.3
Calves	47	170	869	11	16.0	1.0	3.4	1.6
Missouri:								
Heavy cattle	20	113	321	39	28.6	.2	3.4	4.4
Medium weight cattle	47	200	423	44	21.8	.3	3.0	3.7
Yearlings	31	133	454	39	17.5	.3	3.0	3.4
Calves	62	58	399	32	12.8	.3	2.9	2.2

[1] The details of daily gain according to weight classes and districts are shown in Tables 30, 31, and 32.

TABLE 20.—*Feed units required to produce 100 pounds gain on cattle fed in dry lot, 1919–1923*

Weight group	Concentrates	Dry roughage	Silage	Total feed units [1]	Percentage of requirements for heavy cattle
Heavy cattle	1,109	150	71	1,330	100
Medium-weight cattle	841	151	108	1,160	87
Yearlings	691	138	173	1,002	75
Calves	682	110	65	857	64

[1] After due consideration of the analyses of these feeds and of the values given to them in various feeding standards, they were put on a unit basis as follows:

1 pound corn	1.00 unit	1 pound mixed hay	0.35 unit
1 pound protein concentrate	1.30 units	1 pound stover and straw	.25 unit
1 pound prepared feed	1.10 units	1 pound corn silage	.17 unit
1 pound legume hay	.45 unit		

The striking difference in the quantities of feed required to produce 100 pounds of gain on cattle of different weights is also shown in Figure 13. All feeds that were given to cattle handled according to the dry-lot and fall-pasture methods, during the last three years of the study, were reduced to feed units. The increase in the quantity of feed required to produce gain was rather regular except in the

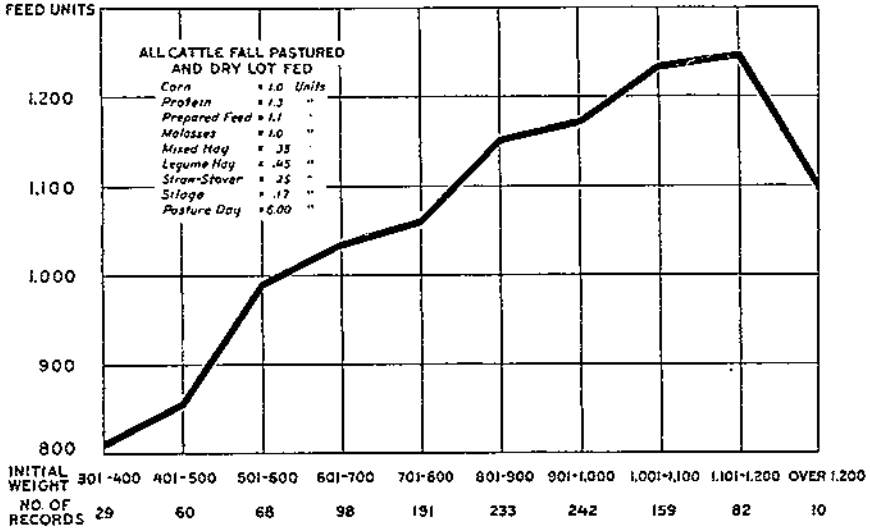


FIG. 13.—FEED UNITS PER 100 POUNDS GAIN ON CORN-FED CATTLE OF DIFFERENT WEIGHTS, 1921–1923

Larger cattle require more feed to put on gain.

case of the cattle weighing over 1,200 pounds when bought. Only a small number of droves were in this class.

It would not be expected that a typical growth curve could be drawn from the feed requirements per unit of gain as found in this study because the feed requirements for growing and for fattening cattle to a given weight are usually different. Moreover, the heavier weights of feeder cattle are usually fed during a short period and, if they are thin when bought, are capable of very rapid daily gains,

which cause their feed requirements per unit of gain to be considerably lower than would be the case if a continous record of their performance since they were calves were available. Heavy cattle may be fattened in a much shorter feeding period than lighter steers because they already have their growth and fatten more easily.

The average length of time that the heavy cattle in the districts studied were on the farm was a little more than four months. Medium-weight cattle were usually on the farm for about six months. The average length of time on the farm for yearlings was almost seven months and for calves a little over seven months. (Table 40.)

On account of the longer feeding period required to fatten light-weight cattle there was less difference in the quantity of feed consumed per head by calves and that consumed by heavy cattle than might be expected. The average quantity of corn per animal for all that received a corn and hay ration in dry lot was 48 bushels for heavy cattle, 49 bushels for medium-weight steers, 47 bushels for yearlings, and 44 bushels for calves. With these quantities of corn, however, the calves put on 329 pounds of gain, while the yearlings gained 298 pounds, the medium-weight cattle 285 pounds, and the heavy steers 262 pounds. The gain which feeders put on calves is ordinarily about 75 pounds greater than the usual gain put on heavy steers.

Although heavy cattle require more feed per day and per unit of gain than do cattle which are lighter in weight, they also have a greater pork credit. The quantity of pork produced behind cattle depends upon the quantity of corn fed, the form in which it is fed, and the size of the cattle. Where ground corn or shelled corn is fed there is less feed for the hogs following steers than where ear corn or fodder corn is given, because there is less waste at the bunk and the corn is more completely digested when fed as ground corn. For light-weight cattle the corn is usually sliced or shelled, but for heavier feeders the ears are only broken. (Table 36.) This explains the smaller quantity of pork produced in feeding the lighter weights of steers.

In this study, heavy and medium-weight cattle had a credit of 31.3 pounds of pork with each 100 pounds of gain as compared with 25.3 pounds for yearlings and 19.2 pounds for calves.

The advantage of heavy cattle in the quantity of pork by-product was not sufficient to offset their greater feed requirement per unit of gain. For all the cattle in this study whose basic ration was corn and hay in dry lot, the quantity of beef and pork produced per bushel of corn fed to cattle was as follows:

Class of cattle	Pounds of beef	Pounds of pork behind cattle	Class of cattle	Pounds of beef	Pounds of pork behind cattle
Heavy cattle	5.45	1.71	Yearlings	6.34	1.60
Medium-weight cattle	5.81	1.82	Calves	7.47	1.44

The net cost of 100 pounds of gain sums up the advantages of each class of cattle in the quantity of feed consumed, the quantity of pork produced, and the rate of gain. In each year of the study the calves had the lowest cost of gain of any group. Heavy cattle

had the highest cost of gain in each year except in 1919, when 6 of the 13 droves fed were fattened largely on grass in Missouri. The net cost of gain on calves was usually from 65 to 80 per cent of that on heavy cattle.

The purchase price per 100 pounds of heavy cattle is usually higher than for feeders of any other weight. This is explained by the fact that they are usually in better condition and may be finished within a short feeding period without a very large margin. It should be remembered that the feeder will sell not only the gain which he puts on his cattle but also the initial weight of the animals whose finish he is trying to improve by fattening. Although the cost of gain on heavy cattle is much greater than the cost of gain on calves, their greater original weight makes it possible for them to be fed for a short period without any greater margin over the original cost per hundredweight than is necessary for lighter cattle. If they are fed too long, however, their more expensive gains outweigh this advantage, and they require an ever-increasing margin to pay for their feed and other costs.

During each year of the study, yearlings cost less per 100 pounds when bought than did cattle of any other weight. There are more yearlings on the feeder market than heavy cattle or calves, and they are usually much thinner, often being used as stockers before being fed out. That feeders ordinarily bid more per pound for calves than for yearlings is indicated in Table 21, where the average cost per 100 pounds of feeder cattle of each class is shown for each year.

TABLE 21.—*Average costs and returns for cattle of different weights, 1919–1923*

Item	1919				1920				1921				1922				1923			
	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves
Number of droves	13	148	105	39	56	295	116	44	98	262	110	31	108	249	145	51	90	274	107	33
Number of cattle	701	6,745	3,914	1,942	1,752	11,555	4,855	1,470	3,575	10,710	3,938	1,032	3,927	10,213	5,696	2,750	3,646	12,684	4,909	1,980
Initial weight per head, pounds	1,023	847	641	419	1,046	873	659	427	1,067	878	647	432	1,096	877	650	418	1,065	876	647	399
Gain in weight per head, pounds	237	279	298	316	255	266	291	300	291	326	314	372	241	302	331	334	255	305	341	337
Final weight per head, pounds	1,260	1,126	939	735	1,301	1,139	950	727	1,358	1,204	961	804	1,337	1,179	981	752	1,320	1,181	988	736
Days on farm [1]	125	179	182	210	140	160	209	208	151	205	207	236	124	181	208	222	126	196	219	221
Average daily gain, pounds	1.89	1.57	1.65	1.54	1.83	1.58	1.41	1.46	1.93	1.60	1.53	1.60	1.94	1.68	1.61	1.55	2.02	1.56	1.58	1.56
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Initial cost of feeder animal	113.21	88.79	60.73	41.01	112.93	85.57	60.93	41.05	102.30	74.26	48.59	37.14	67.23	51.49	37.63	26.17	72.61	57.16	41.09	26.14
Feed	55.42	84.03	72.29	70.70	84.26	79.62	71.70	65.15	38.68	41.76	35.99	37.53	24.94	29.01	29.79	25.16	38.37	42.61	41.08	34.76
Man and horse labor	3.45	6.65	6.41	4.85	5.02	5.17	5.02	4.71	4.44	4.98	4.54	3.95	2.41	2.87	2.98	2.55	2.43	2.91	2.64	2.60
Interest on investment in cattle and equipment	3.42	4.68	3.91	3.21	4.65	4.34	4.10	3.30	4.45	4.71	3.73	4.13	2.55	2.90	2.82	2.42	2.59	3.04	2.67	2.16
Depreciation and repairs of equipment	.60	1.80	1.75	1.42	1.68	1.54	1.58	1.72	1.09	1.26	1.37	1.85	.95	1.04	1.17	1.13	.97	.94	1.09	1.03
Other costs	.76	1.94	1.66	1.83	1.71	1.40	1.66	1.34	1.47	1.54	1.24	1.38	1.04	1.12	1.11	1.44	.97	1.09	1.08	1.32
Total cost of finished animal	176.86	187.89	146.75	123.02	210.25	177.64	144.99	117.27	152.43	128.51	95.46	85.98	99.12	88.43	75.50	58.87	117.94	107.75	89.65	68.01
Credits for—																				
Pork	8.31	10.40	8.75	9.81	12.40	10.62	9.38	6.93	6.87	6.33	4.43	4.83	7.73	7.27	6.23	5.14	5.79	5.51	4.49	4.07
Manure	1.14	4.62	4.07	3.04	6.65	6.88	5.67	5.95	2.53	2.84	2.75	2.46	2.70	2.85	2.58	2.66	2.46	2.85	2.07	2.55
Net cost of finished animal at farm	167.41	172.87	133.93	110.17	191.20	160.14	129.94	104.39	143.00	119.34	88.28	78.69	88.69	78.31	66.69	51.07	109.69	99.39	83.09	61.39
Net sale value of finished animal at farm	187.72	160.08	126.69	99.50	167.54	139.01	113.26	90.84	115.79	94.54	72.81	68.88	98.59	91.35	76.75	60.36	114.42	103.56	83.63	63.89
Profit	20.31																			
Loss		12.79	7.24	10.67	23.66	21.13	16.68	13.55	27.21	24.80	15.47	9.81	9.90	13.04	10.06	9.29	4.73	4.17	.54	2.50
Cost of finished animal per 100 pounds, at farm	13.15	15.08	14.28	14.97	14.53	13.90	13.50	14.18	10.54	9.93	9.18	9.75	6.50	6.62	6.78	6.81	8.16	8.43	8.46	8.38
Initial cost of animal per 100 pounds, at farm	11.07	10.49	9.47	9.78	10.80	9.80	9.25	9.62	9.59	8.46	7.51	8.59	6.13	5.87	5.79	6.27	6.82	6.52	6.35	6.55
Margin necessary to cover costs	2.22	4.86	4.79	5.21	3.90	4.26	4.43	4.74	.94	1.45	1.68	1.20	.50	.77	1.01	.52	1.49	1.90	2.06	1.79
Margin received	3.83	3.71	3.99	3.63	2.08	2.30	2.62	2.81	−1.07	−.62	.05	−.07	1.24	1.87	2.01	1.67	1.84	2.23	2.09	2.06
Return per bushel of corn fed	2.26	.96	1.11	1.03	.81	.75	.80	.94	−.03	−.07	.05	.28	.65	.72	.65	.68	.77	.76	.67	.73
Farm price of corn per bushel		1.40				1.40				0.51				0.42				0.66		
Farm price of silage per ton		11.00				11.00				6.00				4.00				5.75		
Farm price of hogs per 100 pounds		18.50				14.00				8.25				9.00				7.50		

Cost per 100 pounds gain: [2]																			
Feed	23.35	29.90	24.07	21.88	32.88	29.79	24.29	21.43	13.25	12.74	11.37	9.91	10.31	9.55	8.91	7.32	15.01	13.89	11.91	10.09
Labor	1.45	2.36	2.13	1.49	1.96	1.94	1.69	1.55	1.52	1.52	1.44	1.04	1.00	.94	.89	.74	.95	.95	.76	.76
Interest	1.44	1.66	1.31	.99	1.81	1.62	1.39	1.09	1.53	1.44	1.18	1.09	1.05	.96	.84	.70	1.01	.99	.78	.63
Other costs	.58	1.33	1.14	1.01	1.33	1.10	1.09	1.02	.87	.85	.83	.85	.81	.70	.67	.76	.77	.66	.64	.68
Total	26.80	35.25	28.65	25.37	37.98	34.45	28.46	25.09	17.17	16.55	14.82	12.89	13.17	12.15	11.31	9.52	17.74	16.49	14.09	12.16
Credit for pork and manure per 100 pounds gain	3.98	5.35	4.27	3.98	7.43	6.55	5.10	4.24	3.22	2.80	2.27	1.93	4.31	3.33	2.63	2.27	3.23	2.73	1.90	1.92
Net cost per 100 pounds gain	22.82	29.90	24.38	21.39	30.55	27.90	23.36	20.85	13.95	13.75	12.55	10.96	8.86	8.82	8.86	7.25	14.51	13.76	12.19	10.24
Return, per $100 of cost	112.13	92.60	94.59	90.31	87.63	86.81	87.16	87.02	80.97	79.22	82.48	87.53	111.16	116.65	115.08	118.19	104.31	104.20	100.65	104.07

[1] The distribution of cattle by weight groups according to the number of days on farms is shown in Table 40.
[2] The percentage distribution of cattle by weight classes and years according to the net cost per pound of gain is shown in Table 33.

59944°—27——4

The per head cost and returns in feeding the different weights of cattle are also shown in Table 21. The differences in the original costs per head are striking. The calves cost only about 36 per cent as much per head as did the heavy cattle. The feed and other costs on the per head basis are more nearly equalized because of the longer feeding period of the lighter cattle. Aside from the showing of the heavy cattle in 1919, which is scarcely typical, the returns per head show that heavy cattle made the lowest return in those years when price conditions were unfavorable to cattle feeding and that during the last two years of study, when the price of cattle was rising, they had a slight advantage over lightweight cattle.

In summarizing the advantages of cattle of the various weight classes for fattening in the Corn Belt it should be emphasized that the cost of gain on young cattle is much lower than on older steers because of the smaller quantity of feed required per unit of gain on lightweight feeders. But heavy steers are better able to utilize stalk pasture, corn fodder, and coarse hay than are calves or yearlings, and because they already have their growth they fatten more readily in a short time, whereas calves must be full-fed on grain at least during the last part of their feeding period or they will grow mostly instead of fattening properly. The market demand for heavy cuts of beef is much more limited than for beef from handy-weight steers, hence the price of heavy steers is more sensitive to market demands. Although the greater original weight of heavy cattle makes them much more profitable when the general price trend is upward, their expensive gains and their dependence on a more inelastic demand at the end of a rather definite feeding period make the operation more hazardous than the feeding of younger cattle. With a lower cost of gain on younger cattle, the feeder is not so dependent on market conditions at any one particular time and does not risk so much in waiting for a better market.

IMPORTANCE OF BEEF TYPE IN THE FATTENING OF STEERS

It has been the aim of beef cattle breeders for over a century to produce a better meat animal. Although it is difficult to measure the extent to which beef breeds have been improved, it can safely be said that the improvement has been considerable.

The ideal beef type desired by breeders and feeders of beef cattle is an animal that will produce the largest proportion of the highest priced cuts of beef when slaughtered. Such a one is necessarily a low-set animal of straight lines, broad and deep bodied, smoothly covered with a thick, even layer of firm flesh. (Pl. 2, fig. 2.) An animal of poor breeding usually deposits its fat around the internal organs instead of interspersing it among the more valuable cuts of lean meat. This type is characterized by such undesirable features as light hind quarters, high flank, narrow thin loin, small heart girth and long, narrow head and neck.

INFLUENCE OF GRADE OF CATTLE ON FEED-LOT PERFORMANCE

To show the effect of quality of feeder cattle on feed-lot performance the personal observation of the field agent was used in dividing the cattle fed in Illinois district in 1922 and 1923 into two groups. One group was made up of steers that were above the average in quality

and are here called "good" steers. The cattle that were distinctly below the average in quality are called "common" steers. A comparison of the results of feeding good and common cattle in those years is shown in Table 22.

TABLE 22.—*Results with good and common cattle in the feed lot in Illinois in 1922 and 1923*

Item	Grade of cattle	
	Good [1]	Common [2]
Number of droves	15	26
Number of cattle	703	1,785
Number of days on the farm	174	143
Initial weight per head, pounds	888	824
Gain in weight, per head, pounds	298	189
Final weight per head, pounds	1,186	1,013
Average daily gain, pounds	1.71	1.32
Feed per 100 pounds gain:		
Grain, pounds	664	693
Silage, pounds	1,261	1,871
Protein concentrates, pounds	21	29
Prepared feeds and molasses, pounds	10	2
Mixed hay, pounds	225	315
Stover and straw, pounds	102	152
Pasture, days	9	8
	Dollars	*Dollars*
Feed cost per 100 pounds gain	12.32	14.92
Other costs	2.82	4.07
Total cost of 100 pounds gain	15.14	18.99
Pork and manure credits	2.14	3.21
Net cost per 100 pounds gain	13.00	15.78
Initial cost per head	62.16	42.27
Value of feed	36.93	28.26
Other costs	5.29	4.86
Cost of animal out of feed lot	107.52	78.25
Pork and manure credit	6.41	6.07
Net cost out of feed lot	101.11	72.18
Net sale value out of feed lot	107.62	72.64
Profit per head	6.51	.46
Purchase price per 100 pounds	7.00	5.13
Sale price per 100 pounds (at farm)	9.07	7.16
Necessary margin to break even	1.52	1.99
Farm price of corn	.54	.54
Return per bushel of corn fed	.73	.55
Price of silage per ton	5.00	5.00
Amount that could have been paid for animals per hundredweight and break even	7.73	5.18

[1] Above the average. [2] Distinctly below the average.

Good feeder steers always cost more per pound than do common cattle. This fact is accounted for by their performance in the feed lot and at the fat-cattle market. In this instance the common steers cost $5.13 per 100 pounds original weight, as compared with $7 per 100 pounds for the good steers.

The good steers gained more rapidly, were more efficient in the use of feed, and at the price at which they were purchased made a greater return for feed, labor, and other charges than did the common steers. A margin of $1.52 per 100 pounds was needed to break even with good steers, as compared with $1.99, with common steers. In the net cost of gain the good steers had an advantage of $2.78 per 100 pounds of gain. To make the same net return per head common steers must be purchased cheaply enough to overcome their handicap in sale price and feed-lot performance.

The feeding of good cattle is not always more profitable than the feeding of common steers because most feeders realize the advantage of good feeder cattle and tend to purchase their cattle at a price at which all grades of cattle will make the same return over a period of years.

The fact that greater returns are made by feeding common cattle in some years and by feeding good cattle in other years is shown in Table 23, which gives the average profit and loss per head for good and common heavy steers in the Indiana district during the last four years of the study. In two of those years common cattle made the greater return and in the other two years good cattle had the advantage in financial returns.

TABLE 23.—*Profit and loss, per head, on heavy cattle of different grades, fed in Indiana*

Year	Grade of cattle		Year	Grade of cattle	
	Good	Common		Good	Common
1919–20	−$29.12	−$13.24	1921–22	+$13.17	+$6.78
1920–21	−8.19	−10.00	1922–23	+15.15	+16.54

It may be noticed that the average length of time on the farm of the common steers in Table 22 was 31 days less than for the better cattle. This is probably due to the fact that it is usually considered inadvisable to put a high finish on low-grade steers. Common steers, besides being of a less desirable beef type are usually not as fat when sold as are good steers.

Because of their better use of feed, greater gain per day, and higher sale price when finished, the feeder of the good steers in the years 1922 and 1923 could have paid as much as $7.73 per 100 pounds for them, while $5.18 per 100 pounds was the most that could have been paid for the common steers if the feeder were to break even. The actual difference in the purchase price of the two groups was $1.87 per 100 pounds. These figures indicate that feeders could, in those years, have paid as much as $2.55 per 100 pounds more for the good feeder steers than for the common ones.

Good steers excel common steers in the feed lot in these particulars: (1) They make greater daily gains, (2) they require less feed per pound of gain, (3) they require less margin between purchase and sale price, and (4) they sell at a higher price per 100 pounds when finished. If feeders judge correctly the differences in price and feed-lot performance between good and common steers the returns from feeding the different grades will tend to be the same with seasonal influence duly considered.

SEASONAL VARIATIONS IN PRICE OF BEEF CATTLE OF DIFFERENT GRADES

Since April, 1919, the Bureau of Agricultural Economics has collected prices at the principal livestock markets on four grades of cattle slaughtered. These grades are choice, good, medium, and common. The seasonal variation in the prices of cattle of these different grades is of considerable interest and importance to the cattle feeder in the Corn Belt.

Figures 14 and 15 show that common cattle are generally lowest in price in October and November during the time of large runs of cattle from the range whereas choice cattle are usually higher in price than at any other time of the year because ordinarily very few corn-finished steers are marketed at that time.

Common steers, the thinnest of the four grades, are in demand in the spring for grazing and summer-feeding purposes as well as for the cheaper grades of beef. Consequently the highest prices of the year for common steers are obtained during May, whereas the price of choice steers is lowest in April and May, because most of the corn-finished steers are fattened during the winter and sold in the spring.

In this case, however, the price of common steers during May, which was their month of highest prices, was only 79 per cent of that at which choice steers sold during the same period which was their

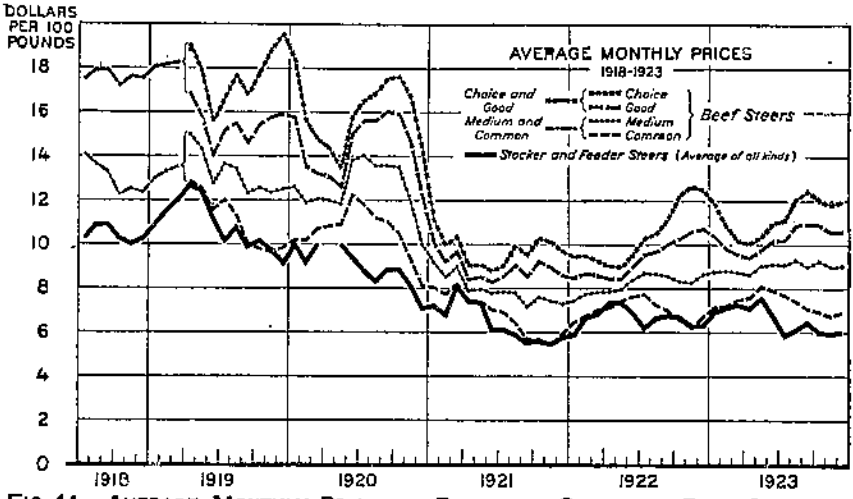


FIG. 14.—AVERAGE MONTHLY PRICES OF DIFFERENT GRADES OF BEEF CATTLE IN CHICAGO, 1918–1923

The seasonal variation in the spread between the price of common and choice beef steers was rather consistent in the five years shown.

month of lowest prices. In November the average price of common steers was as low as 53 per cent of the price of choice cattle. (Table 24.) Another way of expressing the apparent seasonal relationship

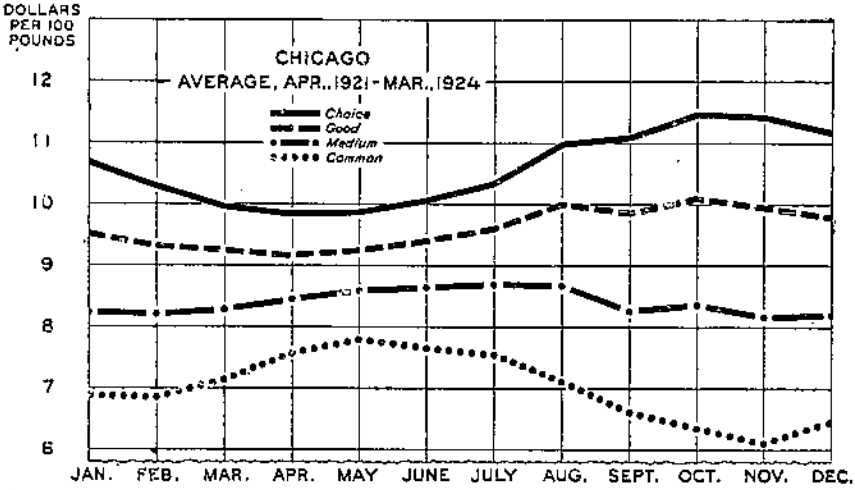


FIG. 15.—SEASONAL VARIATION IN PRICES OF DIFFERENT GRADES OF BEEF CATTLE

Choice beef steers are usually highest during October and November. The highest prices of the year for common beef steers are usually obtained in May and June.

between the price of choice and common steers is to say that during the three years 1921 to 1923 there was an average spread of $2 per 100 pounds between them during April and May, which increased to $5 per 100 pounds during October and November.

TABLE 24.—*Seasonal variation in the price relation of different grades of beef cattle, April, 1921, March, 1924*

Grade of cattle	Percentage of average monthly price [1] for choice cattle at Chicago												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ave.
Choice	100	100	100	100	100	100	100	100	100	100	100	100	100
Good	89	90	92	93	94	93	93	91	89	88	87	87	91
Medium	77	79	83	86	87	86	84	79	75	73	71	73	79
Common	64	66	72	77	79	76	73	65	60	55	53	58	66

[1] Corrected for trend.

The Corn Belt cattle feeder can draw several conclusions from the graphs showing the seasonal variation in the prices of different grades of beef cattle at Chicago from 1919 through 1923. If steers of low quality are to be fattened they should be bought in October or November, when they are relatively low in price, and should be sold in April or May, when there are fewer grass-fat cattle to compete with them on the market and when they usually sell nearest to the price of good and choice steers. It should be remembered, however, that feeder cattle of poor quality gain less rapidly at a greater cost per pound and require a wider margin over the purchase price per 100 pounds than do steers of a better grade. Therefore, they must be purchased cheaply enough to overcome their handicap in feed-lot performance and sale price. The difference in the purchase price necessary to make the same return on good and common steers in 1922 and 1923 amounted to $2.55 per 100 pounds. (Table 22.)

Many cattle feeders make it a practice to buy good steers weighing over 900 pounds in August or September and finish them for marketing in December or January. Heavy cattle are well adapted to being finished in such a short period, and if they are of good quality they usually sell at a premium over other kinds of cattle at that time of year. There may be more financial risk in feeding heavy steers, but lighter cattle could not be fattened in such a short time. Heavy steers of poor quality should not be handled in this manner without a very wide probable margin because there are usually a large number of range steers still to be marketed as late in the year as December.

Calves and yearlings of good quality that are bought in November may be given a growing ration during the first part of the winter and may be fed out in dry lot for a July or August market to advantage. Hot weather and flies as well as the heavy labor requirement elsewhere on the farm during the crop season are objections to this and other plans of summer feeding.

Where summer fattening of steers with corn on grass is practiced, Figure 15 would indicate that steers that are somewhat above average in quality should be bought in the fall and wintered over for this purpose. The premium paid for corn-finished steers which grade good or choice from July to October is one of the most important advantages of this type of feeding. Steers that are handled in this way are purchased at the time of year when feeder steers are lowest in price and are sold when the price of corn-fed steers is the highest of the year.

But the majority of the cattle fattened in that part of the Corn Belt where the acreage of pasture is limited will continue to be pur-

chased in the fall, fattened during the winter, and marketed during the spring months because this plan fits in so well with the seasonal nature of marketing from the range and with Corn Belt feed and labor conditions.

MARGINS NECESSARY FOR CATTLE KEPT VARIOUS LENGTHS OF TIME ON GRAIN FEED

Much of the success in fattening cattle on grain depends upon the margin secured on the initial weight of the feeder steer, and on the ability of the cattleman to plan his feeding operations so that he may know the margins necessary to cover costs over each additional week or month of feeding. A knowledge of what another 15 days' or another month's feeding will require in the way of margins to cover costs, considered in the light of probable cattle-price movements, furnishes a basis for choosing the most profitable time for selling. And in the same way, when finished cattle are to be sold upon a certain future market, a knowledge of the margin necessary to cover costs under varying price levels and for different periods on grain feed furnishes a basis for determining the best time and price at which to buy.

In general, as the feeding period is lengthened the rate of gain decreases, the net cost of gain increases, and therefore the margin necessary to cover this cost increases. Table 25 shows the rate at which the margin necessary to cover fattening costs increased as the length of time on grain feed was extended. Table 26 shows the relationship of time on feed to the rate and cost of gain. Of the three factors—rate of gain, cost of gain, and the margin necessary to cover costs, all of which vary as the time on feed varies—the increase in the margin necessary to cover costs followed most closely the increase in the length of the feeding period. This increase in margin required to cover costs was greater for heavy cattle than for cattle of the other weights.

TABLE 25.—*Margin per 100 pounds necessary*[1] *when fattening cattle for various lengths of time*

Weight classes and rations	60 days	90 days	120 days	150 days	180 days	210 days	240 days	Rate of increase each 30 days
Corn and hay rations, 1919–20:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Heavy cattle	1.64	2.45	3.26	4.07	4.88	5.69	6.50	0.81
Medium-weight cattle	1.90	2.64	3.38	4.12	4.86	5.60	6.34	.74
Yearlings	3.60	4.12	4.43	4.75	5.07	5.38	5.70	.31
Calves			4.24	4.86	5.48	6.10	6.72	.62
Silage rations, 1919–20:								
Heavy cattle	2.27	3.22	4.17	5.12	6.07	7.02	7.97	.95
Medium-weight cattle	2.62	3.37	4.12	4.87	5.62	6.37	7.12	.75
Yearlings	2.77	3.24	3.71	4.18	4.65	5.12	5.59	.47
Calves			5.09	5.00	4.90	4.81	4.72	−.09
Corn and hay rations, 1922–23:								
Heavy cattle	.21	.60	.99	1.38	1.77	2.16	2.55	.39
Medium-weight cattle	.40	.61	.82	1.03	1.24	1.44	1.65	.21
Yearlings	1.01	1.08	1.15	1.22	1.29	1.36	1.43	.07
Calves			.64	.62	.60	.59	.57	−.02
Silage rations, 1922–23:								
Heavy cattle	.76	1.01	1.27	1.53	1.78	2.04	2.30	.26
Medium-weight cattle	.94	1.13	1.33	1.52	1.72	1.91	2.11	.20
Yearlings	1.03	1.18	1.33	1.48	1.63	1.78	1.93	.15
Calves			.60	.85	1.10	1.35	1.60	.25

[1] In computing the cost factor for this table uniform prices of corn and silage were used for all groups as follows: In 1919–20, corn at $1.40 per bushel and silage at $11 per ton; in 1922–23, corn at $0.50 per bushel and silage at $5 per ton.

TABLE 26.—*Results of feeding cattle for various lengths of time, 1919 and 1920, and 1922 and 1923*

1919 AND 1920

Weight class and length of feeding period in days	Corn and hay rations						Silage rations					
	Number of droves	Gain per day	Cost of gain [1]	Margin necessary	Margin received	Returns per $100 of cost	Number of droves	Gain per day	Cost of gain [1]	Margin necessary	Margin received	Returns per $100 of cost
		Lbs.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*		*Lbs.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Heavy cattle:												
51 to 80 days	10	2.57	21.78	1.85	2.47	107.21	3	2.46	32.06	2.03	2.36	102.54
81 to 110 days	16	2.28	23.70	2.67	2.18	90.25	2	1.85	30.10	2.63	−1.25	75.93
111 to 140 days	11	2.03	28.64	3.40	1.94	89.15	5	1.67	35.14	4.81	1.94	82.67
141 to 170 days	4	2.32	26.98	4.04	1.89	86.91	6	1.65	28.86	3.98	2.37	89.61
171 to 200 days	1	1.74	49.77	8.35	2.13	64.09	1	1.17	40.18	6.58	5.03	88.72
201 to 230 days							1	1.34	58.12	8.98	.68	56.21
Over 230 days							1	1.75	38.67	7.91	5.15	84.51
Medium-weight cattle:												
51 to 80 days	31	2.12	21.14	2.05	2.40	102.65	10	1.49	24.02	2.14	3.01	108.84
81 to 110 days	45	1.79	24.95	3.21	3.12	99.30	31	1.51	29.83	3.64	2.44	91.37
111 to 140 days	47	1.84	24.38	3.41	2.83	95.66	50	1.57	30.58	4.11	1.96	84.31
141 to 170 days	33	1.80	24.69	4.17	2.55	89.82	45	1.01	30.79	4.94	2.71	85.82
171 to 200 days	13	1.76	25.08	4.39	3.05	90.90	33	1.54	33.92	6.24	3.87	86.14
201 to 230 days	12	1.64	30.12	5.55	3.52	86.36	24	1.62	32.51	6.23	4.19	80.08
Over 230 days	3	1.51	28.87	6.08	3.95	88.67	8	1.67	33.77	8.19	4.33	80.70
Yearlings:												
51 to 80 days	7	1.91	30.78	5.05	1.87	93.21	4	2.48	20.08	2.39	1.88	105.75
81 to 110 days	16	1.84	24.51	3.91	.92	96.21	13	1.59	22.38	2.81	1.15	100.87
111 to 140 days	18	1.54	25.98	5.06	1.81	91.65	19	1.54	23.69	3.87	−.01	87.49
141 to 170 days	12	1.72	26.08	5.73	1.73	87.84	28	1.53	26.07	4.86	1.06	86.92
171 to 200 days	6	1.75	21.91	4.79	.96	88.94	16	1.61	27.61	5.44	1.11	84.99
201 to 230 days	7	1.55	26.21	5.79	1.44	91.09	12	1.64	23.59	5.39	2.40	90.26
Over 230 days							4	1.60	18.18	4.25	2.39	98.60
Calves:												
81 to 110 days	4	2.34	17.68	3.38	4.18	107.70	2	1.39	19.10	3.27	4.71	111.66
111 to 140 days	7	1.89	20.51	4.05	2.40	90.23						
141 to 170 days	12	1.78	23.27	5.83	4.28	90.15	7	1.23	28.44	6.13	2.93	77.71
171 to 200 days	15	1.69	22.54	5.62	3.40	85.22	4	1.16	20.80	4.58	3.30	92.01
201 to 230 days	4	1.52	27.61	7.56	3.31	74.83	1	1.71	12.34	2.36	1.62	102.58
Over 230 days	6	1.64	21.63	5.31	3.18	86.88	5	1.60	18.90	4.44	3.40	94.39

1922 AND 1923

Heavy cattle:												
51 to 80 days	23	2.24	9.04	0.50	0.97	109.07	0.6	1.67	12.98	0.47	1.05	106.32
81 to 110 days	37	2.35	9.92	.62	1.50	112.02	6	1.97	13.56	1.04	.97	98.11
111 to 140 days	36	2.18	10.00	.86	1.77	113.33	11	1.73	13.02	1.49	1.69	104.67
141 to 170 days	19	1.99	11.63	1.09	2.15	110.75	7	1.78	13.70	1.67	2.32	107.83
171 to 200 days	11	1.86	13.54	1.26	1.80	101.31	4	1.72	16.43	2.15	2.52	101.43
201 to 230 days	2	1.51	21.00	2.80	3.45	96.65						
Over 230 days							1	1.82	16.10	1.63	2.42	98.17
Medium weight:												
51 to 80 days	11	2.17	7.44	.38	1.11	113.64	5	1.29	11.55	.92	1.06	106.30
81 to 110 days	27	2.16	8.95	.62	1.51	112.95	33	1.75	12.42	1.09	1.40	104.88
111 to 140 days	76	2.06	9.83	.91	1.60	110.13	34	1.51	13.74	1.70	1.81	101.94
141 to 170 days	73	1.97	9.94	.82	1.65	104.24	46	1.57	13.12	1.77	2.33	108.08
171 to 200 days	25	1.84	11.25	1.39	2.46	112.24	22	1.57	12.81	1.84	2.16	103.79
201 to 230 days	14	1.71	11.18	1.39	2.35	110.56	10	1.56	13.05	1.54	2.09	109.28
Over 230 days	1	1.38	12.87	1.11	3.57	118.70	2	1.25	13.20	1.94	2.30	106.13
Yearlings:												
51 to 80 days	1	1.49	11.08	.89	1.22	110.15	4	1.42	9.96	1.12	1.35	96.39
81 to 110 days	13	1.77	10.37	1.10	1.32	101.85	6	1.56	9.88	1.30	1.50	105.00
111 to 140 days	13	1.73	8.36	1.04	1.75	114.00	11	2.36	11.41	1.27	2.10	104.08
141 to 170 days	31	1.81	9.44	1.36	1.80	110.30	27	1.62	10.48	1.62	1.95	103.77
171 to 200 days	27	1.70	11.05	1.35	2.22	105.67	20	1.65	11.49	1.84	2.49	106.42
201 to 230 days	8	1.76	8.49	.92	1.81	114.07	4	1.55	9.19	1.47	3.45	127.22
Over 230 days	3	1.90	8.35	1.01	2.21	118.75	8	1.47	12.55	1.99	3.04	106.06
Calves:												
81 to 110 days	3	1.17	9.85	1.29	1.46	93.45	4	1.58	6.76	.24	.85	106.68
111 to 140 days	3	1.97	6.07	.32	.65	113.46	6	1.78	9.49	.84	1.92	108.31
141 to 170 days	7	1.71	6.80	.73	1.22	113.49	3	1.68	9.40	1.58	.93	96.85
171 to 200 days	5	1.64	7.89	.82	1.60	110.72	8	1.48	8.64	1.07	1.72	109.47
201 to 230 days	9	1.70	7.83	.37	1.83	118.11	5	1.27	8.67	1.32	1.83	111.29
Over 230 days	6	1.76	8.34	.21	1.34	109.61	5	1.63	8.35	.64	2.68	124.26

[1] Per 100 pounds.

In order to show the influence of the length of feeding period on the margin necessary to cover costs, cattle fattened in dry lot and those which were pastured during the fall previous to being finished in dry lot were divided into the usual initial-weight groups and then subdivided according to the length of time that they were given grain feed. The days on feed were used as a basis of division instead of the total days on the farm because the cost of gain while on grass alone is usually so low that no margin is required. A difference of 30 days was made for each feeding-period group, beginning with those which were given grain from 50 to 80 days and ending with the longest feeding period of those that were grain-fed for more than 230 days. Thus the feeding periods of the different groups averaged approximately 60, 90, 120, 150, 180, 210, and 240 days.

The purpose in compiling this table was to determine the margin necessary to meet the cost of fattening cattle of different weights and the rate at which this margin increases with the length of time they are on grain feed. When cattle are fattened on grain, the net cost of gain is almost always greater than the sales price per hundred pounds, even when the price of corn is very low. This makes it necessary for the cattle feeder to have a margin over the initial cost per hundredweight to meet all of his expenses. The exceptions to this rule are most common in the case of calves. Fattening cattle on corn improves the quality of beef and hence the selling value of the whole animal. The difference between the purchase and sale price per hundred pounds on the initial weight of the feeder is usually enough to equalize the difference between the net cost of 100 pounds gain and the sale price per hundredweight.

The greater initial weight of the heavy steers makes it possible for them to be fed for short periods of 60 days or less with less margin than medium-weight cattle require. After the first two months, however, their greater cost of gain overbalances the advantage of greater initial weight, and the margin necessary to cover costs widens more rapidly than for cattle of any other weight.

This was true in 1918–19 and 1919–20, when corn was $1.40 a bushel, and in 1921–22 and 1922–23, when corn was 50 cents a bushel. Naturally the margin and the increase in margin necessary for the longer feeding periods were much less for cattle of all classes when the price of corn was low. The margin required by calves when corn was high seemed to be greater than that required for the heavier cattle although it increased at a slower rate. If this fact is significant, it would seem that the initial weight of the feeder animal has more effect on the margin necessary to cover feeding costs when cattle and corn are high in price. Although calves gain more economically than older cattle, their fattening costs make up a much larger proportion of the final cost of the animal. When the cost of gain on all cattle is much higher than the sale price per pound, the margin necessary to fatten calves is likely to be wider than the margin necessary for heavy cattle.

The most profitable lengths of feeding period shown in Table 26 are of historical value only. During the high-price period the cattle that were fed for 60 days on grain feed were the only ones that showed a profit. In the last two years the most profitable group of medium and heavy cattle was made up of some that were fed longer than is usually considered good practice. This means only that the

price of corn was higher than the price of fat cattle in the first two years and that it was lower in relation to the price of cattle during the last two years. The most that can be said is that it is normally somewhere between these two extremes.

A graph of margins necessary for different lengths of time on feed has been constructed from the available data. (Fig. 16.) The relationship between the margins and days on feed has been represented by a straight line, which seems to fit the data within practical limits. Although figures are available only for the periods when corn was worth $1.40 and $0.50 per bushel, an approximation of the margin required to feed corn at $0.95 a bushel can be obtained by averaging the margin necessary at the other two price levels.

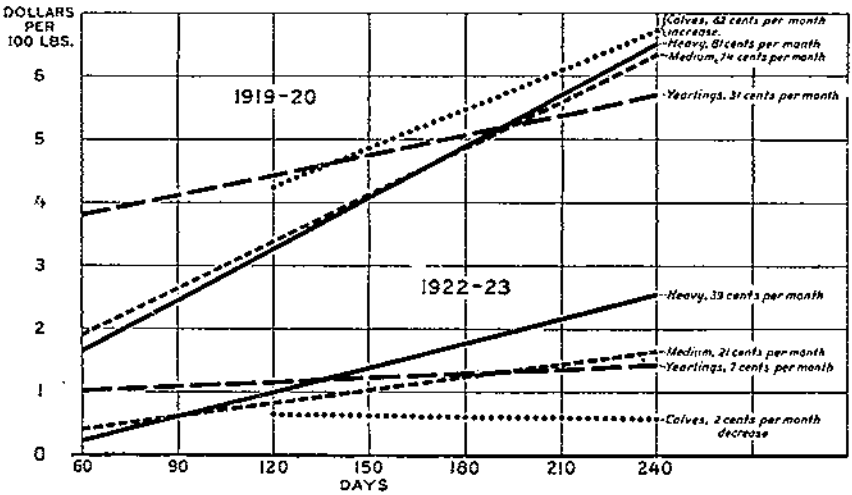


FIG. 16.—MARGINS NECESSARY FOR DIFFERENT LENGTHS OF FEEDING PERIOD WITH CORN AND HAY RATIONS

The greater weight of heavy cattle makes it possible for them to be fed for short periods with less margin per 100 pounds than is required by lighter cattle.

By means of Table 25 the feeder can tell how much additional margin he needs from month to month to pay the costs on the kind of cattle he is feeding and, with the aid of his knowledge of market conditions, this table will help him to decide when to market his cattle so that they will bring the greatest return for feed. To obtain the price at which steers can be profitably sold at any given time, the marketing expense and the cost of the feeder steer, per 100 pounds delivered to the farm, should be added to the margin given in Table 25. It should be kept in mind that the margin necessary to cover costs is affected by a host of influences, including the prices of cattle, feed, and hogs, the size and quality of cattle, and the suitability of the ration fed. Therefore, the table is at best a rough approximation and should be considered as such.

TABLE 27.—*Initial price of animals, per 100 pounds—Percentage of cattle bought at stated prices, by districts and years*

Range in price, per 100 pounds	1919					1920					1921					1922					1923				
	Nebraska	Iowa	Illinois	Indiana	Missouri	Nebraska	Iowa	Illinois	Indiana	Missouri	Nebraska	Iowa	Illinois	Indiana	Missouri	Nebraska	Iowa	Illinois	Indiana	Missouri	Nebraska	Iowa	Illinois	Indiana	Missouri
Dollars:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
15 and over			1																						
14 to 15		1		4																					
13 to 14	3	4	3	3	1				1	1															
12 to 13	3	5	8	10	9	4	4	1	10	1	2		2	2											
11 to 12	16	16	18	41	11	8	8	9	10	8	4	4		5	1									1	
10 to 11	19	28	27	30	23	49	32	25	35	21	16	16	4	9	5							1		1	
9 to 10	27	24	29	11	25	30	33	34	24	32	30	18	8	20	13				1			2		2	2
8 to 9	24	12	13		20	8	19	16	17	30	21	32	31	26	30	1	2			5	1	2	2	2	1
7 to 8	3	9	1	1	7	1	4	11		6	18	19	30	21	37	10	7	6	9	12	50	32	27	41	11
6 to 7	5	1			4			4	3	1	7	9	14	8	10	46	48	17	49	26	37	49	41	33	49
5 to 6											1	2	9	9	4	39	39	49	32	41	5	13	27	21	29
4 to 5											1		2			2	2	25	9	16	1	3	5	1	9
3 to 4																2	2	3							
Average price, per 100 pounds, in dollars	9.82	10.09	10.36	11.15	9.80	10.09	9.83	9.45	10.18	9.48	9.04	8.88	7.90	8.50	8.04	6.06	5.98	5.40	6.00	5.94	6.97	6.62	6.37	6.63	6.16

TABLE 28.—*Initial price of animals, per 100 pounds—Percentage of cattle bought at stated prices, by weight classes, and years*

Range in price, per 100 pounds	1919				1920				1921				1922				1923			
	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves
Dollars:	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
15 to 16		(1)		4																
14 to 15		1		7																
13 to 14	4	3		1	1	(1)						2								
12 to 13	32	7	5	16	10	2	6		6			15								1
11 to 12	13	23	13	20	26	8	5	2	8	1		14								4
10 to 11	45	30	18	18	47	33	23	37	23	9	4	19		(1)				(1)		3
9 to 10	6	28	24	16	15	37	19	44	25	20	6	13	3	2			3	(1)	2	39
8 to 9		6	30	10	1	16	31	13	27	35	23	6	13	4	10	21	40	29	31	23
7 to 8		1	8			2	14	4	10	29	35	27	44	38	34	45	45	48	39	21
6 to 7		(1)	2	8		1	2		1	5	17	14	36	46	40	26	8	21	22	9
5 to 6										(1)	14	4	3	9	15	8	4	1	6	
4 to 5											1		1	(1)	1					
3 to 4																				
Average price, per 100 pounds, in dollars	11.07	10.49	9.47	9.78	10.80	9.80	9.25	9.62	9.59	8.46	7.51	8.59	6.13	5.87	5.79	6.27	6.82	6.52	6.35	6.55

[1] Less than 0.5 per cent.

TABLE 29.—*Initial price of animals per 100 pounds—Percentage of cattle bought at stated prices, by years*

Range in price, per 100 pounds	All cattle					
	1919	1920	1921	1922	1923	Average
Dollars:	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
15 to 16	(1)					(1)
14 to 15	1					(1)
13 to 14	3	(1)				(1)
12 to 13	7	4	1			2
11 to 12	18	8	3			5
10 to 11	24	30	10		(1)	12
9 to 10	24	31	17	(1)	(1)	13
8 to 9	15	19	28	1	2	12
7 to 8	5	5	25	9	32	16
6 to 7	2	2	10	38	42	20
5 to 6			5	39	19	15
4 to 5			(1)	11	4	4
3 to 5				1		(1)
Average price, per 100 pounds in dollars	10.15	9.75	8.46	5.93	6.53	7.89

[1] Less than 0.5 per cent.

TABLE 30.—*Rate of gain—Percentage of droves making the stated gains, by districts and weight classes*

Range in daily gain per head	Heavy cattle					Medium-weight cattle				
	Nebr.	Iowa	Ill.	Ind.	Mo.	Nebr.	Iowa	Ill.	Ind.	Mo.
Pounds:	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
4.2 to 4.4	1									
4.0 to 4.2		1				(1)	(1)			
3.8 to 4.0	1	2				(1)				
3.6 to 3.8		2				1	(1)			
3.4 to 3.6	1	3				1	(1)			
3.2 to 3.4	2	2			2	(1)	(1)		(1)	
3.0 to 3.2	4	5			2	3	3			
2.8 to 3.0	10	8	2	1		3	3	(1)	(1)	(1)
2.6 to 2.8	10	11	2	6	5	6	4	2	2	(1)
2.4 to 2.6	13	8	2	8	7	14	9	1	3	2
2.2 to 2.4	27	9	12	9	2	12	14	4	9	4
2.0 to 2.2	11	20	10	21	7	14	18	6	15	4
1.8 to 2.0	10	11	28	21	16	10	20	14	17	8
1.6 to 1.8	3	9	21	24	9	13	15	26	23	20
1.4 to 1.6	3	3	11	8	12	7	7	26	16	17
1.2 to 1.4	3		7	1	18	5	5	11	10	24
1.0 to 1.2	1		5	3	16	(1)	1	7	4	12
.8 to 1.0						1	(1)	2	(1)	6
.6 to .8					2				(1)	2
.4 to .6					2					(1)
Average gain, per day, in pounds	2.20	2.15	1.68	1.82	1.58	1.90	1.82	1.54	1.65	1.34

Ranges in daily gain per head	Yearlings					Calves				
	Nebr.	Iowa	Ill.	Ind.	Mo.	Nebr.	Iowa	Ill.	Ind.	Mo.
Pounds:	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
3.4 to 3.6	1			1		3				
3.2 to 3.4	2									
3.0 to 3.2	2	1								
2.8 to 3.0	2	2		3	1		2			3
2.6 to 2.8	3	3			2	3			2	
2.4 to 2.6	7	4	1	1	1		3			3
2.2 to 2.4	5	8	2	6	4	11	5	5	2	8
2.0 to 2.2	11	21	5	7	12	14	13		5	15
1.8 to 2.0	20	21	16	8	11	14	25	16	14	8
1.6 to 1.8	19	16	20	32	14	29	36	11	30	12
1.4 to 1.6	13	13	27	18	22	20	11	32	20	15
1.2 to 1.4	6	7	19	13	20	6	5	21	14	10
1.0 to 1.2	6	2	9	5	6			10	4	15
.8 to 1.0	2	2	1	3	7			5	2	5
.6 to .8				2					2	3
.4 to .6				1					5	3
Average gain, per day, in pounds	1.62	1.70	1.44	1.54	1.41	1.67	1.67	1.35	1.44	1.51

[1] Less than 0.5 per cent.

TABLE 31.—*Rate of gain—Percentage of droves making stated gains, by weight classes*

Range in daily gain per steer	Heavy	Medium	Yearlings	Calves	Range in daily gain per steer	Heavy	Medium	Yearlings	Calves
Pounds:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	Pounds:	*Per cent*	*Per cent*	*Per cent*	*Per cent*
4.2 to 4.4	(1)				2.0 to 2.2	10	11	11	11
4.0 to 4.2	(1)	(1)			1.8 to 2.0	16	16	15	16
3.8 to 4.0	1	(1)			1.6 to 1.8	12	19	20	20
3.6 to 3.8	(1)	(1)			1.4 to 1.6	6	15	19	18
3.4 to 3.6	1	(1)	(1)	(1)	1.2 to 1.4	4	11	13	9
3.2 to 3.4	1	(1)	(1)		1.0 to 1.2	4	5	5	5
3.0 to 3.2	3	1	(1)		.8 to 1.0		2	3	2
2.8 to 3.0	6	2	2	1	.6 to .8	(1)	(1)	(1)	1
2.6 to 2.8	7	3	2	1	.4 to .6	(1)	(1)	(1)	2
2.4 to 2.6	8	6	3	1	Average daily gain, in pounds	1.94	1.59	1.54	1.51
2.2 to 2.4	14	8	6	6					

[1] Less than 0.5 per cent.

TABLE 32.—*Rate of gain—Percentage of droves making stated gains, by districts*

Range in daily gain per steer	Nebraska	Iowa	Illinois	Indiana	Missouri	Total
Pounds:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
4.2 to 4.4	(1)					(1)
4.0 to 4.2	(1)	(1)				(1)
3.8 to 4.0	(1)	(1)				(1)
3.6 to 3.8	(1)	1				(1)
3.4 to 3.6	1	1		(1)		(1)
3.2 to 3.4	1	1		(1)	(1)	(1)
3.0 to 3.2	3	2			(1)	1
2.8 to 3.0	4	4	(1)	1	1	2
2.6 to 2.8	6	4	2	2	1	3
2.4 to 2.6	11	7	1	3	2	5
2.2 to 2.4	14	11	4	7	4	8
2.0 to 2.2	13	19	6	13	7	12
1.8 to 2.0	17	19	16	15	11	16
1.6 to 1.8	13	16	23	25	16	19
1.4 to 1.6	8	8	25	16	17	15
1.2 to 1.4	5	4	13	10	21	10
1.0 to 1.2	2	1	7	4	10	5
0.8 to 1.0	1	1	2	1	6	2
0.6 to 0.8	(1)			1	2	1
0.4 to 0.6				1	1	(1)
Average gain per day, in pounds	1.81	1.81	1.51	1.60	1.38	1.60

[1] Less than 0.5 per cent.

TABLE 33.—*Net cost of gain—Percentage of cattle making gains at stated costs per pound, by weight classes and years*

Range in net cost per pound of gain	1919				1920				1921				1922				1923			
	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves	Heavy cattle	Medium-weight cattle	Yearlings	Calves
Cents:	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
60 and over			1		5	(1)														
58 to 60																				
56 to 58		(1)			3	(1)				1										
54 to 56				3		1														
52 to 54						1														
50 to 52		2	(1)		2	3														
48 to 50		3	1			1	1													
46 to 48		2			6	2	1													
44 to 46		2			4	1	1													
42 to 44		1	(1)		1	2	1													
40 to 42		(1)	2	4	3	3	1													
38 to 40		4	2		2	5	2													
36 to 38		7	1		6	6	6	2				3	1				1			
34 to 36	20	11	6	4	3	5	3	5			2			(1)				(1)		
32 to 34	6	5	7	5	10	6	8	4												
30 to 32	4	12	4	5	5	9	3	3										(1)		
28 to 30		8	7	6	13	8	8	5	1	(1)		2					2			1
26 to 28		8	14	4	9	6	7	13		(1)	1							(1)		
24 to 26	16	10	11	12	6	12	9	15	3	2	1		1	(1)	(1)		3	(1)	1	
22 to 24		11	13		8	9	12	4	7	7	3			(1)			6	4		
20 to 22	8	4	7	8	3	8	6	8	5	8	2		3	(1)			6	7	1	
18 to 20		3	9	30	5	5	12	12	16	10	6	5	2	3	2		14	12	12	
16 to 18	6	4	5	10	4	4	12	13	20	14	14		1	4	2		18	15	18	
14 to 16	40	2	2	7	1	2	3	10	13	16	18	3	4	9	3	1	18	19	15	5
12 to 14			4		1	(1)	2	5	21	21	22	39	11	14	12	6	10	25	23	38
10 to 12			1	2		(1)	2	1	11	13	20	25	23	15	28	23	15	12	14	22
8 to 10			1						3	5	11	12	23	23	24	26	7	5	14	27
6 to 8										2		11	24	23	23	38		(1)		7
4 to 6													7	8	5	1			2	
2 to 4		(1)												(1)		5				
Average cost per pound of gain, in cents	22.8	29.9	24.4	21.4	30.6	27.9	23.4	20.8	14.0	13.8	12.6	11.0	8.9	8.8	8.7	7.2	14.5	13.8	12.2	10.2

[1] Less than 0.5 per cent.

TABLE 34.—*Number of head of cattle per drove—Percentage of droves of specified size, by weight classes, 1919–1923*

Size of drove	Calves	Yearlings	Medium-weight cattle	Heavy cattle	Total
Number of cattle:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Under 25	22	30	30	40	31
25 to 35	28	25	22	15	22
35 to 45	11	20	18	19	18
45 to 55	13	8	7	9	8
55 to 65	8	4	11	7	9
65 to 75	6	5	3	4	3
75 to 85	2	3	2	3	2
85 to 95	1	1	2	1	1
95 to 105	3	1	2	1	1
105 to 115	2	1	1		1
115 to 125	2	1	1	1	1
125 and over	2	1	1		3
Average number of cattle per drove	40	40	42	37	41

TABLE 35.—*Number of head of cattle per drove—Percentage of droves of specified size, by States, 1919–1923*

Size of drove	Nebraska	Iowa	Illinois	Indiana	Missouri
Number of cattle:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Under 25	40	28	29	38	10
25 to 35	22	19	27	26	19
35 to 45	20	20	15	16	20
45 to 55	7	9	9	6	8
55 to 65	7	11	10	6	10
65 to 75	1	5	3	2	5
75 to 85	1	4	1	1	3
85 to 95	1	1	3		3
95 to 105		1	1	1	4
105 to 115			1	1	2
115 to 125	1	1	1	1	2
125 and over		1		2	5
Average number of cattle per drove	31	43	40	37	55

TABLE 36.—*Kind of corn fed—Percentage of droves fed corn in specified form, by weight classes, all districts, 1919–1923*

Kind of corn[1]	Calves	Yearlings	Medium-weight cattle	Heavy cattle	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Ear corn	23	39	43	44	40
Shelled corn	45	29	10	17	23
Ear and shelled corn	5	6	7	9	7
Ground corn and cob	13	12	11	10	12
Shock corn	5	5	12	10	10
No corn	2	2	1	1	1
Other combinations	7	7	7	9	7

[1] Silage is not considered in this classification.

TABLE 37.—*Kind of corn fed—Percentage of droves fed corn in specified form, by districts, 1919–1923*

Kind of corn[1]	Nebraska	Iowa	Illinois	Indiana	Missouri
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Ear corn	38	34	30	29	75
Shelled corn	28	45	16	12	7
Ear and shelled corn	13	12	4	5	2
Ground corn and cob	14	4	25	13	1
Shock corn			12	29	9
No corn			1	2	4
Other combinations	7	5	12	10	2

[1] Silage is not considered in this classification.

TABLE 38.—*Months in which feeder cattle were bought and fat cattle sold, by districts, 1918–1923*

Time of buying and selling and time on farm	Nebraska		Iowa		Illinois		Indiana		Missouri	
	Cattle bought	Cattle sold	Cattle bought	Cattle sold	Cattle bought	Cattle sold	Cattle bought	Cattle sold	Cattle bought	Cattle sold
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Before June	7		5		3				7	
June	1		1		1		2			
July	2		1		1		1		1	
August	13		8		5		5		5	
September	29		21		11		14		9	1
October	20	1	23	1	28		27	1	29	1
November	11	6	17	2	26	1	25	2	21	1
December	10	10	9	6	17	2	14	6	14	2
January	4	13	10	6	5	6	7	9	6	3
February	2	14	4	8	2	8	4	9	4	3
March	1	18	1	11	1	16	1	12	2	7
April		11		16		21		14	1	9
May		17		20		28		21	1	12
June		8		10		12		13		14
July		2		8		4		7		20
August				4		1		4		14
September				1		1		2		6
October				1						7
High month	Sept.	Mar.	Oct.	May	Oct.	May	Oct.	May	Oct.	July
Time on farm, days	170		182		172		168		224	

TABLE 39.—*Months in which feeder cattle were bought and fat cattle sold, by weight classes, 1918–1923*

Month	Heavy cattle		Medium-weight cattle		Yearlings		Calves		Total	
	Bought	Sold	Bought	Sold	Bought	Sold	Bought	Sold	Bought	Sold
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Before June	3		2		10		4		4	
June			1		2		2		1	
July	1		1		1				1	
August	10	1	7		6		5		7	
September	20	2	16		13		11		17	
October	26	2	29	1	18		27		26	1
November	16	6	20	2	21	1	25		20	2
December	8	13	13	4	14	4	15	1	13	5
January	3	10	7	6	8	4	5	1	6	7
February	3	12	3	8	4	4	5	3	3	8
March	1	14	1	13	2	12	1	9	1	12
April	1	13		14	1	15		14	1	14
May	1	9		10		24		30		20
June	1	5		12		18		10		13
July		4		9		10		12		9
August		3		7		3		6		5
September				3		2		4		2
October				2		3		1		2

TABLE 40.—*Number of days on farm—Percentage of cattle on farm for specified periods, by weight classes*

Length of time on farm	Heavy cattle	Medium weight cattle	Yearlings	Calves	Total
Days:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Less than 60	4				1
60 to 89	15	3	2		4
90 to 119	25	12	8	6	12
120 to 149	24	19	15	10	18
150 to 179	13	17	20	17	17
180 to 209	10	18	17	22	17
210 to 239	5	11	12	12	11
240 to 269	3	7	9	16	8
270 to 299	1	6	5	5	5
300 to 329		4	4	5	4
330 to 359		2	3	3	2
360 to 389		1	3	1	1
390 to 419				1	
420 to 449			1	1	
450 and over			1	1	
Average number of days on farm	134	187	206	219	187

TABLE 41.—*Kind of silos used on farms studied*

Kind of silo	Number	Per cent	Kind of silo	Number	Per cent
Concrete stave	135	37	Brick	26	7
Wood stave	82	22	Concrete block	20	6
Solid concrete	59	16			
Hollow tile	44	12	Total	366	100

TABLE 42.—*Size of silos on farms studied in Illinois and Indiana*

Illinois			Indiana		
Size of silo	Number	Per cent	Size of silo	Number	Per cent
14 by 60 feet	53	18.7	12 by 40 feet	19	17.6
14 by 40 feet	46	16.2	12 by 35 feet	18	16.7
14 by 45 feet	36	12.7	14 by 40 feet	15	13.9
16 by 50 feet	33	11.6	12 by 50 feet	7	6.5
16 by 40 feet	31	10.8	16 by 40 feet	6	5.5
14 by 35 feet	11	3.9	12 by 30 feet	6	5.5
14 by 30 feet	11	3.9	14 by 35 feet	5	4.7
12 by 40 feet	11	3.9	14 by 30 feet	4	3.7
14 by 60 feet	8	2.8	10 by 35 feet	4	3.7
12 by 30 feet	7	2.5	16 by 50 feet	3	2.8
16 by 35 feet	6	2.1	12 by 60 feet	3	2.8
12 by 50 feet	6	2.1	10 by 30 feet	3	2.8
16 by 55 feet	5	1.8	16 by 35 feet	2	1.8
14 by 55 feet	5	1.8	14 by 45 feet	2	1.8
Other sizes	15	5.2	Other sizes	11	10.2
Total	284	100.0	Total	108	100.0

TABLE 43.—*Basic requirements, costs, and financial returns in fattening beef cattle in Nebraska, by classes, 1919–1923*

Item	Cattle weighing 1,000 pounds and over					Cattle weighing 750 to 1,000 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	1	16	23	37	31	26	66	51	46	52
Number of cattle	26	304	690	1,113	1,238	816	2,128	1,506	1,408	2,032
Initial weight per head, pounds	1,055	1,034	1,058	1,069	1,051	857	870	883	895	860
Gain in weight, pounds	247	239	288	280	266	269	255	315	331	307
Final weight, pounds	1,302	1,273	1,346	1,360	1,327	1,126	1,125	1,198	1,226	1,197
Days on farm	110	103	134	128	120	148	145	168	167	151
Average daily gain while on farm, pounds	2.25	2.34	2.16	2.19	2.22	1.82	1.77	1.89	2.00	2.04
Feed consumed per 100 pounds of gain:										
Grain, pounds	907	883	977	932	915	999	826	936	875	829
Protein concentrates, pounds	------	6.3	8.0	------	.1	0.2	4.7	1.8	.04	1.7
Molasses feeds, pounds					13.3	0.1	.1			1.3
Legume hay, pounds	405	489	419	384	284	412	438	375	368	343
Other hay, pounds	------	13	46	36	13	77	42	79	40	45
Stover and straw, pounds	------	------	12	11	2	1	11	17	14	8
Silage, pounds						227	52	68	------	13
Pasture, days	3	6	2	5	6	11	14	11	8	7
By-products with 100 pounds of gain:										
Pork, pounds	11.1	37.0	22.7	26.5	24.8	26.5	30.4	21.3	26.6	22.9
Manure, loads	.4	.9	.9	.6	.4	.9	1.4	.6	.6	.5
Labor used per 100 pounds of gain:										
Man-hours	5.95	3.40	3.11	2.58	2.59	4.34	2.87	2.98	2.40	2.13
Horse-hours	4.74	2.00	2.14	1.03	1.24	3.81	2.23	2.00	.93	1.12
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	27.17	27.64	12.16	6.79	12.60	29.07	26.10	10.50	6.08	11.61
Man labor	2.02	1.17	1.12	.50	.70	1.48	.97	1.07	.55	.58
Horse labor	.95	.40	.34	.10	.15	.76	.44	.32	.09	.13
Cattle equipment	1.80	.69	.47	.43	.38	.61	.52	.44	.32	.32
Death loss	------	.22	.10	.15	.02	.07	.09	.11	.10	.09
Veterinary	------	.01	.02	.01	------	.04	.01	.02	.01	.01
Insurance						.02		.01		
Taxes	------	.07	.01	.04	.03	.05	.03	.07	.06	.03
Incidentals	.57	.22	.30	.10	.22	.18	.20	.19	.11	.16
Interest on investment in cattle	1.05	.92	1.02	.65	.70	.95	.95	.90	.58	.66
Interest on investment in equipment	1.84	.06	.57	.44	.32	.63	.63	.57	.33	.29
Total cost of 100 pounds of gain	35.40	32.00	16.11	9.39	15.17	33.86	29.96	14.20	8.80	13.93
Deductions from cost:										
Pork	1.90	5.11	1.94	2.20	1.83	4.77	4.06	1.70	2.20	1.68
Manure	.40	.98	.84	.44	.43	1.67	2.26	.52	.30	.45
Net cost of 100 pounds of gain	33.10	25.91	13.33	6.75	12.91	27.42	23.64	11.80	6.12	11.80
Financial returns per head:										
Cost of feeder animal at farm	123.15	109.62	103.48	66.77	74.17	90.51	87.89	78.80	54.17	62.01
Cost of feed	67.10	66.51	35.17	19.09	33.60	78.29	66.95	33.20	22.13	35.80
Cost of man and horse labor	7.35	3.70	4.23	1.95	2.25	6.03	3.63	4.40	2.13	2.22
Interest on investment in cattle and equipment	7.15	3.82	4.61	3.06	2.72	4.26	4.04	4.05	3.05	2.90
Equipment depreciation and repairs	4.45	1.05	1.30	1.20	1.01	1.63	1.33	1.39	1.05	.98
Other costs	1.40	1.25	1.21	1.11	.87	.97	.80	1.23	.97	1.03
Total cost of finished animal at farm	210.60	186.64	150.06	93.18	114.62	181.69	164.73	123.73	83.50	104.94
Deductions from cost:										
Pork	4.70	12.31	5.61	6.17	4.87	12.84	10.40	5.00	7.62	5.19
Manure	1.00	2.37	2.43	1.24	1.15	4.50	5.79	1.65	1.31	1.37
Net cost of finished animal at farm	204.90	171.96	142.02	85.77	108.60	164.35	148.54	116.42	74.57	98.38
Net sales value per head at farm	205.90	167.03	110.64	101.71	118.33	170.35	136.77	100.88	92.10	104.70
Profit	1.00	------	------	15.94	9.73	6.00	------	------	17.53	6.32
Loss	------	4.93	22.38	------	------	------	11.77	15.54	------	------
Cost of finished animal per 100 pounds at farm	15.74	13.50	10.54	6.26	8.18	14.60	13.19	9.71	6.08	8.22
Cost of feeder animal per 100 pounds at farm	11.67	10.60	9.78	6.13	6.99	10.56	10.11	8.93	6.05	6.97
Margin necessary to cover costs	4.07	2.90	.76	.13	1.19	4.04	3.08	.78	.03	1.25
Margin received	4.14	2.51	—.99	1.20	1.93	4.57	2.04	—.52	1.45	1.78
Return per bushel of corn fed	1.38	1.24	.07	.66	.82	1.25	1.05	.13	.66	.72
Farm price of corn per bushel	1.35	1.37	.51	.32	.60	1.13	1.38	.43	.32	.58
Return for each $100 of cost	100.49	97.13	84.24	118.58	108.96	103.05	92.08	86.65	123.51	106.42

TABLE 43.—*Basic requirements, costs, and financial returns in fattening beef cattle in Nebraska, by classes, 1919–1923*—Continued.

Item	Cattle weighing 500 to 750 pounds					Cattle weighing under 500 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	24	23	13	30	19	9	12	4	7	3
Number of cattle	809	680	395	1,173	730	293	339	139	473	179
Initial weight per head, pounds	644	623	654	656	649	427	433	480	421	396
Gain in weight, pounds	330	326	353	366	401	323	306	302	376	445
Final weight, pounds	974	949	1,007	1,022	1,050	750	739	782	797	841
Days on farm	210	248	225	211	215	203	167	165	245	237
Average daily gain while on farm, pounds	1.59	1.34	1.59	1.76	1.87	1.62	1.83	1.83	1.62	1.94
Feed consumed per 100 pounds of gain:										
Grain, pounds	610	622	725	767	726	550	645	817	650	661
Protein concentrates, pounds	15.1	2.9	1.6	------	.5	5.8	1.0	------	------	------
Molasses feeds, pounds	2.8	5.3	------	------	.3	------	------	------	------	------
Legume hay, pounds	396	504	451	310	287	403	366	281	247	219
Other hay, pounds	118	55	89	46	29	147	39	20	52	32
Stover and straw, pounds	9	12	33	------	20	2	------	------	2	------
Silage, pounds	153	284	------	------	------	------	------	------	------	------
Pasture, days	17	34	19	14	14	4	5	------	14	5
By-products with 100 pounds of gain:										
Pork, pounds	17.0	21.2	19.1	20.4	22.1	12.6	20.1	19.8	17.2	13.5
Manure, loads	.8	1.1	.5	.7	.7	.5	.8	.3	.5	.3
Labor used per 100 pounds of gain:										
Man-hours	4.91	2.89	2.75	2.29	2.03	4.46	3.21	2.08	1.53	1.46
Horse-hours	4.27	2.19	2.64	1.35	.87	3.76	1.77	1.05	.34	.78
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	25.32	23.04	11.08	6.57	10.80	22.71	19.95	8.72	5.61	9.47
Man labor	1.70	.99	.99	.51	.56	1.52	1.10	.75	.34	.42
Horse labor	.86	.44	.42	.12	.10	.77	.35	.17	.03	.09
Cattle equipment	.54	.54	.44	.29	.43	.58	.53	.46	.23	.12
Death loss	.11	.28	.24	.15	.08	.07	------	------	.40	.17
Veterinary	.03	.02	.05	.02	.02	.12	.06	------	.09	.10
Insurance	.01	.01	------	------	.01	.01	------	------	------	------
Taxes	.05	.06	.06	.08	.11	.05	.10	.05	.06	.10
Incidentals	.15	.10	.13	.08	.12	.20	.11	.06	.05	.12
Interest on investment in cattle	.68	.99	.82	.51	.53	.51	.47	.49	.37	.32
Interest on investment in equipment	.56	.55	.51	.33	.28	.55	.61	.61	.33	.10
Total cost of 100 pounds of gain	30.01	27.01	14.74	8.66	13.04	27.09	23.28	11.31	7.51	11.01
Deductions from cost:										
Pork	3.13	3.00	1.58	1.80	1.62	2.27	2.73	1.64	1.44	.93
Manure	1.03	.91	.40	.44	.02	.54	1.44	.36	.35	.27
Net cost of 100 pounds of gain	25.85	23.10	12.76	6.42	10.80	24.18	19.11	9.31	5.72	9.81
Financial returns per head:										
Cost of feeder animal at farm	59.02	52.30	56.33	39.67	45.52	43.11	42.28	39.78	27.64	29.70
Cost of feed	84.20	76.46	39.69	24.38	43.00	74.66	61.09	26.34	22.32	43.39
Cost of man and horse labor	8.50	4.71	5.06	2.36	2.70	7.53	4.44	2.78	1.47	2.36
Interest on investment in cattle and equipment	4.14	5.11	4.76	3.08	3.25	3.47	3.30	3.33	2.77	1.94
Equipment depreciation and repairs	1.78	1.78	1.56	1.06	1.72	1.92	1.63	1.38	.93	.55
Other costs	1.16	1.51	1.71	1.21	1.34	2.00	.82	.30	2.41	2.22
Total cost of finished animal at farm	158.80	151.87	109.11	71.76	98.13	132.69	113.56	73.97	57.54	80.16
Deductions from cost:										
Pork	10.40	9.95	5.67	6.66	6.54	7.45	8.35	4.96	5.72	4.25
Manure	3.44	3.01	1.45	1.63	2.51	2.09	4.42	1.08	1.40	1.26
Net cost of finished animal at farm	144.96	138.91	101.99	63.47	89.08	123.15	100.79	67.93	50.42	74.65
Net sales value per head at farm	137.34	115.08	83.39	79.44	92.61	102.09	96.44	64.03	62.91	76.74
Profit	------	------	------	15.97	3.53	------	------	------	12.49	2.09
Loss	7.62	23.83	18.60	------	------	21.06	4.35	3.90	------	------
Cost of finished animal per 100 pounds at farm	14.84	14.56	10.07	6.19	8.47	16.29	13.64	8.69	6.16	8.75
Cost of feeder animal per 100 pounds at farm	9.16	10.01	8.61	6.05	7.02	10.09	9.77	8.29	6.57	7.50
Margin necessary to cover costs	5.68	4.55	1.46	.16	1.45	6.20	3.87	.40	.41	1.25
Margin received	4.90	2.05	—.38	1.70	1.78	3.41	3.28	—.10	1.12	1.50
Return per bushel of corn fed	1.33	.71	.11	.68	.60	.88	1.27	.39	.63	.70
Farm price of corn per bushel	1.54	1.37	.51	.36	.62	1.54	1.39	.48	.35	.66
Return for each $100 of cost	94.74	82.85	81.76	125.16	103.96	82.90	95.68	94.26	124.77	102.80

TABLE 43.—*Basic requirements, costs, and financial returns in fattening beef cattle in Nebraska, by classes, 1919–1923*—Continued

Item	Cows					All cattle				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	6	5	3	4	1	66	121	94	124	106
Number of cattle	225	157	84	109	32	2,163	3,098	2,814	4,276	4,211
Initial weight per head, pounds	774	842	800	942	816	712	800	871	820	876
Gain in weight, pounds	234	186	216	287	185	295	269	310	331	316
Final weight, pounds	1,008	1,028	1,022	1,229	1,001	1,007	1,069	1,181	1,157	1,192
Days on farm	174	83	133	110	94	181	159	168	170	156
Average daily gain while on farm, pounds	1.36	2.24	1.63	2.61	2.03	1.64	1.70	1.88	1.91	2.03
Feed consumed per 100 pounds of gain:										
Grain, pounds	842	806	900	856	1,060	755	766	905	825	818
Protein concentrates, pounds	14.1	.7				11.5	3.9	3.1		.9
Molasses feed, pounds	14.1					5.4	1.3			3.9
Legume hay, pounds	456	581	374	468	1,475	408	454	393	340	338
Other hay, pounds		82	110	13		98	43	72	44	32
Stover and straw, pounds	8			90		5	9	17	9	9
Silage, pounds						142	93	37		6
Pasture, days	23	8	14	12		13	17	10	10	8
By-products with 100 pounds of gain:										
Pork, pounds	34.5	51.0	37.5	10.8	37.3	21.0	28.5	21.5	23.2	22.7
Manure, loads	.6	1.1	1.2	.8	.7	.8	1.2	.6	.6	.5
Labor used per 100 pounds of gain:										
Man-hours	7.34	2.69	3.22	4.11	4.15	4.85	2.96	2.94	2.33	2.17
Horse-hours	2.36	1.87	1.11	4.19	.13	3.88	2.14	2.07	1.07	1.07
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	29.37	27.39	10.07	6.31	13.86	26.56	24.95	10.89	6.51	11.56
Man labor	2.50	.92	1.10	.93	1.08	1.66	1.00	1.06	.53	.60
Horse labor	.28	.37	.18	.38	.02	.77	.43	.33	.10	.13
Cattle equipment	.59	.64	.37	.29	.67	.58	.55	.46	.32	.35
Death loss	.23				.56	.11	.13	.12	.16	.08
Veterinary	.03	.04				.05	.02	.02	.02	.01
Insurance	.02					.01				
Taxes	.02					.05	.00	.05	.09	.09
Incidentals	.14	.19	.25	.15	.13	.17	.17	.20	.11	.16
Interest on investment in cattle	.82	.65	.69	.33	.36	.76	.90	.59	.54	.62
Interest on investment in equipment	.64	.71	.37	.30	.70	.60	.61	.56	.35	.28
Total cost of 100 pounds of gain	34.64	30.91	13.69	8.69	17.38	31.32	28.82	14.57	8.70	13.88
Deductions from cost:										
Pork	6.38	6.65	3.37	1.33	2.84	3.82	3.86	1.82	1.98	1.66
Manure	.65	.87	.94	.47	.82	1.16	1.71	.58	.41	.47
Net cost of 100 pounds of gain	27.61	23.39	9.38	6.89	13.72	26.34	23.25	12.17	6.36	11.75
Financial returns per head:										
Cost of feeder animal at farm	64.78	73.92	46.50	40.54	34.09	69.86	80.70	78.81	50.04	61.08
Cost of feed	69.33	51.02	23.08	18.00	26.44	78.97	67.44	33.96	21.87	36.75
Cost of man and horse labor	6.57	2.40	2.90	3.75	2.00	7.23	3.87	4.33	2.11	2.32
Interest on investment in cattle and equipment	3.40	2.55	2.30	1.79	2.03	4.05	4.08	4.52	3.00	2.87
Equipment depreciation and repairs	1.39	1.18	.81	.83	1.28	1.73	1.47	1.39	1.07	1.10
Other costs	1.05	.44	.54	.44	1.31	1.21	1.02	1.24	1.23	1.09
Total cost of finished animal at farm	140.57	131.51	76.13	65.41	67.24	163.05	158.58	124.25	79.32	105.21
Deductions from cost:										
Pork	15.07	12.38	7.20	3.82	5.41	11.36	10.42	5.66	6.67	5.20
Manure	1.54	1.62	2.02	1.36	1.56	3.44	4.61	1.80	1.39	1.50
Net cost of finished animal at farm	129.96	117.51	66.82	60.23	60.27	148.25	143.55	116.79	71.26	98.42
Net sales value per head at farm	115.59	111.31	67.99	68.99	75.03	143.39	131.23	100.23	87.30	105.20
Profit			1.17	8.76	14.76				16.04	6.78
Loss	14.37	6.20				4.86	12.32	16.56		
Cost of finished animal per 100 pounds at farm	12.88	11.43	6.54	4.90	5.97	14.68	13.42	9.87	6.12	8.24
Cost of feeder animal per 100 pounds at farm	8.37	8.78	5.77	4.30	4.18	9.82	10.09	9.04	5.06	6.97
Margin necessary to cover costs	4.51	2.65	.77	.60	1.79	4.86	3.33	.83	.06	1.27
Margin received	3.09	2.05	.88	1.31	3.25	4.38	2.17	—.57	1.44	1.84
Return per bushel of corn fed	1.10	1.10	.51	.49	1.06	1.22	1.04	.13	.66	.75
Farm price of corn per bushel	1.51	1.33	.48	.29	.64	1.34	1.37	.46	.33	.60
Return for each $100 of cost	88.94	94.72	101.75	114.54	124.49	96.72	91.42	85.52	122.51	106.89

TABLE 44.—*Basic requirements, costs, and financial returns in fattening beef cattle in Iowa, by classes, 1919–1923*

Item	Cattle weighing 1,000 pounds and over					Cattle weighing 750 to 1,000 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	4	13	32	23	17	33	55	55	52	53
Number of cattle	276	401	1,320	837	760	1,805	2,159	2,520	2,049	2,231
Initial weight per head, pounds	1,046	1,051	1,072	1,085	1,075	850	866	881	884	855
Gain in weight, pounds	172	325	319	248	320	260	329	360	344	331
Final weight, pounds	1,218	1,370	1,391	1,333	1,395	1,129	1,195	1,241	1,228	1,186
Days on farm	60	146	153	116	150	168	181	207	167	174
Average daily gain while on farm, pounds	2.88	2.23	2.10	2.13	2.15	1.61	1.82	1.75	2.07	1.91
Feed consumed per 100 pounds of gain:										
Grain, pounds	819	935	1,004	1,016	1,026	745	881	863	891	943
Protein concentrates, pounds	23.2	.3	10.2	1.4	------	50.6	1.3	2.1	.3	.7
Molasses feeds, pounds	------	34.1	18.6	------	14.6	65.9	1.9	9.7	3.7	19.1
Legume hay, pounds	152	551	211	211	193	140	40	230	244	225
Other hay, pounds	------	49	23	24	56	24	56	14	30	47
Stover and straw, pounds	67	37	39	60	66	168	36	53	34	45
Silage, pounds	54	266	89	114	------	570	269	34	27	36
Pasture, days	------	9	8	7	6	10	14	17	11	11
By-products with 100 pounds of gain:										
Pork, pounds	16.2	48.9	28.7	27.6	30.0	28.4	40.9	26.9	27.3	24.5
Manure, loads	.7	.6	.6	.5	.5	.7	.0	.6	.6	.5
Labor used per 100 pounds of gain:										
Man hours	1.66	2.41	2.26	2.65	2.20	3.35	2.52	2.25	2.19	2.30
Horse hours	.56	1.88	1.82	1.88	1.49	3.25	2.21	1.25	1.25	1.56
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	22.47	26.14	11.18	8.38	15.10	33.40	26.02	10.71	8.01	13.36
Man labor	.51	.80	.81	.65	.62	1.11	.84	.81	.48	.65
Horse labor	.13	.38	.33	.19	.18	.75	.44	.23	.13	.19
Cattle equipment	.24	.58	.37	.55	.28	.50	.49	.28	.40	.28
Death loss	------	.16	.10	.06	.03	.17	.05	.17	.11	.08
Veterinary	------	.01	------	------	.02	.04	.01	.01	.02	.01
Insurance	.01	.03	.03	.02	.02	.03	.01	.02	.02	------
Taxes	------	.25	.20	.14	.19	.15	.20	.17	.15	.15
Incidentals	.13	.10	.12	.12	.14	.15	.09	.10	.09	.09
Interest on investment in cattle	.87	.97	1.01	.63	.70	1.06	.92	.96	.53	.65
Interest on investment in equipment	.25	.59	.47	.46	.25	.51	.46	.35	.41	.26
Total cost of 100 pounds of gain	24.61	30.01	14.62	11.20	17.53	37.90	30.46	13.81	10.35	15.72
Deductions from cost—										
Pork	3.40	6.27	2.32	2.38	2.25	5.26	5.37	2.15	2.49	1.78
Manure	1.36	.98	.87	.49	.54	1.20	1.58	.04	.53	.51
Net cost of 100 pounds of gain	19.85	22.76	11.63	8.33	14.74	31.44	23.51	11.62	7.33	13.43
Financial returns per head—										
Cost of feeder animal at farm	114.29	113.34	102.46	65.90	59.52	89.46	85.79	79.58	52.23	58.15
Cost of feed	38.66	85.21	35.84	20.80	48.38	90.26	88.73	38.84	27.71	44.51
Cost of man and horse labor	1.10	3.81	3.66	2.08	2.56	5.01	4.20	3.77	2.60	2.80
Interest on investment in cattle and equipment	1.03	5.07	4.76	2.72	2.73	4.31	4.57	4.76	3.24	3.03
Equipment depreciation and repairs	.42	1.88	1.19	1.37	.89	1.35	1.62	1.01	1.39	.95
Other costs	.23	1.77	1.45	.84	1.27	1.36	1.25	1.72	1.34	1.14
Total cost of finished animal at farm	156.63	211.08	149.36	93.71	125.46	191.75	186.16	129.68	88.00	110.58
Deductions from cost:										
Pork	5.86	20.45	7.43	5.00	7.23	14.20	17.70	7.80	8.62	5.94
Manure	2.34	3.19	2.16	1.21	1.73	3.24	5.20	2.33	1.84	1.69
Net cost of finished animal at farm	148.43	187.44	130.77	86.60	116.44	174.31	163.26	119.55	77.54	102.95
Net sale value per head at farm	162.16	183.24	116.05	96.56	122.08	161.47	152.73	101.11	94.65	107.20
Profit	13.73	------	------	9.96	5.64	------	------	------	17.11	4.25
Loss	------	4.20	23.72	------	------	12.84	10.53	18.44	------	------
Cost of finished animal per 100 pounds at farm	12.19	13.61	10.04	6.50	8.35	15.43	13.65	9.62	6.30	8.65
Cost of feeder animal per 100 pounds at farm	10.92	10.78	9.56	6.07	6.47	10.40	9.90	9.03	5.91	6.80
Margin necessary to cover costs	1.27	2.83	.48	.43	1.88	5.03	3.75	.59	.39	1.85
Margin received	2.39	2.53	−1.22	1.18	2.28	3.80	2.87	−.90	1.79	2.21
Return per bushel of corn fed	1.82	1.19	.64	.59	.72	1.06	1.01	.16	.69	.70
Farm price of corn per bushel	1.27	1.26	.45	.36	.63	1.43	1.22	.50	.38	.62
Return for each $100 of cost	109.24	97.76	83.03	111.50	104.84	92.63	93.55	84.58	122.07	104.13

TABLE 44.—*Basic requirements, costs, and financial returns in fattening beef cattle in Iowa, by classes, 1919–1923*—Continued

Item	Cattle weighing 500 to 750 pounds					Cattle weighing under 500 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	20	27	30	26	26	16	13	11	14	7
Number of cattle	790	1,130	1,070	1,155	1,377	711	360	324	553	468
Initial weight per head, pounds	623	650	618	641	656	426	428	416	395	387
Gain in weight, pounds	274	314	341	386	353	334	329	421	356	436
Final weight, pounds	897	970	959	1,027	1,009	760	757	837	751	823
Days on farm	149	197	211	218	206	197	208	230	205	279
Average daily gain while on farm, pounds	1.85	1.61	1.63	1.80	1.74	1.74	1.60	1.84	1.80	1.61
Feed consumed per 100 pounds of gain:										
Grain, pounds	698	685	758	877	886	811	712	715	669	698
Protein concentrate, pounds	17.5	3.6	4.0	1.0	1.4	21.6	27.0	5.1	.1	3.0
Molasses feeds, pounds	18.2	9.9	.8	3.1	5.9	50.4	106.4	------	------	8.5
Legume hay, pounds	184	29	184	190	322	145	1,300	189	150	150
Other hay, pounds	20	100	30	53	24	35	115	30	76	65
Stover and straw, pounds	110	38	26	32	82	48	16	------	17	22
Silage, pounds	505	466	157	151	86	105	133	------	88	79
Pasture, days	10	19	28	10	18	4	14	15	10	18
By-products with 100 pounds of gain:										
Pork, pounds	23.2	20.8	19.9	23.2	19.9	20.3	22.8	10.9	17.3	15.3
Manure, loads	.8	.9	.5	.5	.4	.6	.7	.3	.4	.5
Labor used per 100 pounds of gain:										
Man hours	3.04	2.61	2.45	2.33	1.97	2.00	2.53	2.03	1.98	1.62
Horse hours	2.72	2.04	1.73	1.01	1.49	1.95	1.52	.69	.40	1.26
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	26.48	23.37	9.35	8.62	13.14	27.33	21.82	8.37	6.72	10.49
Man labor	1.01	.86	.88	.58	.56	.88	.83	.71	.43	.46
Horse labor	.62	.41	.31	.11	.18	.45	.30	.13	.05	.15
Cattle equipment	.66	.55	.31	.33	.26	.41	.57	.39	.32	.19
Death loss	.09	.21	.14	.08	.14	.30	.09	.23	.22	.10
Veterinary	.03	.02	.02	.02	.02	.09	.03	.07	.04	.09
Insurance	.02	.04	.01	.04	.01	.01	.05	.01	------	------
Taxes	.10	.11	.08	.12	.09	.01	.05	.02	.04	.02
Incidentals	.15	.09	.09	.08	.09	.10	.07	.06	.03	.04
Interest on investment in cattle	.61	.77	.64	.48	.49	.48	.50	.37	.30	.35
Interest on investment in equipment	.79	.57	.37	.34	.23	.50	.59	.46	.31	.18
Total cost of 100 pounds of gain	30.56	27.00	12.20	10.80	15.21	30.56	25.00	10.82	8.46	12.16
Deductions from cost—										
Pork	3.94	3.03	1.48	2.06	1.43	5.51	3.11	1.35	1.64	1.05
Manure	1.15	1.59	.59	.52	.42	.90	1.41	.37	.38	.38
Net cost of 100 pounds of gain	25.47	21.48	10.22	8.22	13.30	24.15	20.48	9.10	6.44	10.73
Financial returns per head—										
Cost of feeder animal at farm	57.70	61.12	46.91	40.24	41.26	42.17	40.79	32.23	25.31	28.40
Cost of feed	72.92	74.19	32.25	33.54	47.03	93.62	72.41	36.34	24.73	47.20
Cost of man and horse labor	4.51	4.02	4.11	2.68	2.64	4.54	3.77	3.64	1.77	2.76
Interest on investment in cattle and equipment	3.86	4.26	3.47	3.18	2.59	3.38	3.60	3.61	2.20	2.39
Equipment depreciation and repairs	1.82	1.76	1.07	1.28	.93	1.40	2.23	1.68	1.18	.87
Other costs	1.10	1.50	1.10	1.32	1.27	1.75	.93	1.67	1.24	1.57
Total cost of finished animal at farm	141.91	140.85	89.00	82.24	95.72	146.86	123.73	79.17	56.49	83.19
Deductions from cost:										
Pork	10.86	12.40	5.12	8.02	5.11	18.86	10.31	5.87	6.02	4.71
Manure	3.16	5.04	1.73	2.04	1.50	3.08	4.67	1.61	1.41	1.73
Net cost of finished animal at farm	127.89	129.32	82.16	72.18	89.11	124.92	108.75	71.69	49.06	76.75
Net sale value per head at farm	120.63	121.58	74.71	87.20	89.26	107.90	91.70	73.11	61.45	77.86
Profit	------	------	------	15.02	.15	------	------	1.42	12.39	1.11
Loss	7.26	7.74	7.45	------	------	17.02	16.99	------	------	------
Cost of finished animal per 100 pounds at farm	14.24	13.29	8.53	7.01	8.80	16.29	14.31	8.48	6.44	9.19
Cost of feeder animal per 100 pounds at farm	9.26	9.32	7.59	6.28	6.29	9.90	9.53	7.75	6.41	7.34
Margin necessary to cover costs	4.98	3.97	.94	.73	2.51	6.39	4.78	.73	.03	1.85
Margin received	4.17	3.18	.17	2.19	2.52	4.17	2.54	.90	1.65	1.98
Return per bushel of corn fed	1.28	1.12	.30	.67	.65	1.14	.88	.49	.71	.66
Farm price of corn per bushel	1.52	1.32	.46	.42	.65	1.50	1.31	.46	.41	.64
Return for each $100 of cost	94.32	94.01	90.93	120.81	100.17	86.38	84.38	101.98	125.25	101.45

TABLE 44.—*Basic requirements, costs, and financial returns in fattening beef cattle in Iowa, by classes, 1919–1923*—Continued

Item	Cows					All cattle				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	4	3	5	4	1	77	111	133	119	104
Number of cattle	123	113	279	257	43	3,711	4,175	5,519	4,851	4,888
Initial weight per head, pounds	866	702	763	643	704	730	785	842	791	786
Gain in weight, pounds	139	283	367	372	295	271	323	350	340	346
Final weight, pounds	1,005	1,045	1,130	1,015	1,089	1,010	1,108	1,192	1,131	1,132
Days on farm	110	192	210	174	142	160	185	107	175	189
Average daily gain while on farm, pounds	1.31	1.49	1.76	2.17	2.08	1.71	1.76	1.80	1.97	1.85
Feed consumed per 100 pounds of gain:										
Grain, pounds	507	583	791	815	1,059	752	812	860	871	919
Protein concentrate, pounds	28.2	------	7.8	------	------	34.8	4.1	4.7	.6	1.1
Molasses feeds, pounds	------	------	------	------	------	47.7	15.9	8.8	3.3	13.2
Legume hay, pounds	------	254	204	204	126	151	205	216	212	210
Other hay, pounds	113	50	35	------	------	28	74	21	26	44
Stover and straw, pounds	160	217	60	68	16	124	30	42	30	56
Silage, pounds	947	1,301	233	------	------	433	334	77	77	51
Pasture, days	38	21	17	17	10	11	15	17	12	13
By-products with 100 pounds of gain:										
Pork, pounds	22.6	20.8	27.4	17.4	26.0	26.8	36.6	25.3	24.4	22.9
Manure, loads	1.1	1.3	.4	.5	.6	.7	.9	.5	.5	.5
Labor used per 100 pounds of gain:										
Man hours	4.05	2.65	1.88	1.22	1.67	3.05	2.54	2.25	2.16	2.10
Horse hours	1.89	3.82	2.21	.33	1.76	2.67	2.11	1.48	1.12	1.49
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	23.91	26.34	11.61	7.89	13.47	20.77	25.43	10.43	8.06	13.19
Man labor	1.33	.88	.64	.29	.46	1.01	.84	.81	.51	.60
Horse labor	.43	.77	.50	.05	.21	.61	.42	.27	.12	.18
Cattle equipment	.70	.45	.38	.26	------	.50	.53	.32	.38	.26
Death loss	1.51	.20	.06	.09	------	.20	.11	.15	.11	.11
Veterinary	------	------	------	.08	------	.05	.01	.01	.02	.02
Insurance	.05	.22	.03	------	------	.02	.04	.02	.02	.01
Taxes	.24	.22	.20	.01	------	.10	.17	.15	.12	.12
Incidentals	.27	------	.08	.04	.08	.14	.08	.10	.08	.09
Interest on investment in cattle	.96	.81	.71	.28	.37	.83	.85	.86	.49	.56
Interest on investment in equipment	.54	.37	.46	.22	.17	.56	.51	.39	.37	.24
Total cost of 100 pounds of gain	29.94	30.26	14.77	9.21	14.90	33.79	28.99	13.51	10.28	15.38
Deductions from cost—										
Pork	3.94	2.65	2.03	1.57	2.02	4.92	4.81	2.00	2.20	1.66
Manure	1.52	1.87	.40	.31	.59	1.13	1.51	.50	.49	.47
Net cost of 100 pounds of gain	24.48	25.74	12.34	7.33	12.29	27.74	22.67	10.92	7.59	13.25
Financial returns per head—										
Cost of feeder animal at farm	67.06	66.46	57.96	2:.50	35.14	74.54	77.20	74.78	47.32	52.04
Cost of feed	34.49	75.23	42.80	29.73	39.75	81.50	82.64	36.89	27.67	46.05
Cost of man and horse labor	2.54	4.69	4.20	1.30	2.00	4.44	4.10	3.81	2.16	2.71
Interest on investment in cattle and equipment	2.16	3.36	4.20	1.87	1.58	3.78	4.42	4.41	2.95	2.79
Equipment depreciation and repairs	1.02	1.28	1.75	1.00	.42	1.38	1.73	1.14	1.32	.92
Other costs	2.98	1.85	1.36	.84	.23	1.35	1.37	1.53	1.21	1.23
Total cost of finished animal at farm	110.25	152.87	112.36	63.24	79.12	166.99	171.46	122.56	82.63	105.74
Deductions from cost:										
Pork	5.69	7.58	7.49	5.92	5.98	13.48	15.62	7.06	7.57	5.79
Manure	2.20	5.36	1.49	1.18	1.74	3.09	4.92	2.08	1.69	1.65
Net cost of finished animal at farm	102.36	139.94	103.38	56.14	71.40	150.42	150.92	113.42	73.37	98.30
Net sale value per head at farm	108.35	110.16	87.38	70.22	58.89	140.74	140.69	97.25	88.13	101.24
Profit	5.99	------	------	14.08	------	------	------	------	14.76	2.94
Loss	------	29.78	16.00	------	12.51	9.68	10.23	16.17	------	------
Cost of finished animal per 100 pounds at farm	10.09	13.35	9.14	5.50	6.56	14.85	13.60	9.48	6.46	8.65
Cost of feeder animal per 100 pounds at farm	7.75	8.72	7.60	4.43	4.42	10.09	9.83	8.88	5.98	6.62
Margin necessary to cover costs	2.34	4.63	1.54	1.07	2.14	4.76	3.77	.60	.48	2.03
Margin received	2.94	1.79	.13	2.45	.99	3.80	2.84	—.75	1.78	2.28
Return per bushel of corn fed	1.89	.32	.22	.68	.40	1.18	1.03	.17	.67	.69
Farm price of corn per bushel	1.50	1.25	.53	.42	.62	1.46	1.25	.48	.39	.60
Return for each $100 of cost	105.85	78.72	84.52	125.08	82.48	93.56	93.22	85.74	120.12	102.99

TABLE 45.—*Basic requirements, costs, and financial returns in fattening beef cattle in Illinois, by classes, 1919–1923*

Item	Cattle weighing 1,000 pounds and over					Cattle weighing 750 to 1,000 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	2	10	12	14	19	46	70	51	46	63
Number of cattle	44	384	462	452	575	1,800	2,875	2,001	1,877	2,724
Initial weight per head, pounds	1,029	1,042	1,073	1,094	1,078	857	876	858	845	872
Gain in weight, pounds	166	258	232	238	256	287	235	270	230	260
Final weight, pounds	1,186	1,300	1,305	1,332	1,334	1,144	1,111	1,128	1,074	1,132
Days on farm	74	175	148	130	141	179	158	177	152	166
Average daily gain while on farm, pounds	2.25	1.47	1.57	1.82	1.81	1.62	1.49	1.54	1.51	1.57
Feed consumed per 100 pounds of gain:										
Grain, pounds	789	813	763	875	838	599	590	601	696	732
Protein concentrates, pounds	54.7	60.1	47.6	22.3	33.0	83.0	63.1	50.3	14.7	23.1	
Molasses feeds, pounds	------	5.9	22.4	1.5	8.2	3.2	12.6	.6	1.9	4.4
Legume hay, pounds	164	393	84	141	161	129	166	71	122	155
Other hay, pounds	191	79	28	125	160	161	131	140	129	132
Stover and straw, pounds	------	93	243	82	148	118	154	177	108	144
Silage, pounds	510	1,770	1,580	978	1,124	1,746	2,344	1,610	1,587	1,225
Pasture, days	5	12	7	8	9	9	7	11	9	11
By-products with 100 pounds of gain:										
Pork, pounds	21.3	18.8	15.5	23.1	21.2	19.2	19.0	13.0	17.4	17.4
Manure, loads	1.6	2.5	2.2	2.2	1.9	2.2	2.4	2.0	1.6	1.8
Labor used per 100 pounds of gain:										
Man hours	7.81	6.26	5.26	4.05	4.08	7.44	5.88	4.74	4.72	3.84
Horse hours	4.26	3.40	3.48	2.04	2.77	4.33	3.10	3.07	2.74	2.54
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	30.14	40.40	16.01	12.78	16.36	31.18	36.03	14.91	11.60	15.12
Man labor	2.66	1.98	1.04	1.18	1.09	2.51	2.16	1.09	1.12	1.04
Horse labor	.85	.70	.65	.26	.34	.86	.69	.58	.34	.30
Cattle equipment	1.15	.72	.07	.61	.73	1.00	.82	.76	.66	.58
Death loss	------	.09	.19	.08	.15	.10	.10	.14	.08	.13
Veterinary	------	.02	.05	.01	.02	.03	.03	.03	.01	.03
Insurance	.07	.02	.01	------	.01	.03	.01	------	------	------
Taxes	------	.39	.19	.17	.08	.36	.32	.23	.17	.13
Incidentals	.76	.39	.23	.29	.12	.24	.27	.19	.12	.13
Interest on investment in cattle	.94	1.22	1.18	.69	.73	.92	.94	.83	.50	.64
Interest on investment in equipment	.03	.82	.82	.50	.08	.06	.09	.06	.06	.05
Total cost of 100 pounds of gain	37.49	46.75	21.04	16.04	20.31	38.25	42.27	20.35	15.32	18.65
Deductions from cost:										
Pork	3.52	2.64	1.30	1.98	1.58	3.57	2.74	1.09	1.59	1.20
Manure	1.60	6.55	2.17	1.90	1.64	3.37	5.00	2.04	1.39	1.59
Net cost of 100 pounds of gain	32.37	37.56	18.47	12.76	17.09	31.31	34.53	17.22	12.34	15.78
Financial returns per head:										
Cost of feeder animal at farm	128.79	106.80	105.02	67.81	75.39	90.86	83.81	68.05	45.05	55.81
Cost of feed	50.14	104.46	37.28	30.42	41.81	90.18	85.04	40.44	26.65	39.48
Cost of man and horse labor	5.84	6.92	6.01	3.42	3.67	9.76	6.74	6.16	3.37	3.50
Interest on investment in cattle and equipment	3.12	5.27	4.65	3.05	3.60	5.43	4.35	4.85	2.86	3.10
Equipment depreciation and repairs	1.91	1.87	1.55	1.44	1.87	2.90	1.93	2.15	1.52	1.50
Other costs	1.36	2.35	1.53	1.20	.95	2.37	1.74	1.57	.90	1.11
Total cost of finished animal at farm	191.16	227.67	156.07	107.43	127.29	201.48	183.61	123.22	80.29	104.50
Deductions from cost:										
Pork	5.86	6.82	3.03	4.71	4.03	10.33	6.47	2.96	3.65	3.36
Manure	2.66	16.03	5.06	4.52	4.19	9.75	11.81	5.55	3.19	4.13
Net cost of finished animal at farm	182.64	203.92	147.98	98.20	118.98	181.40	165.33	114.71	73.45	97.01
Net sale value per head at farm	191.54	163.03	113.68	106.68	119.33	168.03	138.46	90.95	78.48	96.97
Profit	8.90	------	------	8.48	.35	------	------	------	5.03	------
Loss	------	40.89	34.90	------	------	13.37	31.87	23.76	------	.04
Cost of finished animal per 100 pounds at farm	15.40	15.60	11.33	7.37	8.92	15.84	14.87	10.16	6.84	8.55
Cost of feeder animal per 100 pounds at farm	12.63	10.25	9.78	6.20	6.98	10.61	9.57	7.93	5.33	6.40
Margin necessary to cover costs	2.77	5.44	1.55	1.17	1.94	5.23	5.30	2.23	1.51	2.15
Margin received	3.52	2.29	—1.12	1.80	1.97	4.07	2.43	.13	1.98	2.15
Return per bushel of corn fed	1.79	.32	—.54	.67	.04	1.03	.04	—.29	.62	.63
Farm price of corn, per bushel	1.41	1.41	.56	.44	.63	1.47	1.46	.53	.44	.63
Return for each $100 of cost	104.87	79.95	76.42	108.64	109.29	92.63	80.72	79.29	106.85	99.98

TABLE 45.—*Basic requirements, costs, and financial returns in fattening beef cattle in Illinois, by classes, 1919–1923*—Continued

Item	Cattle weighing 500 to 750 pounds					Cattle weighing under 500 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	21	10	22	30	25	3	4	------	9	3
Number of cattle	676	864	784	1,484	1,160	155	236	------	380	102
Initial weight per head, pounds	659	653	664	677	636	438	393	------	442	484
Gain in weight, pounds	299	274	284	263	314	404	226	------	285	254
Final weight, pounds	958	927	948	940	950	842	619	------	727	738
Days on farm	191	215	198	177	217	309	178	------	203	174
Average daily gain while on farm, pounds	1.55	1.29	1.45	1.49	1.46	1.32	1.29	------	1.42	1.46
Feed consumed per 100 pounds of gain:										
Grain, pounds	347	399	358	564	446	452	360	------	521	350
Protein concentrates, pounds	74.0	46.4	41.4	13.8	16.1	39.6	61.9	------	9.7	6.2
Molasses feeds, pounds	3.9	39.4	3.6	1.2	17.8	6.4	1.3	------	3.6	------
Legume hay, pounds	96	106	107	77	116	------	99	------	70	------
Other hay, pounds	199	99	123	96	100	95	26	------	56	123
Stover and straw, pounds	42	141	43	153	48	------	177	------	49	85
Silage, pounds	1,061	1,030	1,033	1,504	1,042	1,254	1,737	------	1,250	1,489
Pasture, days	10	14	11	11	23	27	5	------	2	26
By-products with 100 pounds of gain:										
Pork, pounds	13.6	20.5	7.5	14.7	11.4	4.3	5.1	------	10.4	9.5
Manure, loads	2.2	1.9	1.7	1.5	1.6	1.7	1.8	------	1.2	1.1
Labor used per 100 pounds of gain:										
Man hours	6.58	4.64	4.41	4.48	2.55	4.10	5.34	------	4.04	2.25
Horse hours	3.88	3.01	2.02	2.41	1.53	1.39	1.49	------	.90	.88
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	26.09	27.90	13.66	10.04	11.80	20.53	24.75	------	9.42	10.25
Man labor	2.22	1.69	1.50	1.05	.67	1.39	2.01	------	.97	.57
Horse labor	.78	.66	.37	.30	.18	.28	.34	------	.12	.10
Cattle equipment	.80	.76	.73	.58	.44	.58	.58	------	.50	1.05
Death loss	.08	.23	.04	.05	.12	.06	.28	------	.23	------
Veterinary	.03	.03	.02	.01	.03	.01	.01	------	.00	.01
Insurance	------	.01	.01	.01	------	.03	------	------	------	------
Taxes	.32	.28	.19	.13	.07	.19	.36	------	.12	.14
Incidentals	.15	.17	.09	.07	.04	.07	.12	------	.09	.01
Interest on investment in cattle	.64	.74	.62	.44	.45	.57	.49	------	.32	.32
Interest on investment in equipment	.79	.79	.82	.58	.40	.54	.65	------	.49	.88
Total cost of 100 pounds of gain	31.00	33.32	18.11	13.26	14.20	24.28	29.05	------	12.35	13.33
Deductions from cost:										
Pork	2.51	3.01	.61	1.33	.85	.80	.73	------	.94	.75
Manure	3.15	4.11	1.72	1.32	.91	2.01	4.89	------	1.12	.88
Net cost of 100 pounds of gain	26.30	26.20	15.78	10.61	12.44	21.47	24.03	------	10.29	11.70
Financial returns per head:										
Cost of feeder animal at farm	64.85	55.55	47.17	35.33	39.92	45.40	38.42	------	25.62	26.40
Cost of feed	78.46	77.75	30.10	26.47	37.47	83.40	57.01	------	27.52	26.06
Cost of man and horse labor	8.99	6.54	5.56	3.57	2.72	6.81	5.47	------	3.17	1.72
Interest on investment in cattle and equipment	4.30	4.24	4.15	2.63	2.71	4.51	2.64	------	2.37	3.03
Equipment depreciation and repairs	2.59	2.12	2.02	1.54	1.40	2.34	1.34	------	1.46	2.66
Other costs	1.70	2.01	.98	.73	.83	1.55	1.86	------	1.51	.40
Total cost of finished animal at farm	157.05	148.21	98.99	70.32	85.05	144.10	106.74	------	61.05	60.33
Deductions from cost:										
Pork	7.50	8.37	1.74	3.50	2.70	3.26	1.67	------	2.76	1.90
Manure	9.49	11.44	4.04	3.47	2.90	8.15	11.25	------	3.27	2.23
Net cost of finished animal at farm	140.06	128.40	92.31	63.35	79.45	132.69	93.82	------	55.62	56.20
Net sale value per head at farm	127.03	113.18	72.61	69.01	79.89	115.56	76.33	------	59.22	52.53
Profit	------	------	------	------	.44	------	------	------	3.60	------
Loss	12.97	15.22	19.70	5.66	------	17.13	17.49	------	------	3.67
Cost of finished animal per 100 pounds at farm	14.69	13.79	9.75	6.73	8.34	15.70	15.06	------	7.57	7.62
Cost of feeder animal per 100 pounds at farm	9.38	8.51	7.13	5.22	6.28	10.35	9.79	------	5.80	5.47
Margin necessary to cover costs	5.30	5.28	2.62	1.51	2.06	5.35	5.27	------	1.77	2.15
Margin received	3.05	3.05	.54	2.11	2.10	3.33	2.40	------	2.26	1.65
Return per bushel of corn fed	.75	.62	.55	.66	.68	.85	.20	------	.04	.41
Farm price of corn, per bushel	1.45	1.40	.53	.45	.66	1.38	1.50	------	.50	.64
Return for each $100 of cost	90.70	88.15	78.66	108.93	100.55	87.09	81.36	------	106.47	93.47

TABLE 45.—*Basic requirements, costs, and financial returns in fattening beef cattle in Illinois, by classes, 1919–1923*—Continued

Item	Cows					All cattle				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	1	3	10	4	7	73	106	95	100	117
Number of cattle	32	188	387	139	219	2,713	4,547	3,634	4,330	4,780
Initial weight per head, pounds	808	812	873	881	869	786	819	849	779	831
Gain in weight, pounds	217	251	160	129	174	294	245	252	243	268
Final weight, pounds	1,025	1,063	1,033	1,010	1,043	1,080	1,064	1,101	1,022	1,099
Days on farm	73	182	122	96	147	187	172	172	161	175
Average daily gain while on farm, pounds	2.96	1.38	1.33	1.36	1.19	1.58	1.43	1.50	1.52	1.55
Feed consumed per 100 pounds of gain:										
Grain, pounds	489	545	649	630	527	524	537	565	646	648
Protein concentrates, pounds	28.9	30.4	23.4	------	11.4	76.8	57.7	49.7	14.2	21.6
Molasses feeds, pounds	------	14.8	8.0	------	.5	3.2	15.3	4.3	1.8	8.4
Legume hay, pounds	------	------	67	165	94	110	183	81	103	140
Other hay, pounds	578	422	128	110	286	169	120	122	103	132
Stover and straw, pounds	------	223	301	329	213	87	151	161	118	118
Silage, pounds	------	2,016	1,624	1,624	1,820	1,730	2,007	1,685	1,460	1,184
Pasture, days	------	17	22	23	29	10	9	11	9	15
By-products with 100 pounds of gain:										
Pork, pounds	9.3	24.0	18.5	18.0	22.9	16.6	18.8	12.3	16.3	16.1
Manure, loads	.9	2.4	2.0	1.6	2.2	2.1	2.3	1.9	1.6	1.6
Labor used per 100 pounds of gain:										
Man hours	4.69	5.08	4.52	4.86	5.57	6.94	5.56	4.71	4.56	3.52
Horse hours	4.22	4.28	2.39	2.73	2.70	3.98	3.08	2.82	2.35	2.25
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	16.89	16.78	15.70	10.77	14.34	28.92	33.95	14.70	10.90	14.19
Man labor	1.59	1.03	1.58	1.10	1.51	2.34	2.03	1.68	1.09	.95
Horse labor	.84	.98	.45	.36	.32	.80	.68	.53	.29	.27
Cattle equipment	.53	.75	.59	.88	1.16	.03	.78	.77	.61	.58
Death loss	------	.15	.17	.38	.21	.13	.14	.12	.10	.13
Veterinary	.14	.04	.03	.09	.01	.03	.03	.03	.02	.03
Insurance	.04	.01	------	------	------	.02	.01	------	------	------
Taxes	.38	.26	.15	------	.05	.33	.32	.21	.15	.10
Incidentals	.30	.36	.21	.16	.18	.21	.26	.17	.12	.10
Interest on investment in cattle	.39	.73	.81	.48	.58	.82	.89	.82	.50	.59
Interest on investment in equipment	.39	.68	.99	.72	.82	.88	.85	.91	.60	.53
Total cost of 100 pounds of gain	21.49	22.67	20.98	14.94	19.18	35.41	39.94	20.03	14.38	17.47
Deductions from cost:										
Pork	.17	3.67	1.70	1.30	1.71	3.06	2.73	1.04	1.40	1.20
Manure	1.73	4.32	1.82	1.17	2.36	3.18	4.91	1.97	1.38	1.41
Net cost of 100 pounds of gain	19.59	14.08	17.40	12.47	15.11	29.17	32.30	17.02	11.54	14.86
Financial returns per head:										
Cost of feeder animal at farm	69.22	70.12	53.30	34.53	40.15	81.40	77.30	66.68	42.28	52.94
Cost of feed	36.56	79.61	25.34	14.13	25.10	85.58	83.62	38.14	26.65	38.33
Cost of man and horse labor	5.25	7.35	3.28	1.01	3.21	9.29	6.68	5.60	3.37	3.28
Interest on investment in cattle and equipment	1.08	3.55	2.89	1.57	2.45	5.02	4.28	4.46	2.71	3.03
Equipment depreciation and repairs	1.16	1.86	1.44	1.18	2.03	2.75	1.93	1.99	1.50	1.57
Other costs	1.87	2.00	.00	.84	.79	2.15	1.86	1.36	.94	.99
Total cost of finished animal at farm	115.74	164.55	87.15	54.13	73.82	185.19	175.76	118.32	77.45	100.14
Deductions from cost:										
Pork	.38	9.26	2.84	1.70	3.01	9.05	6.73	2.69	3.57	3.23
Manure	3.75	10.00	2.93	1.54	4.14	9.41	12.10	5.07	3.38	3.80
Net cost of finished animal at farm	111.61	144.39	81.38	50.89	66.67	167.73	156.93	110.56	70.50	93.11
Net sale value per head at farm	109.84	116.42	64.96	48.24	57.61	154.74	128.44	85.80	75.52	92.76
Profit	------	------	------	------	------	------	------	------	5.02	------
Loss	1.77	27.97	16.42	2.65	9.06	12.99	28.49	24.76	------	.35
Cost of finished animal per 100 pounds at farm	10.89	13.57	7.88	5.03	6.39	15.52	14.72	10.03	6.88	8.46
Cost of feeder animal per 100 pounds at farm	8.56	8.64	6.11	3.92	4.62	10.30	9.45	7.90	5.40	6.37
Margin necessary to cover costs	2.33	4.93	1.77	1.11	1.77	5.16	5.27	2.13	1.48	2.09
Margin received	2.16	2.30	.18	.85	.90	3.95	2.60	−.11	1.98	2.06
Return per bushel of corn fed	1.35	.26	−.37	.19	.02	.99	.20	−.44	.63	.63
Farm price of corn, per bushel	1.44	1.41	.52	.37	.57	1.46	1.41	.53	.45	.64
Return for each $100 of cost	98.41	80.63	79.82	94.79	86.41	92.26	81.86	77.60	107.12	99.62

TABLE 46.—*Basic requirements, costs and financial returns in fattening beef cattle in Indiana, by classes, 1919–1923*

Item	Cattle weighing 1,000 pounds and over				Cattle weighing 750 to 1,000 pounds				
	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	6	16	27	18	20	59	44	52	51
Number of cattle	188	521	1,231	765	694	1,683	1,451	2,033	1,887
Initial weight per head, pounds	1,071	1,099	1,124	1,067	820	856	805	900	803
Gain in weight, pounds	245	220	206	187	326	274	278	252	276
Final weight, pounds	1,316	1,323	1,330	1,254	1,152	1,130	1,143	1,152	1,169
Days on farm	125	125	120	95	181	166	184	155	158
Average daily gain while on farm, pounds	1.97	1.83	1.71	1.98	1.82	1.66	1.54	1.63	1.76
Feed consumed per 100 pounds of gain:									
Grain, pounds	832	1,005	1,195	907	465	540	664	872	875
Protein concentrates, pounds	53.3	22.8	2.7	3.6	104.8	48.3	46.2	13.9	11.2
Molasses feeds, pounds	76.7				48.0	22.7		.6	7.6
Legume hay, pounds		45	13	25	21	60	80	24	50
Other hay, pounds	117	27	25	20	70	30	14	18	15
Stover and straw, pounds	389	340	454	378	134	239	310	400	428
Silage, pounds	1,021	1,035	798	811	1,040	1,630	1,351	1,271	857
Pasture, days	4	9	13	15	8	9	12	14	13
By-products with 100 pounds of gain:									
Pork, pounds	25.8	40.3	61.1	54.2	20.1	27.3	23.5	38.5	43.6
Manure, loads	1.9	1.6	1.8	1.6	.9	1.6	1.4	1.6	1.6
Labor used per 100 pounds of gain:									
Man, hours	4.55	4.48	3.83	2.81	5.40	5.18	5.28	3.88	3.78
Horse, hours	1.94	2.06	4.20	2.59	2.05	1.51	2.15	2.98	2.18
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	31.40	15.70	12.42	14.66	27.52	27.94	13.87	11.57	14.82
Man, labor	1.67	1.52	.77	.64	1.84	1.91	1.82	.80	.86
Horse, labor	.45	.40	.53	.32	.42	.30	.35	.36	.27
Cattle equipment	.93	.37	.18	.28	.95	.85	.66	.30	.37
Death, loss	.24	.18	.18	.14	.27	.10	.37	.06	.17
Veterinary	.02	.02	.01		.05	.05	.02	.01	.04
Insurance	.02				.06	.04			.02
Taxes	.30	.25	.12	.08	.58	.32	.28	.28	.18
Incidentals	.25	.30	.14	.15	.23	.20	.14	.18	.11
Interest on investment in cattle	1.07	1.11	.75	.66	.86	.87	.89	.64	.62
Interest on investment in equipment	1.21	.50	.15	.16	1.01	1.06	.89	.28	.31
Total cost of 100 pounds of gain	37.71	20.41	15.25	17.09	33.80	33.82	19.27	14.43	17.77
Deductions from cost:									
Pork	3.89	3.72	5.90	4.45	4.06	4.33	2.08	3.77	3.52
Manure	5.18	1.67	2.40	2.49	1.60	3.60	2.03	2.61	2.20
Net cost of 100 pounds of gain	28.64	15.02	6.89	10.15	28.15	25.89	15.16	8.05	12.05
Financial returns per animal:									
Cost of feeder animal at farm	127.32	100.14	67.67	70.99	95.08	80.88	72.88	55.06	59.67
Cost of feed	77.48	35.99	25.63	27.51	90.70	77.05	39.17	29.25	41.24
Cost of man and horse labor	5.23	4.54	2.67	1.79	7.44	6.33	6.09	2.91	3.12
Interest on investment in cattle and equipment	5.61	3.60	1.85	1.55	6.16	5.32	5.04	2.33	2.61
Equipment depreciation and repairs	2.24	.84	.37	.52	3.17	2.34	1.87	.76	1.02
Other costs	2.04	1.73	.95	.70	3.92	2.20	2.28	1.23	1.43
Total cost of finished animal at farm	220.12	155.09	99.14	103.06	206.47	180.12	127.33	91.54	109.09
Deductions from cost:									
Pork	9.57	8.53	12.31	8.34	13.35	11.95	5.87	9.53	9.79
Manure	12.74	3.82	4.95	4.68	5.27	9.92	5.73	6.59	6.12
Net cost of finished animal at farm	197.81	143.58	81.88	90.04	187.85	158.25	115.73	75.42	93.18
Net sales value per head at farm	162.31	124.23	93.62	101.45	171.80	146.62	91.09	88.50	103.31
Profit			11.74	11.41				13.08	10.13
Loss	35.50	19.35			16.05	17.63	24.64		
Cost of finished animal per 100 pounds at farm	15.02	10.80	6.15	7.18	16.26	13.98	10.08	6.54	7.95
Cost of feeder animal per 100 pounds at farm	11.89	9.03	6.02	6.65	11.51	10.15	8.43	6.12	6.68
Margin necessary to cover costs	3.13	.87	.13	.53	4.75	3.83	1.65	.42	1.27
Margin received	.43	−.58	1.01	1.44	3.36	2.27	−.50	1.56	2.13
Return per bushel of corn fed	.37	.11	.68	.94	.91	.78	−.22	.76	.89
Farm price of corn per bushel	1.35	.54	.42	.59	1.61	1.44	.52	.42	.65
Return for each $100 of cost	82.05	80.52	114.34	112.67	91.46	88.86	78.71	117.34	110.87

TABLE 46.—*Basic requirements, costs and financial returns in fattening beef cattle in Indiana, by classes, 1919–1923*—Continued

Item	Cattle weighing 500 to 750 pounds					Cattle weighing under 500 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	24	24	23	22	10	6	5	11	10	13
Number of cattle	612	791	704	682	312	276	103	417	732	904
Initial weight per head, pounds	628	650	657	622	626	392	443	431	410	400
Gain in weight, pounds	353	298	273	275	329	331	368	377	315	286
Final weight, pounds	981	948	930	897	955	723	801	811	725	692
Days on farm	202	211	192	177	192	215	283	275	224	186
Average daily gain while on farm, pounds	1.77	1.43	1.44	1.58	1.73	1.57	1.29	1.40	1.42	1.56
Feed consumed per 100 pounds of gain:										
Grain, pounds	370	461	516	717	591	309	468	541	521	500
Protein concentrates, pounds	64.9	36.5	34.1	16.4	14.1	43.1	20.8	74.4	32.3	17.3
Molasses feeds, pounds	52.2	11.5				100.6		4.0	1.7	48.2
Legume hay, pounds	67	72	58	40	160	41	67	45	27	46
Other hay, pounds	102	38	70	44	10	54	181	20	40	36
Stover and straw, pounds	62	172	175	203	223	194	124	142	226	201
Silage, pounds	1,313	1,310	1,391	870	477	999	632	880	889	863
Pasture, days	11	17	15	20	22	9	30	10	9	10
By-products with 100 pounds of gain:										
Pork, pounds	13.6	10.6	18.9	28.5	22.4	11.0	15.6	14.0	15.0	10.8
Manure, loads	1.2	1.3	1.3	1.4	.7	1.0	1.1	.8	1.0	1.1
Labor used per 100 pounds of gain:										
Man, hours	4.05	4.78	4.24	4.17	3.17	2.36	2.70	3.67	3.78	3.33
Horse, hours	.51	1.37	.94	2.30	1.11	.28	1.14	.79	2.63	1.83
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	10.68	23.90	12.34	10.13	11.12	18.89	21.76	11.53	8.15	11.40
Man, labor	1.39	1.74	1.48	.85	.71	.81	.92	1.22	.76	.70
Horse, labor	.10	.31	.15	.28	.13	.06	.20	.11	.32	.23
Cattle equipment	.64	.60	.07	.31	.39	.50	.64	.52	.41	.38
Death loss	.23	.29	.20	.24	.17	.19	.27	.21	.10	.11
Veterinary	.05	.04	.02	.01			.13	.03	.02	.11
Insurance	.03	.01				.03				
Taxes	.47	.20	.21	.14	.13	.46	.15	.12	.16	.11
Incidentals	.20	.19	.19	.13	.18	.06	.19	.05	.05	.06
Interest on investment on cattle	.63	.81	.67	.48	.46	.48	.58	.60	.37	.33
Interest on investment in equipment	.73	.84	.53	.20	.35	.62	.01	.68	.44	.38
Total cost of 100 pounds of gain	24.15	29.11	16.82	12.80	13.64	22.02	25.51	15.07	10.78	13.87
Deductions from cost:										
Pork	2.38	2.53	1.62	2.89	1.73	2.15	2.52	1.28	1.40	1.47
Manure	1.70	3.12	1.67	1.98	1.17	1.82	3.37	1.07	1.72	1.31
Net cost of 100 pounds of gain	20.07	23.16	13.53	8.02	10.74	18.05	19.62	12.72	7.66	11.09
Financial returns per animal:										
Cost of feeder animal at farm	66.56	65.15	49.17	37.64	43.49	43.71	45.60	42.10	26.74	26.00
Cost of feed	70.54	72.21	34.28	25.40	37.04	63.55	79.79	41.29	25.07	33.19
Cost of man and horse labor	5.37	6.26	4.54	3.18	2.81	2.01	4.32	5.13	3.42	2.88
Interest on investment in cattle and equipment	4.87	4.07	4.18	2.15	2.67	3.62	4.37	4.93	2.50	2.06
Equipment depreciation and repairs	2.31	2.08	1.80	.87	1.31	1.68	2.34	1.98	1.20	1.09
Other costs	3.48	2.49	1.89	1.55	1.61	2.27	2.73	1.58	1.08	1.20
Total cost of finished animal at farm	153.13	153.10	95.87	73.69	88.93	117.74	139.21	100.01	61.06	66.48
Deductions from cost:										
Pork	8.52	8.54	4.50	8.11	5.77	7.22	9.23	4.93	4.47	4.29
Manure	6.10	9.43	4.64	5.54	3.88	6.13	12.37	4.10	5.49	3.83
Net cost of finished animal at farm	138.51	135.13	86.73	60.04	79.28	104.39	117.61	90.98	51.10	58.36
Net sales value per head at farm	135.67	110.04	68.56	66.30	86.03	99.48	110.49	71.14	60.33	61.04
Profit				6.26	6.75				9.23	2.68
Loss	2.84	16.09	18.17			4.91	7.21	19.84		
Cost of finished animal per 100 pounds at farm	14.08	14.21	9.29	6.66	8.28	14.32	14.54	11.16	7.04	8.40
Cost of feeder animal per 100 pounds at farm	10.61	10.02	7.48	6.04	6.04	11.16	10.31	9.69	6.52	6.42
Margin necessary to cover costs	3.47	4.19	1.81	.62	1.34	3.16	4.23	1.47	.52	1.56
Margin received	3.18	2.50	—.14	1.32	2.25	2.49	3.34	—.96	1.79	2.30
Return per bushel of corn fed	1.23	.77	—.18	.59	.00	1.26	1.26	—.05	.74	.82
Farm price of corn per bushel	1.30	1.43	.54	.42	.70	1.57	1.51	.50	.42	.71
Return for each $100 of cost	97.95	98.09	79.05	110.43	111.04	95.30	93.37	78.19	118.06	104.59

TABLE 46.—*Basic requirements, costs and financial returns in fattening beef cattle, in Indiana, by classes, 1919–1923*—Continued

Item	Cows				All cattle				
	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	4	7	5	1	49	95	101	117	93
Number of cattle	112	223	276	32	1,582	2,937	3,321	4,954	3,900
Initial weight per head, pounds	902	843	863	908	673	793	801	842	793
Gain in weight, pounds	248	207	99	68	338	282	277	245	264
Final weight, pounds	1,150	1,050	962	976	1,011	1,075	1,078	1,087	1,057
Days on farm	103	78	84	61	195	180	181	156	154
Average daily gain while on farm, pounds	2.45	2.72	1.20	1.15	1.75	1.59	1.56	1.58	1.73
Feed consumed per 100 pounds of gain:									
Grain, pounds	516	549	1,208	2,061	400	532	661	857	767
Protein concentrates, pounds	8.3	28.7	7.2	------	78.7	42.8	44.1	15.3	12.0
Molasses feeds, pounds	.7	------	------	------	59.3	10.2	.9	.6	16.1
Legume hay, pounds	------	20	------	------	43	59	62	24	61
Other hay, pounds	------	8	22	178	84	45	30	28	21
Stover and straw, pounds	381	341	782	1,784	85	225	258	365	346
Silage, pounds	1,469	482	2,404	1,240	1,392	1,428	1,193	1,064	815
Pasture, days	------	11	11	------	9	12	12	14	13
By-products with 100 pounds of gain:									
Pork, pounds	22.2	18.2	61.9	240.9	16.0	23.9	22.8	37.7	37.4
Manure, loads	1.8	.9	2.6	11.2	1.6	1.5	1.3	1.6	1.4
Labor used per 100 pounds of gain:									
Man, hours	4.04	3.49	7.24	12.89	4.33	4.82	4.58	3.97	3.49
Horse, hours	2.85	3.69	2.30	7.14	4.13	4.51	4.84	3.06	2.65
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	20.63	8.93	13.49	34.03	22.86	20.30	13.13	10.91	13.60
Man, labor	1.51	1.20	1.45	2.81	1.46	1.76	1.58	.81	.79
Horse, labor	.65	.59	.35	.85	.23	.37	.20	.37	.25
Cattle equipment	.80	.82	.37	.45	.75	.79	.61	.30	.36
Death loss	.44	.42	.51	1.61	.24	.24	.30	.13	.15
Veterinary	------	.05	.08	.18	.04	.05	.02	.02	.05
Insurance	.02	.02	------	------	.04	.02	------	------	.01
Taxes	------	.06	.16	------	.50	.29	.22	.18	.14
Incidentals	.07	.13	.18	.36	.19	.19	.15	.14	.11
Interest on investment in cattle	.49	.36	.58	.62	.70	.83	.80	.58	.54
Interest on investment in equipment	.90	.91	.37	.27	.83	.97	.79	.29	.31
Total cost of 100 pounds of gain	25.51	13.49	17.46	41.18	27.86	31.81	17.89	13.73	16.31
Deductions from cost:									
Pork	3.40	1.49	5.94	19.27	3.65	3.72	2.03	3.69	2.98
Manure	3.55	1.15	3.56	8.39	1.68	3.53	1.70	2.32	1.92
Net cost of 100 pounds of gain	18.56	10.85	7.96	13.52	23.13	24.56	14.16	7.72	11.41
Financial returns per animal:									
Cost of feeder animal at farm	72.63	51.00	30.99	30.42	75.05	80.71	68.08	50.53	52.59
Cost of feed	52.19	18.94	13.62	23.84	78.16	74.98	30.87	26.88	36.21
Cost of man and horse labor	5.47	3.78	1.82	2.56	5.85	6.09	5.23	2.99	2.78
Interest on investment in cattle and equipment	3.51	2.87	.96	.63	5.22	5.12	4.47	2.15	2.26
Equipment depreciation and repairs	2.02	1.72	.37	.31	2.58	2.27	1.71	.74	.96
Other costs	1.33	1.43	.80	1.51	3.47	2.25	1.96	1.16	1.25
Total cost of finished animal at farm	137.15	79.44	54.62	65.27	170.33	171.42	118.32	84.36	96.05
Deductions from cost:									
Pork	8.59	3.15	6.00	13.50	10.42	10.60	5.69	9.08	7.94
Manure	8.99	2.42	3.59	5.88	5.74	10.07	4.77	5.71	5.12
Net cost of finished animal at farm	119.57	73.87	45.03	45.89	154.17	150.75	107.86	69.57	82.99
Net sales value per head at farm	113.53	58.09	49.43	48.41	145.21	133.48	86.74	80.38	91.31
Profit	------	------	4.40	2.52	------	------	------	10.81	8.32
Loss	6.04	15.78	------	------	8.96	17.27	21.12	------	------
Cost of finished animal per 100 pounds at farm	10.38	7.02	4.69	4.69	15.19	13.98	9.96	6.38	7.84
Cost of feeder animal per 100 pounds at farm	8.06	6.05	4.29	4.01	11.15	10.18	8.50	6.00	6.63
Margin necessary to cover costs	2.32	.97	.38	.68	4.04	3.80	1.46	.38	1.21
Margin received	1.80	−.53	.85	.95	3.16	2.20	−.49	1.38	1.90
Return per bushel of corn fed	.91	−.26	.53	.75	1.08	.78	−.13	.70	.89
Farm price of corn per bushel	1.16	.56	.34	.65	1.46	1.42	.53	.42	.66
Return for each $100 of cost	94.05	78.64	109.77	105.49	94.19	88.54	80.42	115.54	110.03

TABLE 47.—*Basic requirements, costs and financial returns in fattening beef cattle in Missouri, by classes, 1919–1923*

Item	Cattle weighing 1,000 pounds and over					Cattle weighing 750 to 1,000 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	6	11	15	7	5	23	48	61	53	55
Number of cattle	301	385	570	294	299	1,024	2,710	3,232	2,846	3,810
Initial weight per head, pounds	1,004	1,043	1,034	1,034	1,031	825	880	892	866	876
Gain in weight, pounds	295	201	330	230	214	266	253	359	342	336
Final weight, pounds	1,299	1,244	1,364	1,264	1,245	1,091	1,142	1,251	1,208	1,212
Days on farm	183	145	197	140	143	204	191	249	230	274
Average daily gain while on farm, pounds	1.61	1.40	1.69	1.65	1.51	1.30	1.33	1.45	1.46	1.23
Feed consumed per 100 pounds of gain:										
Grain, pounds	415	877	972	823	702	258	581	641	752	640
Protein concentrates, pounds	43.8	23.4	33.5	8.5	------	120.4	47.9	46.6	3.4	6.7
Molasses feeds, pounds	124.0	73.2	------	45.8	4.0	54.0	7.8	3.9	13.1	36.6
Legume hay, pounds	101	146	133	41	34	62	176	136	78	139
Other hay, pounds	4	10	5	59	130	57	31	16	30	94
Stover and straw, pounds	64	277	130	------	65	200	167	137	157	287
Silage, pounds	253	860	300	------	183	793	808	557	157	171
Pasture, days	48	31	32	44	46	48	38	42	42	50
By-products with 100 pounds of gain:										
Pork, pounds	20.3	32.8	34.2	25.6	23.6	8.3	23.8	26.3	23.9	19.8
Manure, loads	------	.6	.1	.1	.2	.1	.4	.2	.3	.4
Labor used per 100 pounds of gain:										
Man hours	2.01	4.75	3.30	3.42	2.81	3.50	3.69	3.07	2.90	2.38
Horse hours	5.12	6.36	3.82	3.40	3.08	5.25	3.70	3.36	4.14	3.26
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	22.13	36.22	16.53	10.64	14.81	21.74	27.84	14.12	10.19	14.60
Man labor	.73	1.40	.94	.73	.55	.62	1.13	.85	.58	.46
Horse labor	.87	1.27	.90	.34	.40	.92	.74	.52	.42	.36
Cattle equipment	.12	.47	.13	.18	.17	.22	.29	.10	.19	.14
Death loss	------	.39	.19	.21	.21	.33	.15	.11	.10	.08
Veterinary	------	.02	.05	.02	.01	.03	.03	.01	.01	.01
Insurance	.19	------	.03	------	.07	.12	.02	.02	.02	.01
Taxes	.09	.10	.09	.13	.18	.08	.12	.11	.11	.13
Incidentals	.08	.17	.10	.19	.15	.08	.10	.09	.07	.06
Interest on investment in cattle	1.20	1.42	1.09	.86	.90	1.10	1.14	1.03	.71	.86
Interest on investment in equipment	.28	.54	.13	.15	.14	.27	.33	.20	.17	.12
Total cost of 100 pounds of gain	25.69	42.06	19.88	13.45	17.59	25.87	31.89	17.22	12.57	16.83
Deductions from cost:										
Pork	3.78	4.75	2.92	2.39	1.72	1.44	3.39	2.12	2.26	1.48
Manure	.01	.71	.08	.09	.35	.08	.77	.29	.41	.53
Net cost of 100 pounds of gain	21.90	36.60	16.88	10.97	15.52	24.35	27.73	14.87	9.90	14.82
Financial returns per head:										
Cost of feeder animal at farm	109.93	114.97	92.17	69.97	73.03	82.21	84.65	72.42	51.34	53.72
Cost of feed	65.42	73.26	55.04	24.67	32.02	58.46	70.71	51.07	35.11	49.22
Cost of man and horse labor	4.73	5.51	5.13	2.48	2.05	4.95	4.76	4.96	3.43	2.80
Interest on investment in cattle and equipment	4.30	3.97	4.07	2.33	2.26	3.83	3.75	4.47	3.04	3.31
Equipment depreciation and repairs	.37	.95	.43	.42	.37	.50	.74	.56	.66	.46
Other costs	1.05	1.36	1.54	1.27	1.34	1.77	1.05	1.18	1.11	.93
Total cost of finished animal at farm	185.89	200.02	158.38	101.14	111.07	151.81	165.66	134.60	94.69	110.44
Deductions from cost:										
Pork	11.17	9.61	9.73	5.55	3.72	3.88	8.60	7.65	7.79	5.00
Manure	.04	1.43	.27	.20	.76	.22	1.96	.82	1.43	1.79
Net cost of finished animal at farm	174.68	188.98	148.38	95.39	106.59	147.71	155.10	126.19	85.47	103.65
Net sales value per head at farm	205.81	158.72	105.12	100.99	102.29	139.52	134.73	91.63	99.13	105.60
Profit	31.13	------	------	5.60	------	------	------	------	13.66	2.04
Loss	------	30.26	43.26	------	4.30	8.19	20.37	34.56	------	------
Cost of finished animal per 100 pounds at farm	13.45	15.18	10.85	7.55	8.56	13.51	13.58	10.07	7.06	8.54
Cost of feeder animal per 100 pounds at farm	10.95	11.02	8.92	6.77	7.09	9.97	9.52	8.12	5.93	6.13
Margin necessary to cover costs	2.50	4.16	1.93	.78	1.47	3.54	4.06	1.95	1.13	2.41
Margin received	4.89	1.73	−1.23	1.22	1.13	2.79	2.28	−.81	2.26	2.58
Return per bushel of corn fed	2.83	.45	−.08	.64	.64	.76	.65	−.27	.79	.83
Farm price of corn per bushel	1.41	1.41	.67	.48	.80	1.43	1.43	.57	.49	.78
Return for each $100 of cost	117.82	83.99	70.85	105.87	95.97	94.46	86.87	72.61	115.98	101.97

TABLE 47.—*Basic requirements, costs and financial returns in fattening beef cattle in Missouri, by classes, 1919–1923*—Continued

Item	Cattle weighing 500 to 750 pounds					Cattle weighing under 500 pounds				
	1919	1920	1921	1922	1923	1919	1920	1921	1922	1923
Number of droves	16	24	22	31	27	6	10	5	11	7
Number of cattle	1,021	1,384	985	1,204	1,330	507	365	152	612	327
Initial weight per head, pounds	649	638	658	636	650	415	435	420	430	373
Gain in weight, pounds	257	263	318	361	324	252	288	310	335	298
Final weight, pounds	906	951	976	997	974	667	723	730	765	671
Days on farm	160	197	212	253	241	200	231	193	227	242
Average daily gain while on farm, pounds	1.55	1.35	1.51	1.44	1.30	1.26	1.27	1.63	1.50	1.27
Feed consumed per 100 pounds of gain:										
Grain, pounds	334	461	598	741	578	123	436	667	574	377
Protein concentrates, pounds	102.7	40.1	27.6	3.0	.2	74.5	49.2	29.2	15.0	------
Molasses feeds, pounds	65.4	14.4	8.7	19.9	12.3	61.5	13.0	15.9	23.3	18.0
Legume hay, pounds	76	133	190	111	170	20	121	221	108	120
Other hay, pounds	------	20	32	33	58	106	35	------	51	88
Stover and straw, pounds	140	201	55	51	206	182	58	------	11	20
Silage, pounds	880	658	472	212	252	1,134	511	------	128	72
Pasture, days	37	45	32	42	38	35	25	24	30	42
By-products with 100 pounds of gain:										
Pork, pounds	11.0	20.5	17.0	20.5	15.1	4.6	11.2	12.5	20.5	9.5
Manure, loads	.2	.3	.4	.3	.4	.1	.4	.3	.2	.3
Labor used per 100 pounds of gain:										
Man hours	4.05	3.01	3.02	2.96	2.43	4.04	4.34	2.47	2.02	2.11
Horse hours	5.64	3.30	2.50	3.39	2.77	3.49	2.69	.69	1.62	2.18
Cost of 100 pounds of gain:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed	23.03	22.53	11.52	10.07	12.31	15.44	19.75	10.60	8.39	7.49
Man labor	1.01	.97	.87	.55	.47	1.01	1.36	.69	.51	.41
Horse labor	.66	.66	.39	.20	.30	.59	.54	.16	.26	.23
Cattle equipment	.31	.26	.22	.24	.18	.28	.43	.73	.25	.28
Death loss	.24	.19	.14	.11	.10	.42	.26	.20	.14	.21
Veterinary	.69	.04	.01	.02	.02	.14	.01	.02	.11	.05
Insurance	.04	------	------	.01	------	.01	.01	------	.02	------
Taxes	.03	.09	.04	.07	.08	.03	.03	.05	.06	.04
Incidentals	.11	.11	.07	.08	.07	.05	.11	.05	.04	.05
Interest on investment in cattle	.74	.85	.65	.51	.57	.49	.52	.20	.40	.34
Interest on investment in equipment	.39	.24	.28	.24	.17	.30	.47	1.01	.23	.28
Total cost of 100 pounds of gain	26.95	25.94	14.19	12.19	14.27	18.82	23.49	13.65	10.41	9.38
Deductions from cost:										
Pork	2.06	3.07	1.43	1.83	1.13	.83	1.81	1.06	1.86	.63
Manure	.19	.60	.40	.34	.32	.12	.80	.33	.30	.34
Net cost of 100 pounds of gain	24.70	22.21	12.36	10.02	12.75	17.87	20.88	12.26	8.25	8.41
Financial returns per head:										
Cost of feeder animal at farm	60.17	61.03	48.00	36.00	38.95	35.45	39.81	31.70	25.43	21.09
Cost of feed	59.03	59.87	37.00	36.70	49.18	40.12	58.10	33.42	28.67	23.01
Cost of man and horse labor	5.10	4.34	4.04	3.00	2.50	4.16	5.58	2.49	2.04	1.96
Interest on investment in cattle and equipment	2.93	2.91	2.99	2.73	2.43	2.10	2.94	3.80	2.16	1.91
Equipment depreciation and repairs	.80	.70	.71	.88	.60	.73	1.27	2.29	.85	.85
Other costs	1.31	1.18	.86	1.04	.84	1.67	1.26	1.04	1.20	1.08
Total cost of finished animal at farm	129.94	130.03	93.60	80.41	85.50	84.32	108.96	74.80	61.04	49.90
Deductions from cost:										
Pork	5.34	8.15	4.59	6.63	3.69	2.16	5.32	3.36	6.35	1.93
Manure	.49	1.70	1.29	1.24	1.26	.39	2.38	1.05	1.02	1.03
Net cost of finished animal at farm	124.11	120.12	87.72	72.49	80.55	81.86	101.28	70.39	53.67	46.94
Net sales value per head at farm	116.76	102.26	69.70	70.59	75.58	81.31	85.39	58.07	58.12	48.27
Profit	------	------	------	7.10	------	------	------	------	4.45	1.33
Loss	7.35	17.86	18.02	------	4.97	.55	15.89	12.32	------	------
Cost of finished animal per 100 pounds at farm	13.67	12.60	8.97	7.25	8.25	12.16	13.89	9.59	6.97	7.42
Cost of feeder animal per 100 pounds at farm	9.27	8.88	7.36	5.66	5.99	8.54	9.15	7.55	5.92	5.65
Margin necessary to cover costs	4.40	3.72	1.67	1.59	2.26	3.62	4.74	2.04	1.05	1.77
Margin received	3.59	1.85	—.17	2.30	1.75	3.54	2.56	.30	1.63	1.47
Return per bushel of corn fed	1.08	.61	.04	.63	.02	1.43	.76	.25	.63	.82
Farm price of corn per bushel	1.56	1.43	.57	.48	.77	1.53	1.47	.58	.56	.75
Return for each $100 of cost	94.08	86.13	79.40	109.79	93.83	90.33	84.31	82.50	108.29	102.83

TABLE 47.—*Basic requirements, costs and financial returns in fattening beef cattle in Missouri, by classes, 1919–1923*—Continued

Item	Cows		All cattle				
	1920	1921	1919	1920	1921	1922	1923
Number of droves	2	2	51	95	105	102	94
Number of cattle	91	104	3,513	4,936	5,139	4,956	5,766
Initial weight per head, pounds	805	751	732	809	843	768	803
Gain in weight, pounds	129	188	264	252	341	339	324
Final weight, pounds	934	939	996	1,061	1,184	1,105	1,127
Days on farm	116	131	190	191	230	233	258
Average daily gain while on farm, pounds	1.10	1.45	1.39	1.33	1.49	1.47	1.27
Feed consumed per 100 pounds of gain:							
Grain, pounds	157	97.6	278	548	677	730	614
Protein concentrates, pounds	188.4	75.9	104.7	45.5	41.9	4.9	4.8
Molasses feeds, pounds	17.1	29.3	66.2	15.8	5.2	18.1	30.1
Legume hay, pounds	188	342	65	157	152	89	142
Other hay, pounds			42	26	17	35	37
Stover and straw, pounds	103		196	174	115	105	217
Silage, pounds	3,236	1,052	804	764	566	162	185
Pasture, days	31	18	43	38	38	41	46
By-products with 100 pounds of gain:							
Pork, pounds	5.8	43.7	10.1	22.2	25.6	22.0	18.3
Manure, loads	1.4	.1	.1	.4	.2	.3	.4
Labor used per 100 pounds of gain:							
Man hours	5.27	3.70	3.70	3.63	3.08	2.83	2.39
Horse hours	5.03	1.95	5.10	3.68	3.16	3.01	3.10
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Cost of 100 pounds of gain:	32.56	23.37	21.26	26.15	14.01	9.96	13.70
Feed	1.63	1.04	.94	1.13	.86	.57	.47
Man labor	1.19	.29	.88	.74	.49	.30	.34
Horse labor	.42	.15	.24	.31	.18	.21	.16
Cattle equipment		.26	.28	.18	.13	.11	.09
Death loss	.06	.01	.06	.03	.01	.02	.01
Veterinary		.09	.09	.01	.02	.02	.01
Insurance		.02	.06	.10	.09	.10	.11
Taxes	.15	.09	.08	.11	.09	.08	.06
Incidentals	1.10	.63	.96	1.02	.94	.62	.77
Interest on investment in cattle	.39	.16	.32	.33	.23	.20	.14
Interest on investment in equipment	37.56	26.11	25.16	30.11	17.05	12.25	15.86
Total cost of 100 pounds of gain							
Deductions from cost:	.87	3.64	1.80	3.22	2.08	2.11	1.36
Pork	3.45	.07	.11	.76	.24	.37	.48
Manure	33.18	22.40	23.25	26.13	14.73	9.77	14.02
Net cost of 100 pounds of gain							
Financial returns per head:	66.22	47.71	71.75	76.66	67.79	45.48	49.42
Cost of feeder animal at farm	41.80	44.43	56.87	66.46	48.04	34.08	44.75
Cost of feed	3.62	2.53	4.95	4.74	4.04	3.19	2.04
Cost of man and horse labor	1.91	1.50	3.40	3.43	4.01	2.82	2.97
Interest on investment in cattle and equipment	.54	.29	.65	.78	.62	.72	.51
Equipment depreciation and repairs	.27	.92	1.55	1.12	1.16	1.12	.94
Other costs	114.36	97.38	139.08	153.13	126.25	87.41	101.23
Total cost of finished animal at farm							
Deductions from cost:	1.12	6.92	4.80	8.17	7.14	7.21	4.45
Pork	4.43	.13	.29	1.94	.83	1.26	1.57
Manure	108.81	90.33	133.99	143.02	118.29	78.94	95.21
Net cost of finished animal at farm	90.79	49.37	131.32	128.03	88.35	89.43	95.31
Net sales value per head at farm						10.49	.10
Profit	18.02	40.96	2.67	19.99	31.94		
Loss	11.65	9.61	13.40	13.45	9.97	7.12	8.46
Cost of finished animal per 100 pounds at farm	8.22	6.35	9.89	9.48	8.04	5.94	6.16
Cost of feeder animal per 100 pounds at farm	3.43	3.26	3.66	3.07	1.93	1.18	2.30
Margin necessary to cover costs	1.56	−1.10	3.33	2.09	−.76	2.13	2.28
Margin received	−2.88	−.54	1.27	.62	−.19	.73	.77
Returned per bushel of corn fed	1.31	.71	1.47	1.43	.59	.49	.78
Farm price of corn per bushel	83.44	54.66	98.01	86.02	73.66	113.29	99.74
Return for each $100 of cost							

TABLE 48.—*Results of feeding heavy cattle typical rations under different systems*

Item	Strictly dry lot															
	1919–20					1921					1922–23					
	Corn and legume hay rations	All corn and hay rations	All heavy silage rations	All light silage rations	All rations	Corn and legume hay rations	All corn and hay rations	All heavy silage rations	All light silage rations	All rations	Corn and legume hay rations	Corn and mixed hay rations	Corn, straw, and stover rations	All corn and hay rations	All heavy silage rations	All rations
Number of droves	14	28	8	7	43	21	41	8	7	56	57	17	8	89	14	109
Number of cattle	326	821	350	277	1,448	656	1,445	204	223	1,872	1,677	680	348	2,957	618	3,826
Initial weight per head, pounds	1,042	1,047	1,057	1,075	1,055	1,053	1,072	1,071	1,109	1,076	1,084	1,083	1,130	1,089	1,103	1,092
Gain in weight per head, pounds	266	244	246	237	243	318	278	231	294	275	257	275	224	259	221	249
Final weight, pounds	1,308	1,291	1,303	1,312	1,298	1,371	1,350	1,302	1,403	1,351	1,341	1,358	1,354	1,348	1,324	1,341
Days on farm	107	96	148	120	113	142	129	143	153	133	110	133	99	116	125	118
Days on feed	103	94	144	119	111	141	128	141	152	132	109	133	97	115	123	116
Average daily gain while on farm, pounds	2.48	2.54	1.66	2.00	2.15	2.25	2.16	1.62	1.93	2.07	2.33	2.08	2.26	2.24	1.78	2.12
Daily ration (while on feed):																
Grain, pounds	25.4	24.3	9.4	20.2	18.8	23.0	22.6	10.7	19.2	20.8	21.9	24.8	25.3	23.0	15.6	21.4
Protein concentrates, pounds	-------	.2	1.4	.9	.7	-------	.2	.2	.8	.3	-------	-------	-------	-------	.3	.1
Molasses feeds, pounds	-------	.2	.9	.9	.6	-------	.2	-------	-------	.1	-------	-------	-------	.2	.1	.1
Legume hay, pounds	12.9	8.1	2.2	1.6	4.9	8.2	6.8	1.2	1.9	5.5	9.8	4.1	-------	6.8	1.7	5.8
Other hays, pounds	-------	.8	1.6	.8	1.0	.1	.6	.2	.7	.5	-------	1.5	1.2	.7	1.3	.8
Straw and stover, pounds	.1	2.1	3.7	1.0	2.3	.2	1.0	1.5	6.3	1.8	.1	2.7	6.9	1.7	2.1	1.8
Silage, pounds	-------	-------	40.8	17.4	16.3	-------	-------	37.4	15.7	6.5	-------	-------	-------	-------	36.6	7.6
Feed consumed per 100 pounds of gain:																
Grain, pounds	983	938	549	1,016	858	1,018	1,040	651	993	998	928	1,197	1,097	1,022	867	998
Protein concentrates, pounds	.7	7.1	80.3	43.6	31.7	-------	8.7	12.7	41.7	13.3	.1	-------	-------	1.2	17.5	6.0
Molasses feeds, pounds	-------	8.5	52.1	45.7	26.1	-------	8.7	-------	-------	6.8	-------	-------	-------	6.9	4.5	6.8
Legume hay, pounds	500	312	130	78	224	363	314	76	100	265	417	200	-------	304	96	271
Other hay, pounds	-------	29	95	39	47	6	26	13	36	26	2	72	54	30	72	36
Stover and straw, pounds	5	79	216	48	106	10	45	89	325	85	5	132	297	77	118	83
Silage, pounds	-------	-------	2,387	875	745	-------	-------	2,280	811	312	-------	-------	-------	-------	2,036	356
Pasture, days	2	2	2	-------	2	1	-------	1	2	1	1	-------	2	1	1	1
By-products with 100 pounds of gain:																
Pork, pounds	40.6	36.9	14.5	42.8	32.6	25.9	29.6	16.3	27.6	28.1	27.2	35.7	37.5	30.7	29.4	30.7
Manure, loads	1.0	1.0	1.8	1.0	1.2	.7	.8	2.2	1.3	1.0	.6	.8	1.2	.7	1.7	.9
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Feed cost of 100 pounds of gain	29.82	27.08	34.90	33.57	30.20	11.51	12.03	14.81	15.89	12.77	9.75	11.98	9.32	10.76	15.94	11.67
All other costs 100 pounds of gain	4.39	4.15	5.83	5.36	4.79	3.23	3.64	6.53	5.03	4.09	2.88	2.77	2.17	2.69	3.04	2.80
Total cost of 100 pounds of gain	34.21	31.23	40.73	38.93	34.99	14.74	15.67	21.34	20.92	16.86	12.63	14.75	11.49	13.45	18.98	14.47
Deductions for pork and manure	7.33	7.00	6.53	7.57	6.99	2.82	3.24	3.66	3.77	3.34	2.56	3.87	4.15	3.08	4.76	3.40
Net cost of 100 pounds of gain	26.88	24.23	34.20	31.36	28.00	11.92	12.43	17.68	17.15	13.52	10.07	10.88	7.34	10.37	14.22	11.07

Financial returns per head:																
Initial cost per head	108.04	112.76	113.60	120.64	114.49	97.09	103.46	105.61	111.02	104.60	71.80	69.30	68.74	71.22	67.86	70.37
Value of feed per head	79.44	66.28	85.72	80.59	73.71	36.76	33.57	34.34	46.89	35.24	25.07	33.16	20.94	27.89	35.29	29.15
Value of labor per head	3.93	3.41	6.21	4.65	4.32	3.21	3.32	6.63	7.31	4.16	2.14	2.81	2.11	2.35	2.49	2.43
Interest on investment in cattle and equipment	4.24	3.86	4.90	3.92	4.12	4.51	4.25	4.87	4.56	4.36	3.32	2.67	1.89	2.67	2.53	2.64
Equipment depreciation and repairs	2.05	1.59	1.80	1.40	1.61	1.34	1.16	1.64	1.04	1.20	1.23	.83	.47	1.02	1.11	1.04
Other costs	1.48	2.28	1.44	2.90	1.61	1.22	1.43	2.02	1.89	1.55	.77	1.36	.40	.92	.62	.88
Total cost of finished animal	199.18	190.18	213.67	214.10	199.86	144.13	147.19	155.11	172.71	151.11	104.33	110.13	94.55	106.07	109.90	106.51
Deductions from cost:																
Pork	15.02	13.10	5.22	13.40	11.25	6.97	6.89	3.48	7.12	6.55	5.32	8.83	6.91	6.41	5.73	6.29
Manure	4.51	4.03	10.81	4.78	5.81	2.04	2.14	5.00	4.03	2.67	1.25	1.88	2.39	1.58	4.80	2.21
Net cost of finished animal at farm	179.65	173.05	197.64	195.92	182.80	135.12	138.16	146.63	161.56	141.89	97.76	99.42	85.25	98.08	99.37	98.01
Net sale value per head at farm	172.17	171.89	160.56	182.55	171.19	118.28	116.32	106.68	123.23	116.10	108.49	108.44	100.40	108.69	101.83	106.98
Profit											10.73	9.02	15.15	10.61	2.46	8.97
Loss	7.48	1.16	37.08	13.37	11.61	16.84	21.84	39.95	38.33	25.79						
Sale value per 100 pounds at farm	13.16	13.31	12.32	13.91	13.19	8.63	8.62	8.19	8.78	8.59	8.09	7.99	7.42	8.06	7.69	7.98
Cost of finished animal per 100 pounds at farm	13.73	13.40	15.17	14.93	14.08	9.86	10.23	11.26	11.52	10.50	7.29	7.32	6.30	7.28	7.51	7.31
Cost of feeder animal per 100 pounds at farm	10.37	10.77	10.74	11.22	10.85	9.22	9.65	9.56	10.01	9.72	6.62	6.40	6.09	6.54	6.15	6.44
Margin necessary to cover costs	3.36	2.63	4.43	3.71	3.23	.64	.58	1.40	1.51	.78	.67	.92	.21	.74	1.36	.87
Margin received	2.79	2.54	1.58	2.69	2.34	−.59	−1.03	−1.67	−1.23	−1.13	1.47	1.59	1.33	1.52	1.54	1.54
Farm price of silage per ton			10.13	10.68	10.25			5.44	6.33	5.73					4.34	4.53
Farm price dry roughage per ton	20.42	17.95	13.92	17.04	16.72	10.54	10.37	9.52	5.32	9.54	9.90	8.04	3.74	8.88	7.93	8.67
Farm price of hogs per 100 pounds	13.91	14.56	14.62	13.21	14.20	8.46	8.37	9.23	8.78	8.47	7.61	8.99	8.23	8.06	8.82	8.23
Farm price of corn per bushel	1.36	1.33	1.42	1.33	1.34	.51	.50	.55	.60	.51	.45	.48	.42	.47	.58	.48
Return per bushel of corn fed	1.20	1.30	−.12	1.02	1.03	.22	.08	−.94	−.14	−.02	.70	.63	.77	.69	.65	.68
Return for each $100 of cost	95.84	99.33	81.24	93.18	93.65	87.54	84.19	72.75	76.28	81.82	110.98	109.07	117.77	110.82	102.48	109.15
Results based on adjusted prices: [1]																
Total cost of finished animal	201.05	193.04	215.71	217.43	202.77	143.55	147.19	152.63	165.91	150.33	106.46	111.31	98.06	107.49	108.61	107.59
Credit per head	20.72	17.53	16.16	20.01	17.70	8.63	8.72	8.02	10.51	8.86	6.84	9.73	9.10	7.94	10.01	8.32
Net cost of finished animal at farm	180.33	175.51	199.55	197.42	185.07	134.92	138.47	144.61	155.40	141.47	99.62	101.58	88.96	99.55	98.60	99.27
Net sales value per head at farm	172.17	171.89	160.56	182.55	171.19	118.28	116.32	106.68	123.23	116.10	108.49	108.44	100.40	108.69	101.83	106.98
Profit											8.87	6.86	11.44	9.14	3.23	7.71
Loss	8.16	3.62	38.99	14.87	13.88	16.64	22.15	37.93	32.17	25.37						
Net cost per 100 pounds of gain	27.12	25.63	35.00	31.98	28.96	11.85	12.54	16.82	15.04	13.36	10.81	11.67	9.00	10.95	13.89	11.57
Margin necessary to cover costs	3.42	2.82	4.57	3.83	3.41	.62	.61	1.25	1.07	.75	.81	1.08	.48	.85	1.30	.96
Price returned per bushel corn fed	1.23	1.31	−.22	1.05	1.03	.21	.07	−.91	−.12	−.02	.71	.62	.76	.69	.59	.67
Returns for each $100 of cost	95.47	97.94	80.46	92.47	92.50	87.67	84.00	73.77	79.30	82.07	108.90	106.75	112.86	109.18	103.28	107.77

[1] For purposes of closer comparison of the effect of feeding the different rations costs and returns have been recomputed, using the following rates for all droves:

	Corn per bushel	Silage per ton	Hogs per 100 pounds
Seasons 1919 and 1920	$1.40	$11	$15
Seasons 1921, 1922, and 1923	.50	5	8

TABLE 48.—*Results of feeding heavy cattle typical rations under different systems*—Continued

Item	Fall pastured—finished in dry lot											Fattened on grass			
	1919-20		1921			1922-23						1921		1922-23	
	All corn and hay rations	All rations	Corn and legume hay rations	All corn and hay rations	All rations	Corn and legume hay rations	Corn and mixed hay rations	All corn and hay rations	All heavy silage rations	All light silage rations	All rations	All well wintered cattle	All grass fed cattle	Finished on grass with corn all through the pasture	All grass-fed cattle
Number of droves	14	18	11	23	30	16	12	40	8	7	55	9	11	8	13
Number of cattle	398	577	412	841	1,170	716	535	1,620	294	244	2,158	392	503	450	721
Initial weight per head, pounds	1,029	1,024	1,042	1,062	1,057	1,074	1,068	1,073	1,079	1,031	1,069	1,026	1,051	1,068	1,054
Gain in weight per head, pounds	250	259	370	355	328	292	266	274	183	326	267	295	263	172	210
Final weight, pounds	1,279	1,283	1,412	1,417	1,385	1,366	1,334	1,347	1,262	1,357	1,336	1,321	1,314	1,240	1,264
Days on farm	136	161	169	165	166	136	147	141	107	179	141	212	181	93	126
Days on feed	108	120	146	139	141	119	135	125	94	163	125	177	154	86	103
Average daily gain while on farm, pounds	1.86	1.61	2.20	2.16	1.98	2.16	1.83	1.95	1.73	1.82	1.91	1.40	1.46	1.85	1.67
Daily ration (while on feed):															
Grain, pounds	21.4	18.9	25.1	24.4	22.2	22.8	19.5	21.2	13.5	15.1	19.5	15.8	16.4	15.5	15.1
Protein concentrates, pounds	.4	.4	-------	.1	.3	-------	-------	.1	.3	.4	.1	1.1	1.0	-------	-------
Molasses feeds, pounds	.6	.6	-------	.4	.4	-------	-------	.2	.1	-------	.1	-------	-------	-------	.6
Legume hay, pounds	9.1	6.4	6.2	4.8	3.5	9.7	3.9	5.9	.7	.6	4.6	2.5	2.3	1.0	.8
Other hay, pounds	.4	1.0	-------	.8	.8	.2	1.2	1.2	2.9	3.0	1.7	.2	.1	-------	1.3
Straw and stover, pounds	3.1	2.0	-------	.9	2.2	.1	2.0	1.5	2.2	2.4	1.7	4.1	4.3	1.4	1.3
Silage, pounds	-------	10.8	-------	-------	7.3	-------	.1	-------	41.8	20.7	7.3	10.9	9.8	-------	-------
Feed consumed per 100 pounds of gain:															
Grain, pounds	924	876	989	957	953	928	989	966	693	755	912	948	959	774	742
Protein concentrates, pounds	15.9	18.8	-------	3.8	14.7	-------	-------	2.5	14.0	20.4	6.0	66.0	57.9	-------	-------
Molasses feeds, pounds	23.9	29.2	-------	14.7	17.7	-------	-------	8.1	3.0	-------	6.5	-------	-------	-------	31.0
Legume hay, pounds	391	298	244	188	152	394	198	270	37	28	215	149	134	52	37
Other hay, pounds	18	45	-------	31	33	8	61	56	148	151	78	9	8	-------	64
Stover and straw, pounds	136	93	1	34	94	3	103	68	114	118	79	247	254	72	62
Silage, pounds	-------	502	-------	-------	314	-------	4	1	2,147	1,033	343	652	571	-------	-------
Pasture, days	24	24	14	15	15	11	17	14	13	16	14	42	43	54	50
By-products with 100 pounds of gain:															
Pork, pounds	32.6	30.8	31.3	28.0	26.7	22.9	26.7	25.4	18.2	17.8	23.7	33.3	33.4	30.0	26.0
Manure, loads	1.1	1.1	.4	.6	.8	.5	.5	.7	2.2	1.4	.9	.2	.3	.4	.3

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	30.21	31.68	12.43	11.95	12.93	10.73	12.39	11.41	15.12	12.50	11.90	17.27	16.86	8.13	10.55
All other costs, 100 pounds of gain	4.51	5.11	3.50	3.53	3.79	2.54	2.81	2.88	3.83	2.80	2.96	3.80	3.72	1.88	2.38
Total cost of 100 pounds of gain	34.72	36.79	15.93	15.48	16.72	13.27	15.20	14.29	18.95	15.30	14.86	21.07	20.58	10.01	12.93
Deductions for pork and manure	7.21	6.86	3.06	2.96	3.07	2.32	2.53	2.64	3.80	2.85	2.77	3.12	3.25	3.14	2.57
Net cost of 100 pounds of gain	27.51	29.93	12.87	12.52	13.65	10.95	12.67	11.65	15.15	12.45	12.09	17.95	17.33	6.87	10.36
Financial returns per head:															
Initial cost per head	114.32	111.14	98.77	103.70	101.60	68.57	67.47	68.21	64.17	65.73	67.38	85.28	95.97	70.80	72.23
Value of feed per head	76.19	82.48	46.20	42.60	42.48	31.36	33.41	31.42	27.87	40.77	32.00	51.39	44.59	13.99	22.25
Value of labor per head	3.74	5.40	5.51	5.05	5.08	2.08	2.10	2.36	2.68	3.63	2.55	4.67	4.00	1.09	1.66
Interest on investment in cattle and equipment	4.52	4.87	4.70	4.83	4.80	3.19	2.68	3.04	2.32	3.36	2.97	4.53	3.97	1.58	2.06
Equipment depreciation and repairs	1.66	1.60	1.34	1.17	1.23	1.13	.81	1.19	1.01	1.20	1.17	.53	.45	.32	.34
Other costs	1.45	1.40	1.44	1.52	1.39	1.01	2.03	1.36	1.04	.91	1.26	1.58	1.41	.26	.95
Total cost of finished animal	201.88	206.89	157.96	158.87	156.58	107.34	108.56	107.58	99.09	115.60	107.33	147.98	150.39	88.04	99.49
Deductions from cost:															
Pork	11.34	11.06	9.83	8.31	7.29	5.30	5.46	5.53	2.80	4.95	5.09	8.72	7.87	4.33	4.51
Manure	6.84	6.81	1.55	2.25	2.80	1.50	1.37	1.73	4.20	4.32	2.36	.57	.75	1.07	.91
Net cost of finished animal at farm	183.70	189.02	146.58	148.31	146.49	100.54	101.67	100.32	92.09	106.33	99.88	138.69	141.77	82.64	94.07
Net sale value per head at farm	162.30	163.76	120.58	120.44	117.58	111.38	110.62	109.83	96.43	113.39	108.40	97.17	110.27	87.84	97.76
Profit						10.84	8.95	9.51	4.34	7.06	8.52			5.20	3.69
Loss												41.52	31.50		
Sale value per 100 pounds at farm	21.40	25.26	26.00	27.87	28.91	8.15	8.29	8.15	7.64	8.36	8.11	7.36	8.39	7.08	7.73
Cost of finished animal per 100 pounds at farm	12.69	12.76	8.54	8.50	8.49	7.36	7.62	7.45	7.30	7.84	7.48	10.50	10.79	6.66	7.44
Cost of feeder animal per 100 pounds at farm	14.36	14.73	10.38	10.47	10.58	6.38	6.32	6.36	5.95	6.38	6.30	8.32	9.13	6.63	6.85
Margin necessary to cover costs	11.11	10.85	9.48	9.76	9.61	.98	1.30	1.09	1.35	1.46	1.18	2.18	1.66	.03	.59
Margin received	3.25	3.88	.90	.71	.97	1.77	1.97	1.79	1.69	1.98	1.81	−.96	−.74	.45	.88
Farm price of silage per ton	1.58	1.91	−.94	−1.26	−1.12		5.67	5.67	4.94	5.28	5.08	6.88	6.88		
Farm price dry roughage, per ton		10.94			5.03				6.54	7.52	8.45	6.54	6.14	4.71	7.67
Farm price of hogs per 100 pounds	17.05	18.09	10.75	10.41	8.68	9.48	8.81	8.69	7.23	7.52	8.04	8.88	8.96	8.39	8.26
Farm price of corn per bushel	13.91	13.86	8.49	8.36	8.32	7.92	7.69	7.95	8.41	8.53					
Return per bushel of corn fed	1.35	1.36	.57	.53	.52	.50	.56	.51	.53	.54	.52	.57	.57	.42	.54
Return for each $100 of cost	.83	.74	.17	.07		.72	.75	.71	.72	.70	.72	−.26	−.13	.64	.67
Results based on adjusted prices: [1]	88.35	86.64	82.26	81.21	80.26	110.78	108.80	109.48	104.71	106.64	108.53	70.06	77.78	106.29	103.92
Total cost of finished animal	203.94	208.55	153.39	157.05	155.44	107.34	105.68	107.11	98.53	113.37	106.42	142.69	145.83	89.94	98.38
Credits per head	19.07	18.78	10.81	10.20	9.81	6.85	7.05	7.29	6.86	8.96	7.42	8.44	7.78	5.20	5.28
Net cost of finished animal at farm	184.87	189.77	142.58	146.85	145.63	100.49	98.63	99.82	91.67	104.41	99.00	134.25	138.05	84.74	93.10
Net sale value per head at farm	162.30	163.76	120.58	120.44	117.58	111.38	110.62	109.83	96.43	113.39	108.40	97.17	110.27	87.84	97.76
Profit						10.89	11.99	10.01	4.76	8.98	9.40			3.10	
Loss												37.08	27.78		4.66
Net cost per 100 pounds gain	22.57	26.01	22.00	26.41	28.05	10.92	11.57	11.48	14.92	11.86	11.77	16.46	15.91	8.10	9.89
Margin necessary to cover costs	27.97	30.21	11.78	12.10	13.40	.98	1.07	1.05	1.31	1.31	1.11	1.84	1.38	.20	.52
Return per bushel of corn fed	3.34	3.94	.62	.60	.90	.72	.76	.71	.71	.70	.72	−.24	−.12	.63	.33
Return for each $100 of cost	.85	.76	.16	.06											
	87.79	86.29	84.57	82.02	80.74	110.84	112.16	110.04	105.19	108.60	109.49	72.38	79.89	103.66	105.01

[1] See footnote 1, p. 83.

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*

Item	Strictly dry lot																			
	1919–20											1921								
	Corn and legume hay	Corn and mixed hay	Corn, mixed hay, and protein concentrates	All corn and hay rations	Corn, heavy silage, and legume hay	Corn, heavy silage, legume hay, and protein concentrates	Corn, heavy silage, mixed hay and protein concentrates	Corn, heavy silage, straw, stover, and protein concentrates	Corn, heavy silage, mixed and legume hay	All heavy silage rations	All light silage rations	All rations	Corn and legume hay	Corn and mixed hay	All corn and hay rations	Corn, heavy silage, mixed hay, and protein concentrates	Corn, heavy silage, straw, stover, and protein concentrates	All heavy silage rations	All light silage rations	All rations
Number of droves	39	20	11	96	7	14	31	17	10	99	20	215	29	13	53	11	7	33	16	102
Number of cattle	1,160	554	299	3,025	314	557	1,575	860	384	4,385	813	8,223	836	374	1,644	398	202	1,046	593	3,283
Initial weight per head, pounds	873	884	874	875	846	876	866	881	855	875	891	876	902	890	895	868	904	885	868	887
Gain in weight per head, pounds	242	251	261	266	232	290	232	256	224	240	262	252	291	257	282	298	211	244	321	277
Final weight, pounds	1,115	1,135	1,135	1,141	1,078	1,166	1,098	1,137	1,079	1,115	1,153	1,128	1,193	1,147	1,177	1,166	1,115	1,129	1,189	1,164
Days on farm	114	126	126	133	147	158	152	152	147	148	154	143	134	141	143	169	131	145	183	151
Days on feed	113	123	122	131	145	157	151	151	146	147	153	141	134	139	142	169	128	143	180	149
Average daily gain while on farm, pounds	2.12	2.01	2.07	2.01	1.60	1.84	1.53	1.71	1.54	1.64	1.71	1.77	2.19	1.82	1.99	1.76	1.61	1.69	1.77	1.85
Daily ration (while on feed):																				
Grain, pounds	19.4	19.0	17.8	19.3	9.4	9.7	7.4	9.2	9.8	8.1	13.3	12.5	19.8	18.9	19.2	11.6	10.7	9.8	13.4	15.1
Protein concentrates, pounds	------	------	.9	.4	------	1.5	1.7	2.1	------	1.4	1.3	1.1	------	------	.2	1.1	1.4	1.2	.9	.7
Molasses feed, pounds	------	------	------	.5	------	------	------	.3	------	.4	1.1	.5	------	------	.1	------	------	------	------	.1
Legume hay, pounds	10.0	4.0	2.9	5.7	7.3	5.9	1.4	.1	6.0	2.3	2.2	3.4	8.2	3.6	5.6	1.8	.1	1.5	1.9	3.5
Other hay, pounds	.4	2.8	2.8	1.3	------	------	3.0	.7	.7	1.6	1.5	1.5	.2	2.5	.8	3.4	------	2.1	1.4	1.3
Straw and stover, pounds	.1	3.8	5.5	3.0	------	.3	2.2	3.8	.3	2.3	2.3	2.6	.2	4.6	2.5	1.9	4.9	2.2	2.5	2.4
Silage, pounds	------	------	------	------	38.0	41.3	39.9	38.1	38.1	39.9	18.5	24.2	------	------	.1	32.7	34.7	34.7	19.6	14.9
Feed consumed per 100 pounds, gain:																				
Grain, pounds	905	932	830	952	589	526	482	542	639	497	776	702	913	1,022	967	657	650	572	751	810
Protein concentrates, pounds	.5	.1	41.5	21.3	1.9	80.1	108.5	122.2	2.1	86.2	74.0	59.8	------	------	9.2	64.3	82.6	72.3	50.9	35.6
Molasses feeds, pounds	------	.5	24.5	------	------	------	2.2	18.9	------	21.6	61.9	26.9	------	------	4.9	.8	------	1.3	------	2.9
Legume hay, pounds	468	195	136	282	456	320	90	8	390	139	128	193	378	195	281	100	9	85	107	189
Other hay, pounds	17	136	133	64	------	------	196	40	44	101	87	85	8	133	39	191	------	125	77	71
Stover and straw, pounds	3	185	259	146	3	15	141	223	18	142	136	143	7	247	125	105	296	130	140	129
Silage, pounds	------	------	------	------	2,372	2,237	2,594	2,245	2,486	2,444	1,079	1,356	------	------	7	1,855	2,103	2,035	1,100	803
Pasture, days	1	1	2	1	1	------	1	1	1	1	------	1	------	2	1	1	1	1	1	1
By-products with 100 pounds of gain:																				
Pork, pounds	34.7	37.1	43.6	40.5	22.3	18.9	17.6	19.6	23.0	19.8	27.6	28.6	26.5	31.7	28.7	13.0	20.7	15.2	21.6	23.4
Manure, loads	1.2	1.2	1.9	1.2	1.2	1.7	2.2	1.4	1.3	1.8	1.3	1.5	.6	1.0	.9	1.7	1.6	1.8	1.4	1.3
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed cost of 100 pounds of gain	27.70	27.69	25.23	29.19	33.94	33.69	33.86	32.03	35.91	33.08	33.75	31.64	9.80	11.68	10.89	15.90	15.40	15.60	12.92	12.62
All other costs per 100 pounds of gain	4.45	4.64	5.75	4.65	5.16	6.05	6.88	5.50	5.59	6.19	5.19	5.50	3.89	5.11	4.08	4.94	5.31	5.27	4.47	4.47

Total cost of 100 pounds of gain	32.15	32.33	30.98	33.84	39.10	39.74	40.74	37.53	41.50	39.27	38.94	37.14	13.69	16.79	14.97	20.84	20.71	20.87	17.39	17.09
Deductions for pork and manure	6.73	7.10	9.32	8.03	5.73	6.23	7.42	6.37	6.13	6.85	6.77	7.29	2.85	3.72	3.37	2.84	4.14	3.54	3.63	3.47
Net cost of 100 pounds of gain	25.42	25.23	21.66	25.81	33.36	33.51	33.32	31.16	35.37	32.42	32.17	29.85	10.84	13.07	11.60	18.08	16.57	17.33	13.76	13.62
Financial returns per head:																				
Initial cost	87.88	91.85	91.98	89.67	79.48	88.51	87.08	93.03	81.39	87.65	93.28	88.95	77.11	78.17	76.41	64.13	69.80	67.95	68.33	72.25
Value of feed	67.08	69.83	65.85	77.79	79.56	98.27	78.90	82.99	81.10	79.88	88.76	79.99	28.86	30.09	30.82	47.36	32.49	38.05	41.75	35.70
Value of labor	4.52	5.32	7.44	5.42	4.93	7.26	7.28	5.92	5.56	6.35	6.15	5.99	4.24	6.20	4.59	6.02	4.78	5.46	6.46	5.19
Interest on investment in cattle and equipment	3.62	3.83	4.05	4.08	3.81	5.09	4.56	4.25	3.82	4.48	4.45	4.33	4.17	3.99	4.15	4.76	3.52	4.12	4.57	4.21
Equipment depreciation and repairs	1.55	1.51	2.19	1.72	1.40	2.88	2.27	1.68	1.36	2.12	1.63	1.93	1.56	1.46	1.49	2.06	1.47	1.80	1.68	1.62
Other costs	1.10	1.04	1.33	1.20	1.01	2.43	1.93	2.42	1.89	2.01	1.39	1.65	1.46	1.52	1.28	1.87	1.43	1.51	1.74	1.44
Total cost of finished animal	165.75	173.38	172.84	179.88	171.09	204.47	182.02	190.29	175.12	182.49	195.66	182.84	117.40	121.43	118.74	126.20	113.49	118.89	124.53	119.80
Deductions from cost:																				
Pork	11.97	13.06	16.54	15.79	7.46	9.31	6.82	9.72	7.47	7.91	12.50	11.26	6.59	7.10	6.80	3.23	4.02	3.18	5.86	5.48
Manure	4.33	4.83	7.78	5.62	5.96	8.88	10.47	6.80	6.37	8.61	5.30	7.18	1.79	2.47	2.74	5.24	4.71	5.46	5.88	4.17
Net cost of finished animal at farm	149.45	155.49	148.52	158.47	157.67	186.28	164.73	173.77	161.28	165.97	177.86	164.40	109.02	111.86	109.20	117.73	104.76	110.25	112.79	110.15
Net sales value at farm	143.86	145.83	154.58	153.48	128.03	159.60	141.55	146.01	127.29	142.42	155.57	147.79	98.19	93.37	96.24	93.23	89.01	87.67	97.99	93.83
Profit			6.06																	
Loss	5.59	9.66		4.99	29.04	26.68	23.18	27.76	33.99	23.55	22.29	16.61	10.83	18.49	12.96	24.50	15.75	22.58	14.80	16.32
Sales value per 100 pounds at farm	12.90	12.85	13.62	13.45	11.93	13.69	12.89	12.84	11.80	12.77	13.49	13.10	8.23	8.14	8.18	8.00	7.98	7.77	8.24	8.06
Cost of finished animal per 100 pounds at farm	13.40	13.70	13.09	13.89	14.63	15.98	15.00	15.28	14.95	14.89	15.43	14.57	9.14	9.75	9.28	10.10	9.40	9.77	9.49	9.46
Cost of feeder animal per 100 pounds at farm	10.07	10.40	10.52	10.25	9.40	10.11	10.06	10.56	9.52	10.02	10.47	10.15	8.55	8.78	8.53	7.39	7.72	7.68	7.87	8.14
Margin necessary to cover costs	3.33	3.30	2.57	3.64	5.23	5.87	4.94	4.72	5.43	4.87	4.96	4.42	.56	.97	.75	2.71	1.68	2.09	1.62	1.32
Margin received	2.83	2.45	3.10	3.20	2.53	3.58	2.83	2.28	2.28	2.75	3.02	2.95	−.32	−.64	−.35	.61	.26	.09	.37	−.08
Farm price of silage per ton					9.86	10.25	9.69	10.54	9.02	10.08	9.10	10.00			6.38	5.79	6.43	6.11	5.96	6.07
Farm price dry roughage per ton	19.59	15.26	11.59	16.03	26.82	22.45	15.21	7.35	25.63	15.73	17.22	15.99	10.38	7.14	8.30	10.97	4.85	9.45	8.02	8.53
Farm price of hogs per 100 pounds	14.25	14.03	14.53	14.66	14.43	16.99	16.72	19.36	14.50	16.65	17.29	15.62	8.55	8.71	8.41	8.35	9.20	8.57	8.46	8.46
Farm price of corn per bushel	1.38	1.39	1.34	1.37	1.41	1.51	1.46	1.43	1.42	1.45	1.49	1.41	.46	.51	.49	.53	.48	.52	.49	.50
Return per bushel of corn fed	1.24	1.16	1.50	1.26	.22	.53	.30	.31	.09	.34	.88	.88	.23	.12	.22	−.17	−.16	−.39	.15	.09
Return for each $100 of cost	96.26	93.79	104.08	96.85	81.58	85.68	85.93	84.02	78.92	85.81	87.47	89.90	90.07	83.47	88.13	79.19	84.97	79.52	86.88	85.18
Results based on adjusted prices: [1]																				
Total cost of finished animal	166.53	173.80	175.10	181.24	174.04	203.88	184.75	190.88	177.63	184.10	195.05	180.82	119.30	120.96	119.22	122.94	110.84	115.61	123.23	118.62
Credits per head	16.94	18.79	24.86	21.77	13.71	17.10	16.57	14.30	14.10	15.73	16.13	17.99	7.96	8.99	9.20	8.33	8.20	8.43	11.41	9.36
Net cost of finished animal at farm	149.59	155.01	150.30	159.47	160.33	186.78	168.18	176.58	163.53	168.37	178.92	162.83	111.34	111.97	110.02	114.61	102.64	107.18	111.82	109.26
Net sales value per head at farm	143.86	145.83	154.58	153.48	128.03	159.60	141.55	146.01	127.29	142.42	155.57	147.79	98.19	93.37	96.24	93.23	89.01	87.67	97.99	93.83
Profit			4.28																	
Loss	5.73	9.18		5.99	31.70	27.18	26.63	30.57	26.24	25.95	23.35	15.04	13.15	18.60	13.78	21.38	13.63	19.51	13.83	15.43
Net cost per 100 pounds of gain	25.48	25.05	22.36	26.19	34.49	33.67	34.80	32.25	36.38	33.42	32.57	29.22	11.63	13.13	11.86	16.95	15.57	16.08	13.46	13.30
Margin necessary to cover costs	3.35	3.26	2.72	3.73	5.47	5.91	5.26	4.97	5.64	5.08	5.05	4.29	.78	.98	.82	2.44	1.49	1.81	1.53	1.25
Return per bushel of corn fed	1.26	1.18	1.51	1.27	.10	.40	.07	.17	−.02	.18	.76	.92	.22	.10	.22	−.11	−.06	−.28	.18	.12
Return for each $100 of cost	96.17	94.08	102.85	96.24	80.23	85.45	84.17	82.69	77.84	84.59	86.95	90.76	88.19	83.39	87.48	81.35	86.72	81.80	87.63	85.88

[1] For purposes of closer comparison of the effect of feeding the different rations costs and returns have been recomputed, using the following rates for all droves:

	Corn per bushel	Silage per ton	Hogs per 100 pounds
Seasons 1919 and 1920	$1.40	$11	$15
Seasons 1921, 1922, and 1923	.50	5	8

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Strictly dry lot—Continued										
	1922-23										
	Corn and legume hay	Corn and mixed hay	Corn, non-legume hay, straw, and stover	All corn and hay rations	Corn, heavy silage, and legume hay	Corn, heavy silage, and mixed hay	Corn, heavy silage, mixed and legume hay	All heavy silage rations	Corn, light silage, mixed hay, and protein concentrates	All light silage rations	All rations
Number of droves	61	20	8	100	7	8	15	46	9	28	174
Number of cattle	2,171	722	306	3,076	290	355	645	1,663	573	1,429	6,768
Initial weight per head, pounds	897	876	933	890	885	867	875	887	901	877	891
Gain in weight per head, pounds	308	271	224	298	203	252	230	222	233	213	262
Final weight, pounds	1,205	1,147	1,157	1,197	1,088	1,119	1,105	1,109	1,134	1,090	1,153
Days on farm	139	141	120	142	143	164	154	143	136	126	139
Days on feed	137	140	120	140	136	158	148	140	134	126	137
Average daily gain while on farm, pounds	2.22	1.94	1.88	2.11	1.44	1.54	1.50	1.56	1.72	1.69	1.89
Daily ration (while on feed):											
Grain, pounds	19.2	19.3	20.7	19.6	11.8	11.6	11.7	11.4	12.5	13.1	16.3
Protein concentrates, pounds								.2	.8	.4	.2
Molasses feeds, pounds				.1				.1		.1	.1
Legume hay, pounds	8.3	3.6		6.2	6.6	1.8	3.8	2.7	.9	2.0	4.5
Other hay, pounds	.1	2.0	5.4	1.0		3.0	1.7	1.3	3.5	2.0	1.3
Straw and stover, pounds	.1	2.3	2.4	1.0	.6	1.6	1.2	2.7	2.9	2.6	1.8
Silage, pounds					31.3	35.7	33.9	35.0	19.9	18.9	12.5
Feed consumed per 100 pounds of gain:											
Grain, pounds	854	997	1,108	921	791	725	751	718	718	776	854
Protein concentrates, pounds	.1	.6		2.2		.9	.5	15.4	43.2	20.9	8.2
Molasses feeds, pounds	.1			4.3		.4	.3	3.2		6.6	4.5
Legume hay, pounds	368	186		292	441	111	243	171	49	120	237
Other hay, pounds	4	102	289	48		185	111	79	200	121	67
Stover and straw, pounds	6	119	127	46	37	98	74	173	167	156	92
Silage, pounds	1				2,096	2,236	2,180	2,209	1,144	1,119	654
Pasture, days	1	1		1	3	2	3	2	1	1	1
By-products with 100 pounds of gain:											
Pork, pounds	23.9	28.9	34.3	25.6	21.9	23.4	22.8	21.8	20.9	23.8	24.5
Manure, loads	.6	.7	.8	.6	2.7	1.7	2.1	2.0	1.5	1.6	1.1

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	9.46	10.23	10.75	10.31	15.97	13.11	14.25	14.37	15.08	14.24	11.83
All other costs per 100 pounds of gain	2.28	2.33	2.95	2.35	4.57	3.65	4.01	4.12	2.66	3.11	2.86
Total cost of 100 pounds of gain	11.74	12.56	13.70	12.66	20.54	16.76	18.26	18.49	17.74	17.35	14.69
Deductions for pork and manure	2.48	2.99	3.70	2.66	4.43	3.77	4.01	4.03	3.26	3.75	3.13
Net cost of 100 pounds of gain	9.26	9.57	10.00	10.00	16.11	12.99	14.25	14.46	14.48	13.60	11.56
Financial returns per head:											
Initial cost	59.09	54.08	61.01	58.25	50.22	48.18	49.10	51.28	57.78	54.09	55.85
Value of feed	29.25	28.07	24.29	30.88	32.74	33.17	32.97	32.06	35.21	30.50	31.09
Value of labor	2.16	2.00	2.08	2.41	3.09	3.26	3.18	3.43	2.39	2.52	2.68
Interest on investment in cattle and equipment	2.88	2.29	2.42	2.65	2.96	3.04	3.01	2.93	2.03	2.18	2.62
Equipment depreciation and repairs	1.18	.75	.73	1.00	1.79	1.81	1.80	1.68	.81	1.05	1.18
Other costs	.81	1.35	1.45	.99	1.52	1.10	1.30	1.20	.97	.91	1.02
Total cost of finished animal	95.37	88.54	91.98	96.18	92.32	90.56	91.36	92.58	99.19	92.15	94.44
Deductions from cost:											
Pork	6.10	6.67	6.45	6.31	3.96	5.33	4.64	4.34	3.56	4.19	5.38
Manure	1.53	1.53	1.89	1.66	5.13	4.20	4.62	4.63	4.07	3.83	2.85
Net cost of finished animal at farm	87.74	80.34	83.64	88.21	83.23	81.03	82.10	83.61	91.56	84.13	86.21
Net sales value per head at farm	98.36	91.10	92.74	97.96	84.95	85.58	85.29	87.24	94.04	87.74	93.14
Profit	10.62	10.76	9.10	9.75	1.72	4.55	3.19	3.63	2.48	3.61	6.93
Sale value per 100 pounds at farm	8.16	7.94	8.02	8.18	7.81	7.65	7.72	7.87	8.20	8.05	8.08
Cost of finished animal per 100 pounds at farm	7.28	7.00	7.23	7.37	7.65	7.24	7.43	7.54	8.07	7.72	7.48
Cost of feeder animal per 100 pounds at farm	6.59	6.18	6.54	6.48	5.68	5.56	5.61	5.78	6.41	6.27	6.27
Margin necessary to cover costs	.69	.82	.69	.89	1.97	1.68	1.82	1.76	1.66	1.45	1.21
Margin received	1.57	1.76	1.48	1.70	2.13	2.09	2.11	2.09	1.88	1.78	1.81
Farm price of silage per ton	6.50			6.50	4.78	4.06	4.33	4.71	6.02	5.41	4.92
Farm price dry roughage per ton	10.37	7.57	6.93	9.64	10.54	10.06	10.27	7.66	7.41	7.75	8.87
Farm price of hogs per 100 pounds	8.29	8.52	8.40	8.27	8.90	9.03	8.85	8.97	7.31	8.26	8.38
Farm price of corn per bushel	.48	.47	.46	.49	.54	.46	.50	.51	.07	.61	.51
Return per bushel of corn fed	.71	.69	.67	.69	.60	.60	.60	.64	.75	.73	.68
Return for each $100 of cost	112.10	113.39	110.88	111.05	102.07	105.62	103.89	104.34	102.71	104.29	108.04
Results based on adjusted prices: [2]											
Total cost of finished animal	96.30	89.99	93.75	96.67	91.63	94.49	93.04	93.92	92.78	88.42	94.11
Credits per head	7.42	7.79	8.04	7.76	8.69	8.93	8.81	8.49	7.97	7.89	7.99
Net cost of finished animal at farm	88.88	82.20	85.71	88.91	82.94	85.56	84.23	84.53	84.81	80.53	86.12
Net sale value per head at farm	98.36	91.10	92.74	97.96	84.95	85.58	85.29	87.24	94.04	87.74	93.14
Profit	9.48	8.90	7.03	9.05	2.01	.02	1.06	2.71	9.23	7.21	7.02
Net cost per 100 pounds of gain	9.64	10.25	10.92	10.23	15.97	14.79	15.18	14.91	11.58	11.92	11.52
Margin necessary to cover costs	.79	.99	.87	.95	1.94	2.09	2.01	1.84	1.07	1.12	1.20
Return per bushel of corn fed	.70	.68	.66	.68	.57	.50	.53	.60	.81	.74	.68
Returns for each $100 of cost	110.66	110.83	108.20	110.18	102.42	100.02	101.26	103.21	110.88	108.95	108.15

[2] See footnote 1, p. 87.

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Fall pastured—finished in dry lot												
	1919–20												
	Corn and legume hay	Corn, legume hay, and protein concentrates	Corn and mixed hay	Corn, mixed hay, and protein concentrates	All corn and hay rations	Corn, heavy silage, legume hay, and protein concentrates	Corn, heavy silage, mixed hay, and protein concentrates	Corn, heavy silage, straw, stover, and protein concentrates	Corn, heavy silage, mixed and legume hay	Corn, heavy silage, mixed and legume hay, and protein concentrates	All heavy silage rations	All light silage rations	All rations
Number of droves	36	13	13	7	88	11	25	8	10	36	73	9	170
Number of cattle	1,218	561	477	365	3,464	454	960	192	584	1,444	2,888	687	7,039
Initial weight per head, pounds	870	896	817	843	863	838	848	827	859	845	851	865	858
Gain in weight per head, pounds	279	260	309	295	292	308	273	264	266	284	269	249	278
Final weight, pounds	1,149	1,156	1,126	1,138	1,155	1,146	1,121	1,091	1,125	1,129	1,120	1,114	1,136
Days on farm	169	155	179	179	178	207	188	187	175	194	180	195	180
Days on feed	110	121	127	132	127	153	154	155	127	154	139	149	134
Average daily gain while on farm, pounds	1.66	1.68	1.72	1.66	1.65	1.49	1.45	1.42	1.53	1.47	1.50	1.29	1.55
Daily ration (while on feed):													
Grain, pounds	20.0	19.1	18.6	20.6	19.3	10.4	8.6	9.1	9.9	9.2	9.2	11.4	14.1
Protein concentrates, pounds		.9		1.4	.4	1.9	1.4	1.8	.1	1.6	1.2	.3	.7
Molasses feeds, pounds				.1	.4		.2			.1	.3	.5	.4
Legume hay, pounds	11.3	8.5	5.8	2.0	6.5	5.6	1.7	.1	5.3	2.9	2.7	2.5	4.5
Other hay, pounds	.2	.1	1.8	2.8	1.3		2.5	.9	1.3	1.7	1.4	1.8	1.4
Straw and stover, pounds	.1	.1	2.0	3.6	1.5		1.8	5.0	.3	1.2	1.5	4.3	1.8
Silage, pounds		.6			.1	39.3	35.7	42.5	41.9	36.8	38.4	17.9	18.3
Feed consumed per 100 pounds of gain:													
Grain, pounds	789	887	765	920	840	519	487	533	475	498	473	682	680
Protein concentrates, pounds	.9	40.1	.8	61.7	15.7	93.7	79.8	108.6	2.7	84.6	62.3	16.1	34.2
Molasses feeds, pounds	.1			2.8	19.3		11.5			7.6	14.2	29.0	18.1
Legume hay, pounds	446	395	239	118	282	278	94	8	254	157	141	149	215
Other hay, pounds	9	4	75	124	56		140	51	60	92	70	105	66
Stover and straw, pounds	5	4	83	159	65	1	99	294	13	66	78	258	87
Silage, pounds		30			4	1,950	2,015	2,494	2,000	1,993	1,982	1,070	882
Pasture, days	22	21	22	19	22	20	18	17	26	19	20	22	21
By-products with 100 pounds of gain:													
Pork, pounds	32.1	42.3	24.9	39.7	31.8	16.8	18.4	37.3	19.3	17.8	18.5	15.7	25.1
Manure, loads	1.2	1.2	1.2	1.3	1.1	1.9	1.9	1.8	1.6	1.9	1.7	.9	1.3

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	25.30	30.74	23.81	32.48	27.49	33.25	30.17	34.35	28.86	31.22	29.47	31.88	28.66
All other costs per 100 pounds of gain	3.71	3.56	3.85	4.12	3.90	6.10	7.16	6.60	5.16	6.80	6.08	4.75	4.85
Total cost of 100 pounds of gain	29.01	34.30	27.66	36.60	31.39	39.35	37.33	40.95	34.02	38.02	35.55	36.63	33.51
Deductions for pork and manure	6.37	8.34	5.92	7.86	6.61	6.75	6.24	9.43	6.52	6.42	6.22	3.56	6.19
Net cost of 100 pounds of gain	22.64	25.96	21.74	28.74	24.78	32.60	31.09	31.52	27.50	31.60	29.33	33.07	27.32
Financial returns per head:													
Initial cost	88.56	88.28	78.77	82.90	86.77	81.84	86.02	83.34	81.93	84.71	84.28	83.24	85.40
Value of feed	70.84	79.99	73.58	96.41	80.56	102.54	82.67	91.26	76.94	88.92	79.66	79.76	80.12
Value of labor	3.76	3.50	4.98	5.76	4.65	8.44	9.02	7.97	5.88	8.84	7.22	5.33	5.78
Interest on investment in cattle and equipment	2.24	3.70	4.41	4.12	4.33	5.61	5.65	5.26	4.53	5.64	5.01	4.17	4.59
Equipment depreciation and repairs	1.25	1.15	1.43	1.15	1.29	2.41	2.70	2.81	1.73	2.61	2.19	1.39	1.67
Other costs	1.09	.95	1.16	1.19	1.15	2.35	2.23	1.52	1.61	2.27	2.02	.94	1.50
Total cost of finished animal	169.74	177.57	164.33	191.62	178.75	203.19	188.29	192.16	172.62	192.99	180.38	174.83	179.06
Deductions from cost:													
Pork	12.11	15.81	10.36	18.27	13.75	9.37	8.42	15.27	7.41	8.72	8.01	5.81	10.62
Manure	5.75	5.92	7.93	5.05	5.63	11.45	8.70	9.78	9.97	9.56	8.81	3.10	6.68
Net cost of finished animal at farm	151.88	155.84	146.04	168.30	159.37	182.37	171.17	167.11	155.24	174.71	163.56	165.92	161.76
Net sales value per head at farm	142.62	137.37	142.21	161.06	147.37	168.78	148.80	133.00	137.29	155.08	146.74	133.10	145.72
Loss	9.26	18.47	3.83	7.24	12.00	13.59	22.37	34.11	17.95	19.63	16.82	32.82	16.04
Sale value per 100 pounds at farm	12.41	11.88	12.63	14.15	12.76	14.73	13.27	12.19	12.20	13.74	13.10	11.95	12.83
Cost of finished animal per 100 pounds at farm	13.22	13.48	12.97	14.79	13.80	15.91	15.27	15.32	13.89	15.47	14.60	14.89	14.24
Cost of feeder animal per 100 pounds at farm	10.18	9.85	9.64	9.84	10.06	9.76	10.14	10.08	9.54	10.02	9.91	9.63	9.95
Margin necessary to cover costs	3.04	3.63	3.33	4.95	3.74	6.15	5.13	5.24	4.26	5.45	4.69	5.26	4.29
Margin received	2.23	2.03	2.99	4.31	2.70	4.97	3.13	2.11	2.66	3.72	3.19	2.32	2.88
Farm price of silage per ton						10.15	9.05	11.17	10.56	9.42	9.74	13.75	10.16
Farm price dry roughage per ton	18.56	21.21	16.05	18.38	17.97	21.00	15.32	8.61	24.89	17.04	17.68	14.04	17.40
Farm price of hogs per 100 pounds	13.52	14.37	13.47	15.60	14.80	18.12	16.77	15.50	14.44	17.23	16.08	14.86	15.21
Farm price of corn per bushel	1.33	1.42	1.37	1.50	1.38	1.58	1.48	1.37	1.40	1.51	1.46	1.45	1.41
Return per bushel of corn fed	1.09	.97	1.28	1.35	1.11	1.10	.54	.01	.01	.73	.72	.37	.94
Return for each $100 of cost	93.90	88.15	97.38	95.70	92.47	92.55	86.93	79.59	88.44	88.76	89.72	80.22	90.08
Results, based on adjusted prices: [2]													
Total cost of finished animal	172.49	176.75	165.60	186.78	179.63	200.61	191.85	192.35	173.81	194.63	182.42	169.72	179.73
Credits per head	19.18	22.42	19.47	22.61	19.57	19.20	16.25	24.56	17.67	17.14	16.30	8.97	17.15
Net cost of finished animal at farm	153.31	154.33	146.13	164.17	160.06	181.41	175.60	167.79	156.14	177.49	166.12	160.75	162.58
Net sale value per head at farm	142.62	137.37	142.21	161.06	147.37	168.78	148.80	133.00	137.29	155.08	146.74	133.10	145.72
Loss	10.69	16.96	3.92	3.11	12.69	12.63	26.80	34.79	18.85	22.41	19.38	27.65	16.86
Net cost per 100 pounds of gain	23.12	25.38	21.80	27.36	25.01	32.29	32.69	31.79	27.83	32.57	30.27	30.98	27.61
Margin necessary to cover costs	3.16	3.50	3.34	4.59	3.80	6.07	5.52	5.30	4.34	5.70	4.92	4.80	4.36
Return per bushel of corn fed	1.13	.99	1.31	1.34	1.11	.96	.27	.01	.57	.51	.55	.49	.90
Returns for each $100 of cost	93.02	89.01	97.32	98.11	92.07	93.04	84.74	79.27	87.93	87.37	88.33	82.80	89.63

[2] See footnote 1, p. 87.

TABLE 49—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Fall pastured (continued)							
	1921							
	Corn and legume hay	Corn and mixed hay	All corn and hay rations	Corn, heavy silage, mixed hay, and protein concentrates	Corn, heavy silage, mixed and legume hay, and protein concentrates	All heavy silage rations	All light silage rations	All rations
Number of droves	25	20	55	11	14	24	15	94
Number of cattle	1,277	743	2,353	496	608	866	768	3,987
Initial weight per head, pounds	873	886	880	891	881	877	843	872
Gain in weight per head, pounds	341	351	351	298	300	289	298	328
Final weight, pounds	1,214	1,237	1,231	1,189	1,181	1,166	1,141	1,209
Days on farm	195	202	200	212	205	199	192	198
Days on feed	157	148	156	184	178	169	163	160
Average daily gain while on farm, pounds	1.77	1.75	1.77	1.44	1.48	1.48	1.57	1.67
Daily ration (while on feed):								
Grain, pounds	20.7	21.1	21.2	6.6	7.0	8.1	10.8	16.2
Protein concentrates, pounds			.1	1.4	1.5	1.2	.8	.5
Molasses feeds, pounds					.1	.1		
Legume hay, pounds	6.5	4.1	5.4	1.1	1.4	1.2	2.2	3.8
Other hay, pounds		3.0	1.1	1.8	1.6	1.6	.8	1.1
Straw and stover, pounds	.2	2.0	.8	2.9	2.4	3.2	2.7	.5
Silage, pounds				37.3	37.6	37.1	25.6	13.7
Feed consumed per 100 pounds of gain:								
Grain, pounds	951	889	940	407	414	474	592	789
Protein concentrates, pounds	1.8		4.5	85.1	88.7	68.9	42.9	23.7
Molasses feeds, pounds			1.7		6.6	4.8	2.6	2.4
Legume hay, pounds	269	171	238	66	84	73	118	185
Other hay, pounds	1	125	48	113	92	93	42	56
Stover and straw, pounds	7	83	34	178	145	187	148	24
Silage, pounds				2,303	2,231	2,168	1,403	666
Pasture, days	19	18	18	23	21	20	12	18
By-products with 100 pounds of gain:								
Pork, pounds	25.8	27.5	25.8	15.2	15.9	17.8	13.4	22.1
Manure, loads	.6	.7	.6	1.0	.9	1.4	1.6	.9

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	10.78	10.44	11.08	17.02	16.67	16.53	13.43	12.55
All other costs per 100 pounds of gain	3.07	3.34	3.20	5.46	5.14	5.45	4.79	3.91
Total cost of 100 pounds of gain	13.85	13.78	14.28	22.48	21.81	21.98	18.22	16.46
Deductions for pork and manure	2.78	2.91	2.74	2.33	2.33	2.90	2.84	2.79
Net cost of 100 pounds of gain	11.07	10.87	11.54	20.15	19.48	19.08	15.38	13.67
Financial returns per head:								
Initial cost	80.53	79.54	79.75	77.56	74.00	74.50	68.36	76.41
Value of feed	37.10	36.74	39.11	51.81	50.74	48.55	40.48	41.42
Value of labor	3.67	4.62	4.09	6.91	6.84	6.98	5.84	5.05
Interest on investment in cattle and equipment	4.40	4.81	4.66	5.25	4.89	5.06	5.03	4.82
Equipment depreciation and repairs	.90	1.06	1.02	1.75	1.63	1.79	1.97	1.37
Other costs	1.58	1.27	1.50	2.74	2.29	2.16	1.60	1.67
Total cost of finished animal	128.18	128.04	130.13	146.02	140.39	139.04	123.28	130.74
Deductions from cost:								
Pork	7.58	7.76	7.55	3.95	4.21	4.50	3.28	6.07
Manure	2.00	2.51	2.11	3.13	2.88	4.03	5.29	3.14
Net cost of finished animal at farm	118.60	117.77	120.47	138.94	133.30	130.51	114.71	121.53
Net sales value per head at farm	98.09	100.07	99.00	92.62	90.77	90.00	89.04	95.13
Profit	20.51	17.70	21.47	46.32	42.53	40.51	25.67	26.40
Loss	8.08	8.09	8.04	7.79	7.69	7.72	7.80	7.93
Sales value per 100 pounds at farm	9.77	9.52	9.79	11.69	11.29	11.19	10.05	10.13
Cost of finished animal per 100 pounds at farm	9.22	8.98	9.06	8.71	8.40	8.49	8.11	8.76
Cost of feeder animal per 100 pounds at farm	.55	.51	.73	2.98	2.89	2.70	1.94	1.37
Margin necessary to cover costs	−1.14	−.89	−1.02	−.52	−.71	−.77	−.31	−.83
Margin received				6.40	6.40	6.39	6.00	6.25
Farm price of silage per ton	11.10	8.74	10.29	8.28	8.56	7.97	8.70	9.54
Farm price dry roughage per ton	8.61	8.04	8.33	8.72	8.83	8.75	8.22	8.37
Farm price of hogs per 100 pounds	.47	.48	.49	.63	.62	.58	.52	.50
Farm price of corn per bushel	.12	.16	.13	−1.50	−1.30	−1.07	−.29	−.07
Return per bushel of corn fed	82.71	84.97	82.18	66.66	68.09	68.96	77.62	78.28
Return for each $100 of cost								
Results based on adjusted prices: [2]								
Total cost of finished animal	129.92	129.15	130.72	138.44	133.11	132.77	120.55	129.36
Credits per head	9.04	10.23	9.36	6.76	6.69	8.14	8.48	8.94
Net cost of finished animal at farm	120.88	118.92	121.36	131.68	126.42	124.63	112.07	120.42
Net sales values per head at farm	98.09	100.07	99.00	92.62	90.77	90.00	89.04	95.13
Profit	22.79	18.85	22.36	39.06	35.65	34.63	23.03	25.29
Loss	11.73	11.19	11.78	17.78	17.22	17.07	14.50	13.33
Net cost per 100 pounds of gain	.74	.63	.80	2.36	2.30	2.20	1.71	1.28
Margin necessary to cover costs	.11	.16	.12	−1.30	−1.11	−.91	−.23	−.05
Price returned per bushel corn fed	81.15	84.15	81.58	70.34	71.80	72.21	79.45	79.00
Returns for each $100 of cost								

[2] See footnote 1, p. 87.

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Fall pastured (continued)													
	1922–23													
	Corn and legume hay	Corn, legume hay and molasses	Corn and mixed hay	Corn, mixed hay and molasses	Corn, straw and stover	All corn and hay rations	Corn, heavy silage, and mixed hay	Corn, heavy silage, mixed and legume hay	All heavy silage rations	Corn, light silage and mixed hay	Corn, light silage, mixed hay and protein concentrates	Corn, light silage, straw and stover	All light silage rations	All rations
Number of droves	55	11	30	8	11	126	11	13	35	7	10	9	43	204
Number of cattle	2,014	520	1,122	369	307	4,923	350	422	1,339	236	585	361	2,014	8,276
Initial weight per head, pounds	877	829	866	854	922	872	860	850	851	859	834	898	862	866
Gain in weight per head, pounds	341	383	311	378	230	327	297	312	272	292	239	288	286	308
Final weight, pounds	1,218	1,212	1,177	1,232	1,152	1,199	1,157	1,162	1,123	1,151	1,073	1,186	1,148	1,174
Days on farm	178	225	165	229	144	180	187	194	177	186	170	195	187	181
Days on feed	142	185	135	178	131	148	165	167	142	99	151	187	155	148
Average daily gain while on farm, pounds	1.93	1.71	1.90	1.65	1.60	1.82	1.59	1.61	1.55	1.58	1.42	1.48	1.54	1.71
Daily ration (while on feed):														
Grain, pounds	22.0	18.1	20.2	19.0	16.9	19.7	10.1	10.3	11.0	19.1	10.7	10.9	13.4	16.8
Protein concentrates, pounds						.1			.4		.8		.3	.2
Molasses feeds, pounds		.6		1.5		.2			.1				.2	.2
Legume hay, pounds	9.1	5.7	3.7	1.4		5.3	2.3	2.7	1.6	1.5	.2	.2	2.0	3.9
Other hay, pounds			2.5	4.0	.3	1.1	2.1	1.8	.9	4.9	3.5	.2	1.5	1.2
Straw and stover, pounds		.1	2.1	2.4	10.0	1.9	2.9	2.4	3.9	3.5	2.8	4.4	2.2	2.3
Silage, pounds							33.7	33.7	37.2	36.4	19.9	21.5	19.1	10.6
Feed consumed per 100 pounds of gain:														
Grain, pounds	916	874	877	895	965	890	561	551	576	648	674	710	725	808
Protein concentrates, pounds	.4		.2			2.9	2.7	2.1	20.8		48.8	.4	17.8	8.8
Molasses feeds, pounds	.4	28.7		68.3		11.0	.4	.3	5.8		.3		8.8	9.8
Legume hay, pounds	377	277	160	64		242	127	145	83	52	11	10	109	189
Other hay, pounds	1		110	189	17	49	119	94	48	165	219	13	84	56
Stover and straw, pounds	1	7	90	115	568	85	160	126	201	119	180	284	121	110
Silage, pounds							1,871	1,806	1,941	1,234	1,256	1,393	1,035	511
Pasture, days	13	16	17	20	22	16	15	15	17	17	16	22	19	17
By-products with 100 pounds of gain:														
Pork, pounds	26.1	26.9	28.2	27.3	37.5	26.9	17.4	16.5	17.3	13.7	15.1	24.0	20.8	24.2
Manure, loads	.5	.2	.7	.9	1.2	.7	1.7	1.6	1.6	1.5	1.1	1.5	1.1	.9

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	9.03	11.83	9.32	13.83	10.39	10.53	13.50	12.78	12.53	12.82	13.66	10.37	12.37	11.23
All other costs per 100 pounds of gain	2.48	2.30	2.37	2.29	2.97	2.50	3.22	3.02	3.32	2.72	3.26	2.61	2.66	2.64
Total cost of 100 pounds of gain	12.41	14.13	11.69	16.12	13.36	13.03	16.72	15.80	15.85	15.54	16.92	12.98	15.03	13.87
Deductions for pork and manure	2.51	2.61	3.13	2.83	5.66	2.87	3.30	3.12	3.30	2.54	2.16	4.47	2.98	2.95
Net cost of 100 pounds gain	9.90	11.52	8.56	13.29	7.70	10.16	13.42	12.68	12.55	13.00	14.76	8.51	12.05	10.92
Financial returns per head:														
Initial cost	54.09	53.37	54.63	57.14	53.97	54.54	55.35	53.66	51.83	53.87	48.94	52.33	51.19	53.29
Value of feed	33.15	45.61	29.24	52.37	23.98	34.61	40.08	39.81	34.24	37.58	33.01	29.92	35.61	34.79
Value of labor	2.51	2.74	2.24	3.15	3.07	2.64	3.70	3.82	3.44	3.39	2.69	3.34	2.82	2.82
Interest on investment in cattle and equipment	3.26	3.47	2.89	3.68	2.19	3.16	3.53	3.40	3.18	2.59	2.85	2.51	2.80	3.08
Equipment depreciation and repairs	1.20	1.17	1.08	.93	.77	1.15	1.66	1.55	1.42	1.04	1.09	.52	.97	1.15
Other costs	1.34	1.55	1.24	.83	.83	1.23	.66	.67	1.02	.98	1.27	1.13	1.08	1.16
Total cost of finished animal	95.55	107.91	91.32	118.10	84.81	97.33	104.98	102.91	95.13	99.45	89.85	89.75	94.47	96.29
Deduction from cost:														
Pork	6.82	8.16	7.54	8.07	9.18	7.25	4.25	4.33	3.98	3.16	3.02	6.82	5.15	6.21
Manure	1.56	1.88	2.28	2.66	3.88	2.19	5.57	5.38	5.04	4.27	2.21	6.07	3.44	2.95
Net cost of finished animal at farm	87.17	97.87	81.50	107.37	71.75	87.89	95.16	93.20	86.11	92.02	84.62	76.86	85.88	87.13
Net sales values per head at farm	99.17	111.96	94.68	114.89	85.56	99.61	97.59	97.88	90.09	94.66	85.15	92.57	93.96	96.69
Profit	12.00	14.09	13.18	7.52	13.81	11.72	2.43	4.68	3.98	2.64	.53	15.71	8.08	9.56
Loss														
Sales value per 100 pounds at farm	8.14	9.24	8.01	9.33	7.43	8.31	8.44	8.42	8.02	8.22	7.94	7.81	8.18	8.24
Cost of finished animal per 100 pounds at farm	7.16	8.08	6.92	8.72	6.23	7.33	8.22	8.02	7.67	7.99	7.89	6.48	7.48	7.42
Cost of feeder animal per 100 pounds at farm	6.17	6.44	6.31	6.69	5.86	6.25	6.44	6.31	6.09	6.27	5.87	5.83	5.94	6.15
Margin necessary to cover costs	.99	1.64	.61	2.03	.37	1.08	1.78	1.71	1.58	1.72	2.02	.65	1.54	1.27
Margin received	1.97	2.80	1.73	2.64	1.57	2.06	2.00	2.11	1.93	1.95	2.07	1.98	2.24	2.09
Farm price of silage per ton							5.03	5.08	4.52	5.55	5.22	3.66	4.69	4.60
Farm price dry roughage per ton	9.24	10.79	7.99	8.99	3.50	8.32	8.10	8.40	6.22	7.61	6.70	3.60	7.39	7.86
Farm price of hogs per 100 pounds	7.66	7.92	8.60	7.82	10.65	8.24	8.22	8.41	8.45	7.90	8.37	9.87	8.66	8.34
Farm price of corn per bushel	.46	.59	.45	.63	.46	.50	.57	.56	.51	.58	.56	.45	.54	.51
Return per bushel of corn fed	.68	.83	.72	.75	.81	.73	.65	.71	.65	.64	.58	.88	.76	.73
Return for each $100 of cost	113.77	114.40	116.17	107.00	119.25	113.33	102.55	105.02	104.62	102.87	100.63	120.44	109.41	110.97
Results based on adjusted prices: [2]														
Total cost of finished animal	97.78	102.53	93.76	110.25	86.39	97.33	102.81	100.85	96.10	95.76	87.79	94.25	93.45	96.17
Credits per head	8.08	10.12	9.30	10.91	10.75	9.23	9.71	9.51	8.81	7.47	5.10	11.60	8.19	8.91
Net cost of finished animal at farm	89.10	92.41	84.46	99.34	75.64	88.10	93.10	91.34	87.29	88.29	82.69	82.65	85.26	87.26
Net sales value per head at farm	99.17	111.96	94.68	114.89	85.56	99.61	97.59	97.88	90.09	94.66	85.15	92.57	93.96	96.69
Profit	10.07	19.55	10.22	15.55	9.92	11.51	4.49	6.54	2.80	6.37	2.46	9.92	8.70	9.43
Loss														
Net cost per 100 pounds of gain	10.21	10.13	9.51	11.15	9.39	10.21	12.72	12.10	12.97	11.74	13.96	10.51	11.83	10.56
Margin necessary to cover costs	1.15	1.18	.87	1.37	.71	1.10	1.61	1.55	1.68	1.40	1.84	1.14	1.49	1.28
Price returned per bushel corn fed	.68	.83	.71	.76	.75	.72	.65	.71	.60	.69	.59	.77	.74	.71
Returns for each $100 of cost	111.30	121.15	112.10	115.65	113.11	113.06	104.82	107.16	103.21	107.21	102.97	112.00	110.20	110.81

[2] See footnote 1, p. 87.

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Fattened on grass								
	1919–20					1921			
	Finished on grass with very little or no other feed	Finished on grass with corn all through the pasture	All well-wintered cattle	All roughed through winter	All grass-fed cattle	Finished on grass with corn all through the pasture	Finished on grass; fed heavily for last few weeks only	All well-wintered cattle	All grass-fed cattle
Number of droves	8	8	27	9	45	21	7	38	46
Number of cattle	369	358	1,687	395	2,463	937	576	2,120	2,553
Initial weight per head, pounds	871	830	842	856	839	894	881	891	882
Gain in weight per head, pounds	259	320	299	293	298	387	353	380	369
Final weight, pounds	1,130	1,150	1,141	1,149	1,137	1,281	1,234	1,271	1,251
Days on farm	254	227	238	235	231	271	291	273	264
Days on feed	162	189	174	180	166	217	181	208	193
Average daily gain while on farm, pounds	1.02	1.42	1.27	1.26	1.30	1.43	1.23	1.40	1.41
Daily ration (while on feed):									
Grain, pounds	7.6	9.7	7.6	4.4	7.5	13.2	12.2	12.5	12.6
Protein concentrates, pounds	.6	.6	1.4	1.1	1.3	.2	.7	.6	.6
Molasses feeds, pounds	.3		.4		.4			.1	.1
Legume hay, pounds	.4	2.0	1.3	2.7	1.4	2.7	2.1	2.2	2.2
Other hay, pounds	.3	.4	1.1	.6	1.0	.6		.3	.3
Straw and stover, pounds	2.1	1.6	2.8	8.4	3.5	2.3	2.2	2.8	2.7
Silage, pounds	19.0	13.0	10.7	7.8	10.6	11.3	6.6	8.8	8.9
Feed consumed per 100 pounds of gain:									
Grain, pounds	478	575	443	268	417	738	626	685	661
Protein concentrates, pounds	36.4	35.9	70.6	69.5	73.0	10.3	34.1	33.1	29.9
Molasses feeds, pounds	16.6		22.1	1.7	20.1	1.7		2.8	2.8
Legume hay, pounds	27	121	75	168	79	150	108	118	117
Other hay, pounds	19	24	62	38	54	35		15	14
Stover and straw, pounds	133	92	163	517	196	128	166	153	142
Silage, pounds	1,191	765	624	481	591	632	337	481	465
Pasture, days	59	39	49	59	52	42	57	46	47
By-products with 100 pounds of gain:									
Pork, pounds	24.0	29.8	18.8	6.9	16.0	26.8	31.6	26.4	25.3
Manure, loads	.2	.7	.2	.2	.2	.2	.2	.2	.2

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	27.24	25.29	24.43	19.59	23.38	15.15	12.96	14.12	13.63
All other costs per 100 pounds of gain	4.76	3.72	3.96	3.80	3.89	3.09	2.97	3.10	3.03
Total cost of 100 pounds of gain	32.00	29.01	28.39	23.39	27.27	18.24	15.93	17.22	16.66
Deductions for pork and manure	3.79	6.07	3.44	1.36	2.92	2.49	2.54	2.37	2.78
Net cost of 100 pounds of gain	28.21	22.94	24.95	22.03	24.35	15.75	13.39	14.85	13.88
Financial returns per head:									
Initial cost	79.01	84.55	81.35	87.42	84.20	73.12	69.73	73.36	72.02
Value of feed	71.00	81.42	73.90	57.79	70.28	58.78	46.44	54.03	50.59
Value of labor	6.17	4.26	4.86	4.46	4.81	5.03	3.91	4.91	4.74
Interest on investment in cattle and equipment	4.19	4.58	4.34	4.49	4.35	5.06	4.42	4.89	4.62
Equipment depreciation and repairs	.69	1.06	.74	.63	.73	.61	.34	.56	.52
Other costs	1.41	1.79	2.07	1.65	1.85	1.30	1.92	1.48	1.36
Total cost of finished animal	162.47	177.96	167.26	156.44	166.22	143.90	126.76	139.23	133.85
Deductions from cost:									
Pork	8.82	14.42	8.85	3.19	7.46	8.68	8.61	8.26	7.67
Manure	1.06	5.11	1.55	.84	1.33	.96	.49	.82	.71
Net cost of finished animal at farm	152.59	158.43	156.86	152.41	157.43	134.26	117.66	130.15	125.47
Net sales value per head at farm	137.05	161.40	147.30	143.88	146.80	95.05	87.49	93.10	90.51
Profit		2.97							
Loss	15.54		9.56	8.53	10.63	39.21	30.17	37.05	34.96
Sales value per 100 pounds at farm	12.13	14.03	12.91	12.52	12.91	7.42	7.09	7.32	7.24
Cost of finished animal per 100 pounds at farm	13.50	13.78	13.75	13.26	13.85	10.48	9.53	10.24	10.03
Cost of feeder animal per 100 pounds at farm	9.07	10.18	9.66	10.22	10.03	8.18	7.92	8.23	8.16
Margin necessary to cover costs	4.43	3.60	4.09	3.04	3.82	2.30	1.61	2.01	1.87
Margin received	3.06	3.85	3.25	2.30	2.88	−.76	−.83	−.91	−.92
Farm price of silage per ton	10.36	7.79	11.63	10.00	11.01	6.95	7.22	6.84	6.79
Farm price, dry roughage per ton	11.53	15.93	13.96	8.50	12.24	9.54	7.04	8.81	9.04
Farm price of hogs per 100 pounds	14.18	15.12	15.75	15.79	15.64	8.37	7.72	8.24	8.21
Farm price of corn per bushel	1.40	1.50	1.45	1.54	1.47	.60	.61	.69	.59
Price cattle returned per bushel of corn fed	.70	1.59	1.05	.93	.99	−.17	−.15	−.20	−.21
Return for each $100 of cost	89.82	101.87	93.91	94.40	93.25	70.80	74.36	71.53	72.14
Results based on adjusted prices: [3]									
Total cost of finished animal	163.43	178.52	165.51	155.18	164.66	136.46	121.09	132.92	128.32
Credits per head	10.39	19.41	9.97	3.86	8.48	9.26	9.42	8.84	8.19
Net cost of finished animal at farm	153.04	159.11	155.54	151.32	156.18	127.20	111.67	124.08	120.13
Net sales value per head at farm	137.05	161.40	147.30	143.88	146.80	95.05	87.49	93.10	90.51
Profit		2.29							
Loss	15.99		8.24	7.44	9.38	32.15	24.18	30.98	29.62
Net cost per 100 pounds of gain	28.40	23.15	24.53	21.67	23.95	13.94	11.70	12.83	12.36
Margin necessary to cover costs	4.47	3.65	3.97	2.95	3.71	1.75	1.13	1.53	1.44
Price returned per bushel of corn fed	.68	1.47	1.05	.87	.98	−.13	−.11	.17	−.18
Returns for each $100 of cost	89.55	101.44	94.70	95.08	93.99	74.72	78.35	75.03	75.34

[3] See footnote 1, p. 87.

56944°—27——7

TABLE 49.—*Results of feeding medium-weight cattle typical rations under different systems*—Continued

Item	Fattened on grass									Summer pasture					
	1922-23									1919-20		1921		1922-23	
	Finished on grass with very little or no other feed	Finished on grass with corn all through the pasture	Finished on grass with both corn and molasses	Finished on grass; fed heavily for last few weeks only	All well-wintered cattle	Finished on grass with corn all through the pasture	All roughed through winter	Finished on grass with corn all through the pasture	All grass fed-cattle	All corn and hay rations	All summer pastured cattle	All corn and hay rations	All summer pastured cattle	All corn and hay rations	All summer pastured cattle
Number of droves	9	27	11	9	58	9	17	11	88	9	9	10	11	12	14
Number of cattle	436	1,557	825	875	3,909	474	1,210	476	5,646	286	286	323	383	475	575
Initial weight per head, pounds	883	872	871	845	875	929	887	905	880	848	848	808	814	879	866
Gain in weight per head, pounds	299	373	340	339	350	331	327	291	340	332	332	468	449	360	345
Final weight, pounds	1,182	1,245	1,220	1,184	1,225	1,260	1,214	1,196	1,220	1,180	1,180	1,276	1,263	1,239	1,205
Days on farm	263	234	253	309	262	266	278	148	255	236	236	320	306	268	260
Days on feed	134	186	213	172	181	163	152	140	171	132	132	164	157	151	143
Average daily gain while on farm, pounds	1.14	1.61	1.38	1.10	1.34	1.25	1.18	1.99	1.34	1.41	1.41	1.47	1.47	1.36	1.34
Daily ration (while on feed):															
Grain, pounds	16.2	13.2	12.2	14.9	13.9	11.7	10.2	19.6	13.6	19.4	19.4	19.3	18.5	17.4	16.7
Protein concentrates, pounds	.1	.5		.2	.3		.1		.2	.3	.3		.2		
Molasses feeds, pounds	.1	.1	1.4	.2	.4		.8		.5			1.1	.9	.9	.8
Legume hay, pounds	3.6	2.7	1.2	1.4	2.2	1.7	2.8	.3	2.1	5.4	5.4	8.1	7.3	4.6	4.6
Other hay, pounds	3.5	.8	2.1	1.3	1.4	1.8	.8		1.2	.6	.9		.1	3.9	3.4
Straw and stover, pounds	6.3	4.0	3.9	8.5	5.7	2.5	5.8	.9	5.4	5.1	5.1	6.4	5.9	.1	.5
Silage, pounds	4.1	3.3	.5	1.0	2.0	2.2	3.7	.4	2.3						5.4
Feed consumed per 100 pounds of gain:															
Grain, pounds	728	657	744	758	718	574	473	943	686	772	772	675	646	728	691
Protein concentrates, pounds	6.1	26.7	.6	8.8	15.3		5.4		12.0	10.1	10.1	1.7	6.7		
Molasses feeds, pounds	2.6	3.3	83.5	12.5	21.8		36.1		23.6			36.9	32.4	39.5	34.1
Legume hay, pounds	160	133	71	72	112	83	131	13	108	216	216	284	254	193	191
Other hay, pounds	156	38	128	67	72	89	37		60	36	36		2	162	140
Stover and straw, pounds	281	260	235	433	297	122	270	44	271	203	203	224	205	3	22
Silage, pounds	182	164	28	52	103	108	174	19	114						224
Pasture, days	48	35	38	57	43	61	63	49	47	34	34	33	33	41	42
By-products with 100 pounds of gain:															
Pork, pounds	20.3	24.5	30.0	18.5	23.7	16.9	15.4	29.4	22.5	32.4	32.4	21.0	19.9	25.2	23.3
Manure, loads	.3	.4	.5	.3	.4	.4	.3	.2	.4	.5	.5	.7	.7	.5	.5

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	15.20	11.30	15.32	14.47	13.39	12.28	11.84	10.50	12.86	25.08	25.08	11.69	11.80	13.03	12.69
All other costs per 100 pounds of gain	2.62	2.15	2.43	2.34	2.31	2.20	1.97	2.09	2.26	3.75	3.75	3.17	3.29	2.39	2.40
Total cost of 100 pounds of gain	17.82	13.45	17.75	16.81	15.70	14.48	13.81	12.59	15.12	28.83	28.83	14.86	15.09	15.42	15.09
Deductions for pork and manure	2.00	2.69	3.26	2.02	2.55	2.07	1.67	2.76	2.39	5.64	5.64	2.53	2.50	2.18	2.07
Net cost of 100 pounds of gain	15.82	10.76	14.49	14.79	13.15	12.41	12.14	9.83	12.73	23.19	23.19	12.33	12.59	13.24	13.02
Financial returns per head:															
Initial cost	54.32	53.39	58.88	48.07	53.23	57.09	51.45	56.79	53.29	88.10	88.10	79.27	78.14	61.28	59.48
Value of feed	45.64	42.41	53.49	49.39	47.11	40.73	38.92	30.06	43.99	83.70	83.70	54.85	53.19	47.38	44.11
Value of labor	2.37	3.37	3.48	3.68	3.38	2.79	2.04	2.29	3.01	4.10	4.10	4.07	4.23	2.94	2.77
Interest on investment in cattle and equipment	3.63	3.06	3.42	3.07	3.22	3.34	3.18	2.14	3.13	5.78	5.78	7.45	7.35	3.48	3.51
Equipment depreciation and repairs	.64	.02	.57	.24	.52	.38	.38	.53	.50	1.65	1.65	1.47	1.63	1.00	1.05
Other costs	1.25	1.01	.95	.99	1.03	.89	.87	1.26	1.03	.96	.96	1.89	1.62	1.26	1.04
Total cost of finished animal	107.85	103.86	120.79	105.44	108.49	105.22	96.84	93.97	104.95	184.29	184.29	149.00	146.16	117.34	111.96
Deductions from cost:															
Pork	4.95	8.08	8.88	5.30	7.10	4.66	3.98	7.60	6.47	15.92	15.92	8.00	7.42	6.89	6.09
Manure	1.05	2.04	2.46	1.60	1.86	2.21	1.51	.54	1.71	2.91	2.91	3.82	3.81	1.06	1.11
Net cost of finished animal at farm	101.85	93.74	109.45	98.54	99.53	98.35	91.35	85.83	96.77	165.46	165.46	137.09	134.93	109.39	104.76
Net sales value per head at farm	100.45	108.27	118.14	102.85	107.97	111.00	104.49	95.81	106.13	152.21	152.21	109.34	108.31	106.52	99.38
Profit		14.53	8.69	4.31	8.44	12.65	13.14	9.98	9.36						
Loss	1.40									13.25	13.25	27.75	26.62	2.87	5.38
Sales value per 100 pounds at farm	8.50	8.70	9.08	8.69	8.81	8.81	8.61	8.01	8.70	12.90	12.90	8.57	8.58	8.60	8.25
Cost of finished animal per 100 pounds at farm	8.62	7.53	8.97	8.32	8.12	7.81	7.52	7.18	7.93	14.02	14.02	10.74	10.68	8.83	8.69
Cost of feeder animal per 100 pounds at farm	6.15	6.12	6.76	5.69	6.08	6.14	5.80	6.28	6.06	10.40	10.40	9.81	9.60	6.97	6.92
Margin necessary to cover costs	2.47	1.41	2.21	2.63	2.04	1.67	1.72	.90	1.87	3.62	3.62	.93	1.08	1.86	1.77
Margin received	2.35	2.58	2.92	3.00	2.73	2.67	2.81	1.73	2.64	2.50	2.50	−1.24	−1.02	1.63	1.33
Farm price of silage per ton	5.40	6.30	5.82	6.04	6.25	7.56	5.75	5.54	6.09						7.66
Farm price, dry roughage per ton	6.30	5.79	6.16	4.56	5.46	9.25	5.27	4.02	5.41	13.92	13.92	9.47	9.46	9.28	8.90
Farm price of hogs per 100 pounds	8.15	8.84	8.48	8.45	8.55	8.34	7.90	8.88	8.46	14.80	14.80	8.23	8.30	7.56	7.57
Farm price of corn per bushel	.75	.66	.77	.73	.70	.69	.72	.46	.67	1.34	1.34	.52	.53	.68	.66
Price cattle returned per bushel of corn fed	.71	.99	.96	.81	.89	1.06	1.20	.66	.89	1.05	1.05	.03	.02	.62	.53
Return for each $100 of cost	98.63	115.50	107.94	104.37	108.48	112.86	114.38	111.63	109.67	91.99	91.99	79.76	80.27	97.38	94.86
Results based on adjusted prices:[1]															
Total cost of finished animal	98.01	96.46	108.22	95.17	99.26	98.27	90.55	95.91	97.66	187.04	187.04	147.87	144.61	108.92	105.25
Credits per head	5.91	9.36	10.84	6.63	8.50	6.68	5.54	7.40	7.84	19.04	19.04	11.68	10.96	8.35	7.54
Net cost of finished animal at farm	92.10	87.10	97.38	88.54	90.76	91.59	85.01	88.51	89.82	168.00	168.00	136.19	133.65	100.57	97.71
Net sales value per head at farm	100.45	108.27	118.14	102.85	107.97	111.00	104.49	95.81	106.13	152.21	152.21	109.34	108.31	106.52	99.38
Profit	8.35	21.17	20.76	14.31	17.21	19.41	19.48	7.30	16.31					5.95	1.67
Loss										15.79	15.79	26.85	25.34		
Net cost per 100 pounds of gain	12.58	8.98	11.03	11.86	10.67	10.40	10.21	10.75	10.68	23.95	23.95	12.13	12.32	10.81	11.00
Margin necessary to cover costs	1.64	.88	1.22	1.79	1.33	1.13	1.20	1.12	1.30	3.84	3.84	.86	.98	1.15	1.19
Price returned per bushel of corn fed	.71	.98	.95	.81	.88	1.07	1.08	.65	.89	1.06	1.06	.02	.01	.63	.54
Returns for each $100 of cost	109.07	124.31	121.32	116.16	118.96	121.19	122.92	108.25	118.16	90.60	90.60	80.28	81.04	105.92	101.71

[1] See footnote 1, p. 87.

TABLE 50.—*Results of feeding yearlings typical rations under different systems*

Item	Strictly dry lot																	
	1919–20							1921					1922–23					
	Corn and legume hay	All corn and hay rations	Corn, heavy silage, legume hay, and protein concentrates	Corn, heavy silage, mixed and legume hay	All heavy silage rations	All light silage rations	All rations	Corn and legume hay	All corn and hay rations	Corn, heavy silage, legume hay, and protein concentrates	All heavy silage rations	All rations	Corn and legume hay	Corn and mixed hay	All corn and hay rations	All heavy silage rations	All light silage rations	All rations
Number of droves	16	37	12	7	45	13	95	7	15	7	19	39	18	8	37	13	14	64
Number of cattle	374	1,068	481	272	1,741	479	3,288	213	427	249	725	1,348	625	240	1,233	436	872	2,541
Initial weight per head, pounds	627	667	676	642	646	672	656	645	618	700	656	645	633	668	625	711	687	661
Gain in weight per head, pounds	243	266	276	228	255	281	263	263	293	301	245	261	301	284	320	233	245	279
Final weight, pounds	870	933	952	870	901	953	919	908	911	1,001	901	906	934	952	945	944	932	940
Days on farm	112	139	175	136	156	152	150	123	147	185	165	158	182	147	165	157	159	162
Days on feed	112	139	174	131	155	151	149	123	147	184	164	158	181	146	164	156	158	161
Average daily gain while on farm, pounds	2.16	1.92	1.59	1.68	1.64	1.86	1.76	2.14	2.02	1.65	1.49	1.66	2.01	1.94	1.96	1.49	1.55	1.74
Daily rations (while on feed):																		
Grain, pounds	16.1	16.0	5.3	9.1	5.6	11.6	9.7	16.9	16.2	6.6	5.3	9.3	18.2	18.7	17.6	8.5	10.7	13.7
Protein concentrates, pounds	------	.4	1.3	------	1.1	.7	.8	------	.2	.9	.7	.5	------	------	.1	.2	.3	.2
Molasses feeds, pounds	------	.3	.2	------	.4	.3	.3	------	.1	------	------	.1	------	------	.1	------	------	.1
Legume hay, pounds	10.9	7.3	5.7	2.9	2.9	2.6	4.2	8.1	6.1	4.8	2.5	3.7	6.4	5.7	5.1	.8	2.9	3.7
Other hay, pounds	.2	1.2	------	.8	1.1	.6	1.0	------	.5	------	1.3	1.0	------	1.7	.7	1.2	.8	.8
Straw and stover, pounds	.2	1.1	.2	.3	1.2	2.5	1.4	.1	.8	.1	1.4	1.1	.4	2.5	.9	.9	1.3	1.0
Silage, pounds	------	------	30.8	28.5	32.7	20.3	21.1	------	------	28.0	32.4	20.3	------	------	------	35.1	18.8	12.1
Feed consumed per 100 pounds of gain:																		
Grain, pounds	744	834	332	525	340	621	547	789	815	403	356	564	911	961	904	570	687	791
Protein concentrates, pounds	------	19.5	78.9	.6	64.6	38.0	45.6	------	11.4	55.2	48.7	32.3	.5	.6	3.4	14.9	18.2	9.5
Molasses feeds, pounds	------	17.4	13.5	1.0	22.4	13.6	19.4	------	6.3	------	------	4.8	.4	------	5.5	------	.2	3.1
Legume hay, pounds	502	383	357	107	176	142	239	381	307	292	170	224	323	293	263	51	189	211
Other hay, pounds	9	64	------	45	64	31	50	------	25	------	90	63	------	88	35	82	53	47
Stover and straw, pounds	7	58	11	16	75	137	79	4	41	5	92	65	19	126	44	57	87	59
Silage, pounds	------	------	1,940	1,638	1,985	1,093	1,193	------	------	1,710	2,169	1,230	------	------	------	2,347	1,210	699
Pasture, days	------	------	------	2	1	1	1	------	------	------	1	1	------	------	------	1	1	1
By-products with 100 pounds of gain:																		
Pork, pounds	32.4	30.6	14.3	20.6	15.0	16.7	20.4	16.6	18.2	13.5	9.7	12.5	23.4	23.5	23.8	15.4	21.5	21.9
Manure, loads	.7	.8	1.3	1.2	1.4	1.3	1.2	.5	.7	1.4	1.6	1.2	.6	1.0	.7	6.8	1.1	1.0

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	25.62	28.68	25.06	24.48	25.27	25.45	26.42	8.52	9.27	13.32	14.22	12.18	10.93	11.07	10.69	11.22	11.81	11.10
All other costs, 100 pounds of gain	4.05	4.06	5.29	3.98	4.85	5.44	4.68	3.39	3.12	4.32	4.66	4.00	2.48	2.67	2.56	4.14	2.92	2.89
Total cost of 100 pounds gain	29.67	32.74	30.35	28.46	30.12	30.89	31.10	11.91	12.39	17.64	18.88	16.18	13.41	13.74	13.25	15.36	14.73	13.99
Deductions for pork and manure	5.68	5.95	5.15	5.17	5.13	5.18	5.42	1.75	2.15	2.96	2.55	2.25	2.38	2.58	2.53	3.08	2.86	2.70
Net cost of 100 pounds of gain	23.99	26.79	25.20	23.29	24.99	25.71	25.68	10.16	10.24	14.68	16.33	13.93	11.03	11.16	10.72	12.28	11.87	11.29
Financial returns per head:																		
Initial cost	59.03	60.81	60.68	57.08	58.94	69.47	61.08	46.78	45.90	52.38	44.44	45.40	42.88	43.51	41.39	37.89	40.59	40.52
Value of feed	62.20	76.68	69.44	56.03	64.82	71.93	69.72	22.45	27.43	40.68	35.05	32.08	39.90	31.49	34.56	26.27	29.17	31.29
Value of labor	4.59	4.83	6.48	3.18	5.28	7.07	5.52	4.71	4.07	4.32	4.10	4.17	2.69	3.59	2.93	4.04	2.66	3.03
Interest on investment in cattle and equipment	3.06	3.40	4.32	3.20	3.70	4.00	3.64	2.48	2.84	4.54	3.86	5.37	3.14	2.28	2.64	3.02	2.38	2.62
Equipment depreciation and repairs	1.56	1.67	2.31	1.79	1.90	1.73	1.80	.98	1.14	2.33	2.07	1.63	1.82	1.02	1.42	1.92	1.22	1.44
Other costs	.64	.97	1.53	.94	1.57	1.72	1.40	.71	1.17	2.02	1.46	1.33	1.39	.66	1.27	.70	.97	1.06
Total cost of finished animal	131.08	148.36	144.76	122.22	136.21	156.82	143.16	78.11	82.55	106.27	90.98	87.98	91.82	82.55	84.21	73.84	76.99	79.96
Deductions from cost:																		
Pork	11.73	13.05	6.40	6.99	6.06	8.01	8.62	3.37	4.26	3.47	2.03	2.65	6.73	5.59	6.20	3.22	4.28	5.07
Manure	2.07	2.87	7.88	4.86	7.11	6.64	5.66	1.23	2.09	5.55	4.26	3.26	1.98	1.78	1.87	3.98	2.79	2.55
Net cost of finished animal at farm	117.28	132.44	130.48	110.37	123.04	142.17	128.88	73.51	76.20	97.25	84.69	82.07	83.11	75.18	76.05	66.64	69.92	72.34
Net sale value per head at farms	111.25	121.79	120.35	105.07	110.19	122.01	115.68	68.68	71.13	79.69	68.54	69.54	85.07	73.43	78.52	69.44	74.20	75.47
Profit													1.96		2.47	2.80	4.28	3.13
Loss	6.03	10.65	10.13	5.30	12.85	20.16	13.20	4.93	5.07	17.56	16.15	12.53		1.75				
Sale value per 100 pounds at farm	12.79	13.05	12.64	12.08	12.23	12.80	12.59	7.56	7.81	7.96	7.61	7.68	8.56	7.71	8.31	7.36	7.96	8.03
Cost of finished animal per 100 pounds at farm	13.48	14.20	13.71	12.69	13.66	14.92	14.02	8.10	8.36	9.72	9.40	9.06	8.36	7.90	8.05	7.06	7.50	7.70
Cost of feeder animal per 100 pounds at farm	9.41	9.12	8.97	8.89	9.13	10.34	9.31	7.25	7.43	7.48	6.73	7.04	6.78	6.52	6.63	5.33	5.91	6.13
Margin necessary to cover costs	4.07	5.08	4.74	3.80	4.53	4.58	4.71	.85	.93	2.24	2.67	2.02	1.58	1.38	1.42	1.73	1.59	1.57
Margin received	3.38	3.93	3.67	3.19	3.10	2.46	3.28	.31	.38	.48	.88	.64	1.78	1.19	1.68	2.03	2.05	1.90
Farm price of silage per ton			8.20	11.02	9.92	8.74	9.75			6.46	6.25	6.26				3.69	4.83	4.29
Farm price dry roughage, per ton	20.89	20.55	21.69	21.11	18.24	14.49	18.78	8.50	9.52	15.39	11.42	10.70	11.84	7.68	10.34	8.79	8.67	9.69
Farm price of hogs per 100 pounds	14.90	16.03	16.20	14.87	15.86	17.08	16.05	7.71	7.99	8.55	8.53	8.13	7.96	8.38	8.25	8.97	8.12	8.30
Farm price of corn per bushel	1.49	1.47	1.50	1.33	1.42	1.51	1.46	.47	.47	.53	.52	.50	.54	.52	.54	.48	.54	.53
Returns per bushel of corn fed	1.30	1.20	.88	1.08	.59	.86	.95	.34	.35	−.28	−.52	.02	.57	.48	.59	.60	.68	.61
Returns for each $100 of costs	94.86	91.96	92.24	95.20	89.56	85.82	89.76	93.43	93.35	81.94	80.93	84.73	102.36	97.67	103.25	104.20	106.12	104.33
Results based on adjusted prices: [1]																		
Total cost of finished animal	123.17	145.59	150.68	123.68	138.60	158.78	143.62	79.22	83.83	101.82	87.29	85.96	89.47	81.58	82.14	77.85	76.05	79.49
Credits per head	13.88	15.08	13.81	11.91	12.84	13.65	13.72	4.73	6.36	8.79	6.16	5.87	8.74	7.11	7.97	6.86	7.01	7.44
Net cost of finished animal at farm	114.29	130.51	136.87	111.77	125.76	143.13	129.90	74.49	77.47	93.03	81.13	80.09	80.73	74.47	74.17	70.99	69.04	72.05
Net sale value per head at farm	111.25	121.79	120.35	105.07	110.19	122.01	115.68	68.68	71.13	79.69	68.54	69.54	85.07	73.43	78.52	69.44	74.20	75.47
Profit													4.34		4.35		5.16	3.42
Loss	3.04	8.72	16.52	6.70	15.57	21.12	14.22	5.81	6.34	13.31	12.59	10.55		1.04		1.55		
Net cost per 100 pounds of gain	22.77	26.07	27.49	23.89	26.04	26.07	26.08	10.52	10.67	13.32	14.88	13.17	10.36	10.88	10.14	14.14	11.52	11.19
Margin necessary to cover costs	3.73	4.87	5.41	3.96	4.83	4.68	4.82	.95	1.07	1.81	2.27	1.80	1.34	1.30	1.22	2.19	1.50	1.53
Returns per bushel of corn fed	1.31	1.18	.39	1.09	.40	.72	.85	.34	.35	−.11	−.31	.10	.57	.48	.58	.43	.67	.59
Returns for each $100 of cost	97.34	93.32	87.93	94.01	87.62	85.24	89.05	92.20	91.82	85.66	84.48	86.83	105.38	98.61	105.86	97.82	107.47	104.74

[1] For purposes of closer comparison of the effect of feeding the different rations, costs and returns have been recomputed, using the following rates for all droves:

	Corn per bushel	Silage per ton	Hogs per 100 pounds
Seasons 1919 and 1920	$1.40	$11	$15
Seasons 1921, 1922, and 1923	.50	5	8

TABLE 50.—*Results of feeding yearlings typical rations under different systems*—Continued

Item	Fall pastured												
	1919–20							1921					
	Corn and legume hay	All corn and hay rations	Corn, heavy silage, mixed hay and protein concentrates	Corn, heavy silage, mixed and legume hay and protein concentrates	All heavy silage rations	All light silage rations	All rations	Corn and legume hay	All corn and hay rations	Corn, heavy silage, mixed and legume hay and protein concentrates	All heavy silage rations	All light silage rations	All rations
Number of droves	13	29	11	16	31	7	67	7	17	9	15	9	41
Number of cattle	366	1,058	357	527	1,389	364	2,811	287	619	235	416	376	1,411
Initial weight per head, pounds	640	665	627	637	658	688	665	668	661	654	672	629	656
Gain in weight per head, pounds	342	301	327	314	259	259	275	287	298	296	313	277	296
Final weight, pounds	982	966	954	951	917	947	940	955	959	950	985	906	952
Days on farm	224	193	227	219	183	152	183	156	186	191	200	195	192
Days on feed	158	144	188	179	152	109	143	140	137	155	162	129	142
Average daily gain while on farm, pounds	1.56	1.58	1.45	1.45	1.43	1.71	1.52	1.86	1.62	1.55	1.58	1.43	1.55
Daily ration (while on feed):													
Grain, pounds	14.5	15.7	6.0	5.6	5.7	9.0	9.9	20.4	20.3	7.2	7.7	9.9	13.6
Protein concentrates, pounds	------	.2	1.2	1.1	1.3	.5	.8	------	.2	.9	.7	.8	.5
Molasses feeds, pounds	------	.4	------	------	.2	.5	.3	------	.1	------	------	.2	.1
Legume hay, pounds	9.9	7.8	.7	2.3	1.3	5.7	4.2	7.4	4.6	2.2	1.4	2.4	3.0
Other hay, pounds	------	.7	4.0	2.9	2.1	------	1.4	.2	1.6	1.8	1.9	.5	1.4
Straw and stover, pounds	.4	2.3	.9	.7	1.3	.4	1.6	------	1.6	1.9	1.6	2.0	1.7
Silage, pounds	------	------	34.1	33.2	34.1	24.7	20.4	------	------	32.5	36.1	22.5	17.6
Feed consumed per 100 pounds of gain:													
Grain, pounds	669	753	347	322	337	378	514	994	935	377	400	461	651
Protein concentrates, pounds	------	10.3	68.8	64.5	79.2	19.2	43.5	------	10.4	45.4	34.7	37.9	24.8
Molasses feeds, pounds	------	20.8	------	------	11.8	22.4	16.8	------	5.4	------	------	7.7	4.3
Legume hay, pounds	457	372	39	133	74	241	217	363	212	115	72	113	144
Other hay, pounds	2	34	231	163	123	------	71	12	72	92	97	23	68
Stover and straw, pounds	20	112	51	39	75	15	83	------	74	101	81	94	81
Silage, pounds	------	------	1,962	1,893	2,002	1,041	1,059	------	------	1,702	1,871	1,047	842
Pasture, days	24	21	13	14	18	20	19	14	21	14	13	30	21
By-products with 100 pounds of gain:													
Pork, pounds	29.6	29.6	13.5	12.7	12.3	16.3	19.9	27.9	26.7	21.6	16.9	15.7	20.9
Manure, loads	.9	.9	2.1	2.2	1.7	1.1	1.3	.4	.5	1.8	1.7	1.1	1.0

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	23.48	26.56	25.33	24.60	25.13	19.61	25.05	11.75	11.72	12.16	12.03	11.32	11.72
All other costs, 100 pounds of gain	4.02	3.97	5.46	5.16	4.76	4.39	4.39	3.26	3.25	4.47	4.13	3.16	3.49
Total cost of 100 pounds of gain	27.50	30.53	30.79	29.76	29.89	24.00	29.44	15.01	14.97	16.63	16.16	14.48	15.21
Deductions for pork and manure	5.43	5.82	4.99	5.70	4.69	4.54	5.13	2.60	2.64	4.04	3.20	2.72	2.83
Net cost of 100 pounds of gain	22.07	24.71	25.80	24.06	25.20	19.46	24.31	12.41	12.33	12.59	12.96	11.76	12.38
Financial returns per head:													
Initial cost	59.65	47.71	55.08	58.57	59.04	59.28	58.57	46.66	47.49	46.06	48.57	45.61	47.31
Value of feed	81.68	80.93	83.52	78.07	65.80	51.00	69.58	34.97	35.19	36.00	37.99	31.46	35.03
Value of labor	4.58	4.94	8.95	7.69	5.45	4.64	5.15	5.08	5.01	6.40	5.93	3.95	5.00
Interest on investment in cattle and equipment	5.16	3.82	4.37	4.18	3.52	3.88	3.68	2.47	2.88	4.17	4.11	2.93	3.26
Equipment depreciation and repairs	2.41	1.76	2.19	1.95	1.61	1.78	1.69	.69	.76	1.91	1.76	.98	1.11
Other costs	1.85	1.56	2.53	2.58	1.87	1.14	1.66	1.19	1.08	.71	1.21	.88	1.06
Total cost of finished animal	155.33	150.72	156.64	153.04	137.29	121.72	140.33	90.16	92.41	95.25	99.57	85.81	92.77
Deduction from cost:													
Pork	14.62	13.36	7.78	6.80	5.07	6.02	8.31	6.37	6.34	5.97	4.35	3.66	5.04
Manure	4.29	4.39	8.67	11.29	7.19	5.79	5.95	1.20	1.58	5.97	5.75	3.88	3.42
Net cost of finished animal at farm	136.42	132.97	140.19	134.95	125.03	109.91	126.07	82.59	84.49	83.31	87.47	78.27	84.31
Net sale value per head at farm	126.97	120.83	123.15	124.32	109.94	114.86	114.67	68.54	69.96	73.73	74.90	63.66	69.74
Profit						4.95							
Loss	9.45	12.14	17.04	10.63	15.09		11.40	14.05	14.53	9.58	14.57	14.61	14.57
Sales value per 100 pounds at farm	12.93	12.51	12.91	13.07	11.99	12.13	12.20	7.18	7.30	7.76	7.60	7.03	7.33
Cost of finished animal per 100 pounds at farm	13.89	13.77	14.69	14.19	13.63	11.61	13.41	8.65	8.81	8.77	9.08	8.64	8.86
Cost of feeder animal per 100 pounds at farm	9.32	8.67	8.78	9.20	8.97	8.62	8.81	6.99	7.19	7.04	7.23	7.25	7.22
Margin necessary to cover costs	4.57	5.10	5.91	4.99	4.66	2.99	4.60	1.66	1.62	1.73	1.85	1.39	1.64
Margin received	3.61	3.84	4.13	3.87	3.02	3.51	3.39	.19	.11	.72	.37	—.22	.11
Farm price of silage per ton			9.61	9.70	9.94	9.96	9.94			5.66	5.44	6.06	5.81
Farm price dry roughage per ton	21.96	19.31	17.47	17.86	15.53	22.47	18.28	10.55	10.12	9.07	9.37	8.17	9.54
Farm price of hogs per 100 pounds	14.45	14.99	17.64	17.04	15.89	14.27	15.19	7.95	7.96	8.07	8.21	8.41	8.13
Farm price of corn per bushel	1.38	1.41	1.42	1.44	1.38	1.36	1.40	.51	.50	.52	.51	.52	.51
Return per bushel of corn fed	1.15	1.11	.58	.85	.41	1.64	.95	.23	.21	—.12	—.22	—.12	.07
Return for each $100 of cost	93.07	90.87	87.85	92.12	87.93	104.50	90.96	82.99	82.80	88.50	83.72	81.33	82.72
Results based on adjusted prices: [2]													
Total cost of finished animal	156.15	150.32	160.68	156.22	140.36	123.77	141.92	89.65	92.41	93.20	98.07	83.03	91.46
Credits per head	19.48	17.76	15.24	17.25	11.98	12.11	14.16	7.53	7.98	11.79	9.99	7.36	8.33
Net cost of finished animal at farm	136.67	132.56	145.44	138.97	128.38	111.66	127.76	82.12	84.43	81.31	88.08	75.67	83.08
Net sale value per head at farm	126.97	120.83	123.15	124.32	109.94	114.86	114.67	68.54	69.96	73.73	74.90	63.66	69.74
Profit						3.20							
Loss	9.70	11.73	22.29	14.65	19.44		13.09	13.58	14.47	7.58	13.18	12.01	13.34
Net cost per 100 pounds of gain	22.13	24.57	27.40	25.34	26.48	20.14	24.91	12.23	12.30	11.90	12.51	10.82	11.97
Margin necessary to cover costs	4.60	5.05	6.47	5.41	5.03	3.17	4.78	1.61	1.61	1.52	1.71	1.10	1.51
Return per bushel of corn fed	1.16	1.11	.30	.59	.15	1.58	.88	.23	.21	.12	—.09	—.03	.11
Return for each $100 of cost	92.90	91.15	84.67	89.46	85.64	102.86	89.75	83.46	82.86	90.68	85.04	84.13	83.94

[2] See footnote 1, p. 101.

TABLE 50.—*Results of feeding yearlings typical rations under different systems*—Continued

Item	Fall pasture									
	1922-23									
	Corn and legume hay	Corn and mixed hay	All corn and hay rations	Corn, heavy silage and mixed hay	Corn, heavy silage, mixed and legume hay	All heavy silage rations	Corn, light silage and mixed hay	Corn, light silage, mixed hay and protein concentrates	All light silage rations	All rations
Number of droves	34	13	60	9	12	24	10	9	29	113
Number of cattle	1,412	705	2,595	305	403	784	479	328	1,305	4,684
Initial weight per head, pounds	677	682	674	615	632	653	610	626	614	654
Gain in weight per head, pounds	356	338	351	317	312	297	301	309	303	329
Final weight, pounds	1,033	1,020	1,025	932	944	950	911	935	917	983
Days on farm	209	207	210	190	184	192	201	215	207	206
Days on feed	155	179	163	173	165	160	184	185	163	162
Average daily gain while on farm, pounds	1.73	1.66	1.69	1.68	1.71	1.55	1.51	1.44	1.48	1.61
Daily ration (while on feed):										
Grain, pounds	17.8	18.4	17.9	9.7	9.5	8.0	10.8	11.6	11.7	14.6
Protein concentrates, pounds						.2		.5	.3	.1
Molasses feeds, pounds			.1			.1			.1	.1
Legume hay, pounds	7.6	3.6	5.7	1.0	2.0	3.0	1.9	.2	1.5	4.1
Other hay, pounds	.2	1.6	.7	2.0	1.6	.9	1.1	3.1	1.8	1.0
Straw and stover, pounds		1.6	.7	1.5	1.2	1.7	2.5	5.8	2.9	1.5
Silage, pounds				29.4	30.7	30.9	12.8	14.4	14.6	9.2
Feed consumed per 100 pounds of gain:										
Grain, pounds	775	973	833	530	502	429	661	693	630	720
Protein concentrates, pounds			1.7			10.1	1.9	31.8	14.0	6.4
Molasses feeds, pounds			5.6	.4	.3	5.1			3.0	4.8
Legume hay, pounds	329	193	266	56	106	160	117	10	80	203
Other hay, pounds	9	87	31	109	84	49	66	188	99	51
Stover and straw, pounds	2	84	34	82	63	93	154	346	156	74
Silage, pounds				1,606	1,623	1,662	780	865	786	452
Pasture, days	18	18	19	17	15	17	22	13	23	20
By-products with 100 pounds of gain:										
Pork, pounds	22.1	22.6	22.0	13.4	12.5	13.2	20.9	20.5	18.5	19.8
Manure, loads	.7	.5	.6	1.2	1.2	1.4	1.0	1.4	.9	.8

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Feed cost of 100 pounds of gain	8.67	11.16	9.69	11.00	10.48	14.66	11.30	11.29	10.63	10.68
All other costs, 100 pounds of gain	2.20	2.01	2.16	2.68	2.73	2.96	2.44	3.39	2.46	2.35
Total cost of 100 pounds of gain	10.87	13.17	11.85	13.68	13.21	17.62	13.74	14.68	13.09	13.03
Deductions for pork and manure	2.36	2.26	2.29	2.24	2.13	2.42	2.64	3.54	2.67	2.41
Net cost of 100 pounds of gain	8.51	10.91	9.56	11.44	11.08	15.20	11.10	11.14	10.42	10.62
Financial returns per head:										
Initial cost	41.81	39.83	40.33	33.39	33.91	36.93	33.39	35.76	34.13	38.03
Value of feed	31.20	38.26	34.44	35.10	32.91	43.86	34.77	35.04	32.53	35.49
Value of labor	2.60	2.08	2.51	3.38	3.53	3.61	2.77	4.52	2.92	2.81
Interest on investment in cattle and equipment	3.04	2.61	2.89	2.88	2.77	2.83	2.64	3.00	2.45	2.76
Equipment depreciation and repairs	1.11	.86	1.05	1.60	1.55	1.57	1.19	1.83	1.16	1.17
Other costs	1.20	1.33	1.15	.74	.74	.89	.82	1.15	.96	1.04
Total cost of finished animal	80.96	84.97	82.37	77.09	75.41	89.69	75.58	81.30	74.15	81.30
Deduction from cost:										
Pork	6.57	6.18	5.41	3.70	3.31	3.25	5.42	5.66	4.96	5.48
Manure	1.91	1.59	1.73	3.44	3.40	3.98	2.71	5.34	3.23	2.52
Net cost of finished animal at farm	72.48	77.20	74.23	69.95	68.70	82.46	67.45	70.30	65.96	73.30
Net sale value per head at farm	82.62	82.84	82.46	69.39	69.82	73.23	72.51	75.00	71.48	77.85
Profit	10.14	5.64	8.23		1.12		5.06	4.70	5.52	4.55
Loss				.56		9.23				
Sales value per 100 pounds at farm	8.00	8.12	8.04	7.45	7.40	7.71	7.96	8.02	7.79	7.92
Cost of finished animal per 100 pounds at farm	7.02	7.57	7.24	7.51	7.28	8.68	7.40	7.52	7.19	7.46
Cost of feeder animal per 100 pounds at farm	6.18	5.84	5.99	5.43	5.37	5.65	5.47	5.71	5.55	5.82
Margin necessary to cover costs	.84	1.73	1.25	2.08	1.91	3.03	1.93	1.81	1.64	1.64
Margin received	1.82	2.28	2.05	2.02	2.03	2.06	2.49	2.31	2.24	2.10
Farm price of silage, per ton				5.47	5.00	5.46	5.02	5.09	5.01	5.26
Farm price dry roughage, per ton	8.22	6.41	8.08	6.89	8.11	9.33	7.36	6.21	7.47	8.09
Farm price of hogs, per 100 pounds	8.35	8.09	8.30	8.71	8.49	8.29	8.62	8.94	8.84	8.42
Farm price of corn, per bushel	.46	.51	.49	.50	.49	.53	.60	.45	.52	.50
Return per bushel of corn fed	.67	1.07	.65	.48	.53	.13	.74	.57	.68	.61
Return for each $100 of cost	113.99	107.31	111.09	99.20	101.63	88.81	107.50	106.69	108.37	106.21
Results based on adjusted prices:[1]										
Total cost of finished animal	82.93	85.56	82.89	75.91	75.69	87.86	72.01	79.27	73.46	81.12
Credits per head	8.21	7.70	7.91	6.85	6.53	7.12	7.74	10.42	7.73	7.72
Net cost of finished animal at farm	74.72	77.86	74.98	69.06	69.16	80.74	64.27	68.85	65.73	73.40
Net sale value per head at farm	82.62	82.84	82.46	69.39	69.82	73.23	72.51	75.00	71.48	77.85
Profit	7.90	4.98	7.51	.33	.66		8.24	6.15	5.75	4.45
Loss						7.51				
Net cost per 100 pounds of gain	9.14	11.09	9.75	11.18	11.23	14.64	10.17	10.66	10.33	10.65
Margin necessary to cover costs	1.05	1.79	.72	1.98	1.96	2.85	1.58	1.65	1.62	1.65
Return per bushel of corn fed	.66	.58	.64	.51	.52	.17	.73	.66	.67	.61
Return for each $100 of cost	110.57	106.40	109.98	100.48	100.95	90.70	112.82	108.93	108.75	106.06

[1] See footnote 1, p. 101.

TABLE 50.—*Results of feeding yearlings typical rations under different systems*—Continued

Item	Fattened on grass								Summer pasture							
	1919–20		1921		1922–23				1919–20			1921		1922–23		
	All well-wintered cattle	All grass-fed cattle	All well-wintered cattle	All grass-fed cattle	Finished on grass with corn all through pasture period	All well-wintered cattle	All roughed through winter	All grass-fed cattle	All corn and hay rations	All silage rations	All summer-pastured cattle	All corn and hay rations	All summer-pastured cattle	All corn and hay rations	All silage rations	All summer-pastured cattle
Number of droves	16	26	8	12	17	31	7	41	16	10	26	10	13	15	7	22
Number of cattle	795	1,327	307	455	713	1,362	320	1,858	555	451	1,006	329	498	474	411	885
Initial weight per head, pounds	624	632	614	611	631	643	669	643	673	642	659	640	634	630	622	626
Gain in weight per head, pounds	301	311	352	340	413	383	327	363	422	430	426	469	453	454	420	439
Final weight, pounds	925	943	966	951	1,044	1,026	996	1,006	1,095	1,072	1,085	1,109	1,087	1,084	1,042	1,065
Days on farm	209	209	231	208	257	259	263	245	337	392	362	316	338	269	259	278
Days on feed	157	154	168	162	233	211	177	195	157	233	191	167	166	154	174	163
Average daily gain while on farm, pounds	1.46	1.52	1.54	1.66	1.63	1.50	1.26	1.50	1.29	1.11	1.21	1.51	1.35	1.72	1.46	1.59
Daily ration (while on feed):																
Grain, pounds	8.9	9.1	14.4	14.0	14.6	13.4	6.8	12.4	14.3	3.9	10.3	19.4	16.0	16.7	11.0	13.9
Protein concentrates, pounds	.9	.8	.2	.2	------	------	------	------	.1	.3	.2	------	.3	------	.1	.1
Molasses feeds, pounds	.9	.9	------	------	.1	.2	.3	.2	.3	------	.1	------	------	------	.8	.4
Legume hay, pounds	1.2	1.0	3.9	3.3	1.5	2.5	1.6	2.3	6.5	2.9	4.6	8.2	6.1	6.1	.9	3.6
Other hay, pounds	.8	.6	.5	.6	1.9	1.4	.6	1.2	2.7	3.2	3.0	1.2	1.6	1.1	2.9	2.0
Straw and stover, pounds	2.4	1.7	.8	.7	2.4	3.5	2.8	3.2	3.7	1.6	2.5	1.0	1.2	.9	1.5	1.2
Silage, pounds	8.6	8.3	2.6	2.8	3.8	3.1	11.5	4.2	.3	20.3	11.2	------	11.5	------	10.4	5.1
Feed consumed per 100 pounds of gain:																
Grain, pounds	463	449	688	665	824	737	366	668	532	376	462	690	586	565	455	517
Protein concentrates, pounds	44.7	41.9	10.6	9.9	1.7	2.6	------	2.1	2.5	17.8	9.4	1.4	9.9	.5	4.2	2.1
Molasses feeds, pounds	49.2	43.9	------	------	6.9	8.6	17.9	10.0	10.1	------	5.6	------	.2	.6	34.6	15.7
Legume hay, pounds	61	48	187	158	85	135	87	122	243	157	205	291	225	208	38	133
Other hay, pounds	41	28	22	28	108	79	34	64	99	173	133	42	58	38	120	74
Stover and straw, pounds	127	86	40	32	137	194	149	173	137	84	113	34	44	32	63	46
Silage, pounds	446	410	126	134	216	169	621	228	10	1,100	500	------	423	2	429	191
Pasture, days	40	47	33	34	32	36	56	39	45	39	43	33	40	33	35	34
By-products with 100 pounds of gain:																
Pork, pounds	17.8	17.8	21.5	19.0	20.8	18.9	10.8	17.7	16.9	20.5	18.6	19.0	16.7	18.3	9.9	14.6
Manure, loads	.3	.2	.2	.2	.5	.4	.4	.4	.6	1.3	.9	.3	.4	.4	.9	.6

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	20.91	20.29	10.64	9.70	10.59	11.49	10.54	11.18	19.98	22.72	21.21	10.32	11.01	8.51	9.48	8.94
All other costs, 100 pounds of gain	3.53	3.39	2.96	2.80	2.14	2.13	1.98	2.05	4.10	4.83	4.42	3.07	3.19	2.01	1.76	1.91
Total cost of 100 pounds of gain	24.44	23.68	13.60	12.50	12.73	13.62	12.62	13.23	24.08	27.55	25.63	13.39	14.20	10.52	11.24	10.85
Deductions for pork and manure	3.34	3.24	1.81	2.61	2.32	2.03	1.39	1.92	3.58	4.48	3.99	1.74	1.74	1.98	1.60	1.81
Net cost of 100 pounds of gain	21.10	20.44	11.79	9.89	10.41	11.59	11.23	11.31	20.50	23.07	21.64	11.65	12.46	8.54	9.64	9.04
Financial returns per head:																
Initial cost	56.83	60.86	45.90	44.59	37.23	39.91	42.11	40.11	72.18	64.38	68.72	62.06	58.46	42.94	41.84	42.43
Value of feed	64.10	64.36	37.85	33.44	44.38	44.53	35.31	40.96	87.01	99.36	92.55	49.18	50.40	39.25	40.06	39.62
Value of labor	4.84	4.59	4.68	4.15	3.37	3.20	2.44	2.90	6.73	9.39	7.92	5.01	5.24	2.24	2.93	2.57
Interest on investment in cattle and equipment	3.18	3.48	3.66	3.24	3.17	3.03	2.54	2.72	6.36	7.11	6.69	5.98	6.04	4.30	2.86	3.63
Equipment depreciation and repairs	.82	.93	1.17	1.05	1.08	.91	.48	.76	1.67	2.39	1.99	1.69	1.80	1.36	1.12	1.25
Other costs	1.94	1.82	1.01	1.21	1.38	1.13	1.15	1.12	3.10	2.18	2.65	1.94	1.53	1.34	.54	.96
Total cost of finished animal	131.71	136.04	94.27	87.68	90.61	92.71	84.03	88.57	177.05	184.81	180.52	125.86	123.47	91.43	89.35	90.46
Deduction from cost:																
Pork	8.42	8.82	5.92	4.81	7.64	6.17	2.99	5.45	10.90	14.30	12.42	7.18	6.04	6.47	3.44	5.06
Manure	1.81	1.45	.54	.80	2.11	1.70	1.64	1.57	4.71	5.29	4.97	1.10	1.93	2.66	3.26	2.98
Net cost of finished animal at farm	121.48	125.77	87.81	82.07	80.86	84.84	79.40	81.55	161.44	165.22	163.13	117.58	115.50	82.30	82.55	82.42
Net sale value per head at farm	117.05	122.78	70.88	72.72	94.27	87.51	79.28	84.68	144.79	142.05	143.56	91.41	85.98	88.27	90.41	89.32
Profit					13.41	2.67		3.13						5.97	7.86	6.90
Loss	4.43	2.99	16.93	9.35			.12		16.65	23.17	19.57	26.17	29.52			
Sales value per 100 pounds at farm	12.65	13.02	7.34	7.65	9.03	8.53	7.96	8.42	13.22	13.25	13.23	8.24	7.91	8.14	8.68	8.39
Cost of finished animal per 100 pounds at farm	13.13	13.34	9.09	8.63	7.75	8.27	7.97	8.11	14.74	15.41	15.04	10.60	10.63	7.59	7.92	7.74
Cost of feeder animal per 100 pounds at farm	9.11	9.63	7.48	7.29	5.90	6.21	6.30	6.24	10.72	10.03	10.42	9.69	9.22	6.82	6.73	6.78
Margin necessary to cover costs	4.02	3.71	1.61	1.34	1.85	2.06	1.67	1.87	4.02	5.38	4.62	.91	1.41	.77	1.19	.96
Margin received	3.54	3.39	−.14	.36	3.13	2.32	1.66	2.18	2.50	3.22	2.81	−1.45	−1.31	1.32	1.95	1.61
Farm price of silage per ton	9.04	9.81	4.61	4.57	4.37	4.49	6.75	5.45	9.00	10.84	10.82		5.51	5.00	4.31	4.31
Farm price dry roughage per ton	12.10	12.32	10.13	10.16	7.48	6.84	6.58	6.83	14.78	13.91	14.42	10.83	11.04	8.02	8.69	8.28
Farm price of hogs per 100 pounds	15.71	15.92	7.82	7.45	8.89	8.52	8.47	8.48	15.29	16.21	15.68	8.06	7.98	7.79	8.27	7.89
Farm price of corn per bushel	1.44	1.46	.58	.54	.50	.56	.68	.61	1.37	1.41	1.38	.51	.51	.54	.58	.56
Return per bushel of corn fed	1.26	1.34	.19	.31	.72	.61	.67	.63	.95	.61	.82	.06	−.11	.67	.81	.73
Return for each $100 of cost	96.35	97.62	80.72	88.61	116.58	103.15	99.85	103.84	89.69	85.98	88.00	77.74	74.44	107.25	109.52	108.37
Results based on adjusted prices:[1]																
Total cost of finished animal	132.08	135.26	90.89	86.15	90.86	89.84	78.43	83.63	178.29	184.90	181.42	125.28	122.49	89.60	87.24	88.31
Credits per head	9.85	9.75	6.60	5.97	8.98	7.49	4.46	6.71	15.40	18.55	16.84	8.23	7.99	9.30	6.68	8.11
Net cost of finished animal at farm	122.23	125.51	84.29	80.18	81.88	82.35	73.97	76.92	162.89	166.35	164.58	117.05	114.50	80.30	80.56	80.20
Net sale value per head at farm	117.05	122.78	70.88	72.72	94.27	87.51	79.28	84.68	144.79	142.05	143.56	91.41	85.98	88.27	90.41	89.32
Profit					12.39	5.16	5.31	7.76						7.97	9.85	9.12
Loss	5.18	2.73	13.41	7.43					18.10	24.30	21.02	25.64	28.52			
Net cost per 100 pounds of gain	21.33	20.38	10.79	10.32	10.66	10.95	9.60	10.04	20.83	23.31	21.97	11.55	12.24	8.10	9.17	8.52
Margin necessary to cover costs	4.10	3.68	1.25	1.14	1.94	1.82	1.13	1.41	4.16	5.49	4.75	.86	1.31	.59	1.00	.75
Return per bushel of corn fed	1.19	1.29	.19	.32	.70	.60	.75	.68	.95	.56	.80	.06	−.10	.67	.79	.73
Return for each $100 of cost	95.76	97.82	84.09	90.70	115.13	106.27	107.18	110.09	88.89	85.39	87.23	78.10	75.09	109.92	112.23	111.37

[1] See footnote 1, p. 101.

TABLE 51.—*Results of feeding calves typical rations under different systems*

Item	Strictly dry lot											
	1919–20			1921			1922–23					
	Corn and legume hay	All corn and hay rations	All rations	Corn and legume hay	All corn and hay rations	All rations	Corn and legume hay	Corn and mixed hay	All corn and hay rations	All heavy silage rations	All light silage rations	All rations
Number of droves	18	40	47	7	14	18	7	8	16	8	7	31
Number of cattle	484	1,381	1,761	198	398	487	336	431	827	567	469	1,863
Initial weight per head, pounds	414	396	401	433	437	439	424	375	401	397	427	406
Gain in weight per head, pounds	295	296	300	373	337	313	343	388	332	242	313	314
Final weight, pounds	709	692	701	806	774	752	767	763	763	630	740	720
Days on farm	162	168	176	193	176	175	196	215	202	163	207	192
Days on feed	162	168	176	193	174	174	191	215	201	163	207	191
Average daily gain while on farm, pounds	1.83	1.78	1.73	1.95	1.94	1.81	1.79	1.88	1.85	1.49	1.56	1.68
Daily ration (while on feed):												
Grain, pounds	12.6	12.4	11.0	16.5	16.2	14.6	12.2	12.1	12.3	6.4	7.9	9.6
Protein concentrates, pounds	------	.3	.4	------	.2	.3	------	------	------	.1	.4	.1
Molasses feeds, pounds	------	.4	.7	------	.1	.1	------	------	.2	.3	.1	.2
Legume hay, pounds	6.7	4.5	3.7	6.0	4.8	4.3	5.3	1.3	2.9	.2	1.1	1.7
Other hay, pounds	.1	1.1	1.0	------	.8	.6	.1	2.7	1.5	.5	.5	1.0
Straw and stover, pounds	------	.5	.6	------	------	.6	.1	.6	.4	3.7	1.5	1.5
Silage, pounds	------	------	4.3	------	------	4.3	------	------	------	20.8	12.5	8.7
Feed consumed per 100 pounds of gain:												
Grain, pounds	692	705	648	856	837	811	680	669	682	428	521	533
Protein concentrates, pounds	.7	17.6	22.4	------	10.0	18.7	.2	------	.1	8.0	26.1	8.5
Molasses feeds, pounds	------	25.0	39.5	------	5.6	4.9	------	------	11.6	17.1	4.0	10.9
Legume hay, pounds	367	253	215	312	247	239	296	71	163	13	71	105
Other hay, pounds	8	60	56	------	40	35	3	151	86	33	36	61
Stover and straw, pounds	------	26	38	------	------	36	3	33	20	249	100	93
Silage, pounds	------	------	254	------	------	239	------	------	------	1,401	824	531
Pasture, days	------	------	------	------	------	------	2	------	1	2	------	1
By-products with 100 pounds of gain:												
Pork, pounds	19.2	22.6	19.2	18.2	18.3	16.8	16.3	12.3	15.1	18.8	10.2	14.7
Manure, loads	.7	.7	.8	.4	.4	.5	.3	.4	.4	1.1	1.0	.7
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Feed cost of 100 pounds of gain	21.15	23.51	23.48	9.42	9.69	10.60	6.95	7.08	7.25	9.13	8.11	7.90
All other costs, 100 pounds of gain	3.65	3.44	3.53	2.53	2.68	2.97	1.78	1.92	1.86	2.85	2.48	2.23
Total cost of 100 pounds of gain	24.80	26.95	27.01	11.95	12.37	13.57	8.73	9.00	9.11	11.98	10.59	10.13
Deductions for pork and manure	4.10	4.90	4.70	2.05	1.99	2.02	1.56	1.37	1.53	3.07	2.12	2.04
Net cost of 100 pounds of gain	20.70	22.05	22.31	9.90	10.38	11.55	7.17	7.63	7.58	8.91	8.47	8.09

Financial returns per head:												
Initial cost	41.23	39.50	39.79	39.43	33.51	33.85	28.63	25.13	26.41	24.20	27.42	26.01
Value of feed	62.65	70.41	71.27	35.36	33.10	33.70	24.33	23.71	27.18	22.20	26.23	25.43
Value of labor	5.42	4.46	4.61	3.63	3.05	3.22	1.53	2.34	1.88	3.15	3.09	2.57
Interest on investment in cattle and equipment	2.88	3.06	3.14	3.68	3.48	3.53	2.14	2.54	2.41	1.75	2.19	2.15
Equipment depreciation and repairs	1.46	1.52	1.58	1.54	1.64	1.66	1.09	1.35	1.17	1.23	.96	1.14
Other costs	1.06	1.24	1.38	.69	.98	1.00	1.50	1.53	1.50	.70	1.76	1.30
Total cost of finished animal	114.70	120.19	121.77	84.33	75.76	77.06	59.22	61.60	60.55	53.23	61.65	58.60
Deductions from cost:												
Pork	8.32	11.29	9.73	5.65	5.13	4.39	4.51	4.13	4.55	3.93	3.07	3.99
Manure	3.82	3.37	4.55	2.04	1.67	2.03	.95	1.42	1.22	3.54	3.78	2.57
Net cost of finished animal at farm	102.56	105.53	107.49	76.64	68.96	70.64	53.76	56.05	54.78	45.76	54.80	52.04
Net sale value per head at farm	91.71	92.92	94.79	70.39	65.51	62.78	63.81	64.10	63.41	51.33	62.82	59.58
Profit							10.05	8.05	8.63	5.57	8.02	7.54
Loss	10.85	12.61	12.70	6.25	3.45	7.86						
Sale value per 100 pounds at farm	12.94	13.43	13.52	8.73	8.46	8.35	8.32	8.40	8.31	8.03	8.49	8.28
Cost of finished animal per 100 pounds at farm	14.47	15.25	15.33	9.51	8.91	9.39	7.01	7.35	7.18	7.16	7.41	7.23
Cost of feeder animal per 100 pounds at farm	9.05	9.06	9.02	9.12	7.68	8.67	6.75	6.70	6.59	6.10	6.42	6.40
Margin necessary to cover costs	4.52	5.29	5.41	.39	1.23	.72	.26	.65	.59	1.06	.99	.83
Margin received	2.99	3.47	3.60	—.39	.78	—.32	1.57	1.70	1.72	1.93	2.07	1.88
Farm price of silage per ton			9.80			6.58				5.15	4.50	4.89
Farm price dry roughage per ton	21.01	22.77	21.46	11.78	12.54	11.49	8.49	8.46	8.53	4.59	8.06	7.40
Farm price of hogs per 100 pounds	14.70	16.88	16.89	8.32	8.31	8.35	8.07	8.66	8.32	8.64	9.62	8.64
Farm price of corn per bushel	1.38	1.45	1.45	.48	.49	.50	.50	.50	.47	.50	.48	.48
Return per bushel of corn fed	1.08	1.11	1.08	.37	.42	.33	.74	.67	.67	.80	.76	.71
Return for each $100 of cost	89.42	88.05	88.18	91.84	95.00	88.87	118.69	114.36	115.75	112.17	114.64	114.49
Results based on adjusted prices:[1]												
Total cost of finished animal	115.43	118.32	120.51	85.47	76.26	76.43	59.22	61.60	61.87	52.97	62.88	59.34
Credits per head	12.31	13.38	13.20	7.48	6.61	6.23	5.42	5.24	5.60	7.18	6.35	6.26
Net cost of finished animal at farm	103.12	104.94	107.31	77.99	69.65	70.20	53.80	56.36	56.27	45.79	56.53	53.08
Net sale value per head at farm	91.71	92.92	94.79	70.39	65.51	62.78	63.81	64.10	63.41	51.33	62.82	59.58
Profit							10.01	7.74	7.14	5.54	6.29	6.50
Loss	11.41	12.02	12.52	7.60	4.14	7.42						
Net cost per 100 pounds of gain	20.89	21.85	22.24	10.28	10.59	11.44	7.19	7.71	7.97	8.88	9.01	8.41
Margin necessary to cover costs	4.59	5.20	5.39	.56	1.32	.67	.26	.69	.78	1.07	1.22	.97
Return per bushel of corn fed	1.09	1.08	1.04	.37	.42	.34	.73	.67	.66	.80	.72	.70
Return for each $100 of cost	88.93	88.55	88.32	90.26	94.06	89.43	118.61	113.73	112.69	112.10	111.13	112.25

[1] For purposes of closer comparison of the effect of feeding the different rations, costs and returns have been recomputed, using the following rates for all droves:

	Corn per bushel	Silage per ton	Hogs per 100 pounds
Seasons 1919 and 1920	$1.40	$11	$15
Seasons 1921, 1922, and 1923	.50	5	8

TABLE 51.—*Results of feeding calves typical rations under different systems*—Continued

Item	Fall pasture							Fattened on grass				Summer pasture
	1919–20		1921	1922–23				1919–20		1922–23		1919–20
	All corn and hay rations	All fall-pastured cattle	All fall-pastured cattle	Corn and legume hay	All corn and hay rations	All heavy silage rations	All light silage rations	All fall and winter pastured cattle	All grass-fed cattle	All well-wintered cattle	All grass-pastured cattle	All summer-pastured cattle
Number of droves	8	20	7	9	17	8	8	33	8	7	9	7
Number of cattle	242	990	303	495	995	314	455	1,764	273	228	317	287
Initial weight per head, pounds	455	433	423	414	406	442	393	409	407	407	395	442
Gain in weight per head, pounds	325	276	434	391	345	282	366	340	322	389	390	413
Final weight, pounds	780	709	857	805	751	724	759	749	729	796	785	855
Days on farm	212	212	312	249	234	193	246	229	224	246	276	334
Days on feed	181	179	289	196	181	156	218	186	178	242	223	192
Average daily gain while on farm, pounds	1.55	1.32	1.42	1.65	1.55	1.49	1.51	1.53	1.49	1.63	1.44	1.26
Daily ration (while on feed):												
Grain, pounds	10.8	6.9	8.0	12.9	11.7	6.1	8.3	9.9	9.8	11.3	10.5	8.3
Protein concentrates, pounds	.1	.8	1.0	-------	-------	.1	.5	.2	.2	.2	.1	.5
Molasses feeds, pounds	.1	.3	-------	-------	.2	-------	.1	.1	1.3	-------	-------	-------
Legume hay, pounds	5.5	2.3	.6	5.5	3.8	1.3	1.9	2.9	.6	1.8	1.6	1.6
Other hay, pounds	3.2	1.2	.1	-------	.9	1.0	.7	.8	4.0	2.5	2.2	1.4
Straw and stover, pounds	1.0	1.6	1.9	-------	.1	1.3	.6	.4	.8	.3	.6	1.2
Silage, pounds	-------	12.2	10.6	-------	-------	25.1	9.0	6.4	-------	1.6	2.0	18.1
Feed consumed per 100 pounds of gain:												
Grain, pounds	604	445	533	645	616	339	492	542	540	706	601	397
Protein concentrates, pounds	5.0	50.2	69.6	-------	1.8	7.1	31.2	10.6	9.9	10.9	7.9	23.0
Molasses feed, pounds	7.5	19.3	-------	-------	11.4	-------	5.1	8.0	69.5	-------	-------	-------
Legume hay, pounds	304	148	43	274	199	71	111	156	33	114	92	76
Other hay, pounds	181	81	9	-------	47	53	43	46	222	153	125	65
Stover and straw, pounds	53	102	125	2	4	71	37	23	42	17	33	56
Silage, pounds	-------	794	709	-------	-------	1,391	539	349	-------	98	116	841
Pasture, days	18	22	10	19	19	19	17	19	36	31	42	38
By-products with 100 pounds of gain:												
Pork, pounds	15.8	14.6	15.1	18.8	18.0	13.5	15.6	16.7	19.6	30.6	22.3	12.2
Manure, loads	.7	.7	.7	.3	.5	.9	.6	.6	.3	.4	.4	1.2

	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.
Feed cost of 100 pounds of gain	23.11	21.91	10.59	6.94	7.83	7.70	9.09	8.15	20.31	9.62	8.73	17.89
All other costs, 100 pounds of gain	4.57	4.13	3.44	1.92	2.00	2.41	1.79	2.01	2.87	2.03	1.87	3.17
Total cost of 100 pounds of gain	27.68	26.04	14.03	8.86	9.83	10.11	10.88	10.16	23.18	11.65	10.60	21.06
Deductions for pork and manure	4.34	3.90	2.28	1.91	1.95	2.26	2.23	2.08	4.09	3.23	2.50	3.74
Net cost of 100 pounds of gain	23.34	22.14	11.75	6.95	7.88	7.85	8.65	8.08	19.09	8.42	8.10	17.32
Financial returns per head:												
Initial cost	40.07	39.69	42.91	27.31	25.94	24.11	26.96	25.88	36.05	24.75	25.15	47.09
Value of feed	76.06	61.38	46.95	28.61	28.37	22.07	33.76	28.64	67.83	38.60	34.80	75.33
Value of labor	6.58	5.38	6.05	2.01	2.11	2.00	1.70	1.97	3.61	4.44	3.91	4.95
Interest on investment in cattle and equipment	4.18	3.15	5.42	2.65	2.21	2.43	2.56	2.34	2.84	1.84	1.93	4.27
Equipment depreciation and repairs	2.78	1.60	2.16	.86	.82	1.56	1.11	1.02	1.05	.70	.62	1.85
Other costs	1.47	1.43	1.58	2.37	2.13	.94	1.25	1.68	2.07	1.21	1.02	2.31
Total cost of finished animal	131.14	112.63	105.07	63.81	61.58	53.11	67.34	61.53	113.45	71.54	67.43	135.80
Deduction from cost:												
Pork	9.01	7.00	6.01	6.81	5.44	3.30	4.42	4.80	12.16	10.93	7.93	7.85
Manure	5.26	3.92	4.06	1.08	1.65	3.18	3.85	2.49	1.51	2.00	2.03	7.55
Net cost of finished animal at farm	116.87	101.71	95.00	55.92	54.49	46.63	59.07	54.24	99.78	58.61	57.50	120.10
Net sale value per head at farm	98.39	88.45	77.87	64.86	60.52	50.36	66.71	60.31	93.80	72.92	69.24	109.76
Profit				8.94	6.03	3.73	7.64	6.07		14.31	11.74	
Loss	18.48	13.26	17.13						5.98			10.34
Sale value per 100 pounds at farm	12.61	12.48	9.09	8.06	8.06	6.96	8.79	8.05	12.87	9.16	8.82	12.84
Cost of finished animal per 100 pounds at farm	14.98	14.35	11.09	6.95	7.26	6.44	7.78	7.24	13.69	7.36	7.32	14.05
Cost of feeder animal per 100 pounds at farm	8.81	9.16	10.15	6.59	6.39	5.46	6.86	6.33	8.86	6.01	6.31	10.65
Margin necessary to cover costs	6.17	5.19	.94	.36	.87	.98	.92	.91	4.83	1.35	1.01	3.40
Margin received	3.80	3.32	−1.06	1.47	1.67	1.50	1.93	1.72	4.01	3.15	2.51	2.19
Farm price of silage per ton		9.48	7.08			4.54	5.00	4.73		5.64	5.70	7.78
Farm price dry roughage per ton	18.51	15.53	6.43	8.86	9.21	8.06	8.42	8.88	16.44	7.88	7.66	15.40
Farm price of hogs per 100 pounds	17.53	17.37	9.18	9.27	8.76	8.66	7.74	8.45	19.27	9.18	9.11	15.58
Farm price of corn per bushel	1.53	1.52	.51	.43	.52	.44	.62	.53	1.48	.53	.57	1.32
Return per bushel of corn fed	1.00	.92	.10	.63	.68	.66	.86	.87	1.29	.82	.85	.97
Return for each $100 of cost	84.19	86.96	81.97	115.99	111.07	108.69	112.93	111.19	94.01	124.42	120.42	91.39
Results based on adjusted prices: [1]												
Total cost of finished animal	126.58	111.67	101.54	66.96	60.82	55.06	63.48	60.70	110.97	69.94	64.36	143.61
Credits per head	12.95	9.95	9.30	6.95	6.62	6.22	8.42	7.03	10.94	11.50	9.01	15.41
Net cost of finished animal at farm	113.63	101.72	92.24	60.01	54.20	48.84	55.06	53.67	100.03	58.44	55.35	128.20
Net sale value per head at farm	98.39	88.45	77.87	64.86	60.52	50.36	66.71	60.31	93.80	72.92	69.24	109.76
Profit				4.85	6.32	1.52	11.65	6.64		14.48	13.89	
Loss	15.24	13.27	14.37						6.23			18.44
Net cost per 100 pounds of gain	22.34	22.14	11.13	7.03	7.80	8.63	7.57	7.92	19.15	8.40	7.57	19.27
Margin necessary to cover costs	5.75	5.19	.61	.86	.83	1.29	.39	.84	4.86	1.33	.74	4.34
Return per bushel of corn fed	.97	.79	.15	.61	.67	.59	.86	.70	1.20	.80	.83	.77
Return for each $100 of cost	86.59	86.95	84.42	108.08	111.66	103.11	121.16	112.37	93.73	124.78	125.10	85.62

[1] See footnote 1, p. 109.

SUMMARY

Cattle feeding in the Corn Belt, besides improving the quality and condition of a large number of cattle coming from the range, tends to equalize the number of cattle slaughtered at different times of the year.

More than half the cattle studied weighed between 751 and 1,000 pounds when purchased as feeders. About one fourth of them weighed from 501 to 750 pounds; the other fourth weighed 500 pounds or less, or more than 1,000 pounds.

The rate and cost of gain on the same kind of steers varied a great deal from one farm to another. The rate of gain on medium-weight steers varied from 0.4 to 4.2 pounds per day, whereas the net cost of gain for cattle of the same weight ranged from 2 to 58 cents per pound in the feeding season of 1918–19 and from 6 to 34 cents per pound in the winter of 1922–23.

Approximately 84 per cent of the total cost of 100 pounds gain was for feed, 6 per cent was for interest on investment in cattle and equipment, 5.5 per cent was for labor, and the remaining 4.5 per cent was made up of other costs such as depreciation of equipment, taxes, veterinary charges, and incidental expenses.

The value of manure and pork as by-products of cattle feeding was often enough to pay for all costs other than feed. In 1919 the costs other than feed for medium-weight steers finished in dry lot were $15.07 per steer, whereas the value of manure and pork credited to them was $15.02 per head. In 1923, costs other than feed amounted to $7.98 and the pork and manure credit amounted to $6.86 per steer.

Almost half of the cattle that were finished in dry lot were pastured for some time previous to intensive dry-lot feeding. Each day of fall pasture on second-growth clover or cornstalks was worth 3.4 pounds of grain, plus 2.2 pounds of dry roughage, plus 10.7 pounds of silage, when the feed requirements per 100 pounds of gain on the fall-pastured steers were compared with those of the strictly dry-lot cattle.

The relative prices of feeds largely determine the proportion in which they should be fed at any given time. In the winter of 1919–20, when corn was $1.40 per bushel and protein concentrates were $80 per ton, Illinois farmers fed 537 pounds of grain and 58 pounds of protein concentrates per 100 pounds of gain. In the winter of 1921–22, when corn was 45 cents a bushel and protein concentrates were $50 a ton, they used 646 pounds of grain and only 14 pounds of protein concentrates per 100 pounds of gain. There was also a saving in the second season of about one-third of the hay and silage used in 1919–20. Steer feeders economized on corn when it was relatively high in price by feeding larger proportions of protein feeds, silage, and hay. When corn was relatively cheap farmers economized on protein feeds, silage, and hay by feeding a larger proportion of corn.

Cattle feeding in eastern Nebraska and western Iowa is typified by the average daily ration of 129 droves of cattle weighing 891 pounds when bought. Each animal received, on an average, 19 pounds of shelled corn and 9 pounds of legume hay and gained 2.19

pounds per day for 131 days. The feed required per head amounted to 45 bushels of corn and 1,150 pounds of legume hay, with a pork credit of 77 pounds per steer.

Silage feeding is more common in eastern Iowa, Illinois, and Indiana than in western Iowa and Nebraska because of the smaller and more uncertain quantity of legume hay available. In 1920, 1921, and 1922, there was an average of about 6 bushels of corn in a ton of silage. In the same period the average cost of putting the corn in the silo was about $2 per ton of silage.

Eighty-six per cent of the cattle studied were finished in dry lot, and 14 per cent were fattened while on grass. The practice of fattening while on grass pasture was most common in the west-central Missouri district, where almost two-thirds of the cattle fed were handled in this way.

Feeder cattle that weigh 900 pounds or less are more desirable to be bought in the fall and carried through the winter to be fattened on grass the following summer than are steers that weigh over 900 pounds when bought.

If cattle are to be finished on grass they should be fed grain during both winter and summer or should be roughed through the winter, and fed grain during the summer pasture period only. This is more profitable than to feed them considerable grain with their roughage during the winter and no grain during the summer-pasture period.

To produce 100 pounds of gain, calves required only 64 per cent as much feed as did heavy cattle. Yearlings and medium-weight cattle required, respectively, 75 and 87 per cent as much feed as heavy cattle to produce 100 pounds of gain.

Heavy cattle may be fattened in a much shorter feeding period than light-weight steers. A greater cost of gain, together with a more definite date at which they should be finished make the feeding of heavy cattle more hazardous than the feeding of light-weight steers.

Good steers excel common steers in the feed lot in these particulars: (1) They make greater daily gains, (2) they require less feed per pound of gain, (3) they require less margin for an equal length of feeding period between the purchase and sale price, and (4) they sell at a higher price per 100 pounds when finished. To make the same return, common feeders must be bought at a price low enough to offset these advantages of feeding good quality steers. When feeders judge these differences in price and feed-lot performance correctly, the financial returns from feeding good and common cattle tend to be the same, when due consideration is given to the seasonal market influence.

The margin necessary to cover fattening costs increases rather regularly with the length of time on grain feed. When corn was worth about $1.40 a bushel feeder cattle of medium weight required an additional 75-cent margin to pay feeding costs for every month on feed after 60 days. When corn was worth about 50 cents a bushel, cattle of the same weight needed approximately 20 cents additional margin to cover costs for every 30 days on feed after the first two months.

56944°—27——8

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

November 28, 1927

Secretary of Agriculture	W. M. JARDINE.
Assistant Secretary	R. W. DUNLAP.
Director of Scientific Work	A. F. WOODS.
Director of Regulatory Work	WALTER G. CAMPBELL.
Director of Extension	C. W. WARBURTON.
Director of Personnel and Business Administration	W. W. STOCKBERGER.
Director of Information	NELSON ANTRIM CRAWFORD.
Solicitor	R. W. WILLIAMS.
Weather Bureau	CHARLES F. MARVIN, *Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Dairy Industry	C. W. LARSON, *Chief.*
Bureau of Plant Industry	WILLIAM A. TAYLOR, *Chief.*
Forest Service	W. B. GREELEY, *Chief.*
Bureau of Chemistry and Soils	HENRY G. KNIGHT, *Chief.*
Bureau of Entomology	C. L. MARLATT, *Chief.*
Bureau of Biological Survey	PAUL G. REDINGTON, *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Bureau of Agricultural Economics	LLOYD S. TENNY, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Federal Horticultural Board	C. L. MARLATT, *Chairman.*
Grain Futures Administration	J. W. T. DUVEL, *Chief.*
Food, Drug, and Insecticide Administration	WALTER G. CAMPBELL, *Director of Regulatory Work, in Charge.*
Office of Experiment Stations	E. W. ALLEN, *Chief.*
Office of Cooperative Extension Work	C. B. SMITH, *Chief.*
Library	CLARIBEL R. BARNETT, *Librarian.*

This bulletin is a contribution from

Bureau of Agricultural Economics	LLOYD S. TENNY, *Chief.*
Division of Farm Management and Costs	H. R. TOLLEY, *in Charge.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Animal Husbandry Division	E. W. SHEETS, *Chief.*

114

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
U.S.GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
20 CENTS PER COPY

END