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# **CHANGES IN THE CATTLE-FEEDING INDUSTRY**

## **ALONG THE NORTH AND SOUTH PLATTE RIVERS, 1953-1959**



**FARM PRODUCTION ECONOMICS DIVISION, ECONOMIC RESEARCH SERVICE  
U. S. DEPARTMENT OF AGRICULTURE  
IN COOPERATION WITH COLORADO AGRICULTURAL EXPERIMENT STATION**



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## SUMMARY

Approximately 6 percent of the cattle that are fattened in the United States are fed in the irrigated valleys of the North and South Platte Rivers. The importance of cattle feeding in the area has been increasing, and the cattle-feeding industry directly or indirectly produces more than half of the area's agricultural income.

During the 1950's, significant changes occurred in the structure of the cattle-feeding industry in the area. The number of feeders classified as farmer-feeders (feeding less than 500 head of cattle annually) declined about a sixth, from 3,755 in 1953 to 3,131 in 1959. This was relatively greater than the decline in the number of all farm operators, between a seventh and an eighth, from 6,531 in 1953 to 5,676 in 1959. During the same period the number of commercial feeders (feeding more than 500 head annually) increased from 83 to 182.

During the period 1953-1959, the number of cattle fed within the area increased by nearly half--from 536,500 to 797,055 head. The number of cattle fed by farmer-feeders actually declined during this period from about 341,000 to 335,000 head. Conversely, the number fed by commercial feeders more than doubled.

About 63 percent of the 800,000 head of cattle fed in 1959 were owned by 171 commercial feeders, who fed 58 percent of all cattle in 182 commercial-sized feedlots. The other 5 percent owned by the commercial feeders were fed by approximately 100 farmer-feeders.

Counties in the South Platte River Valley that had the greatest relative increase in cattle feeding during the period 1953-1959 had:

- (1) A relatively high percentage (65 percent or more) of the cattle fed, fattened in commercial feedlots in 1959.
- (2) Transportation favorably located for access to surplus grain-producing areas (either the irrigated corn areas of Kansas and Nebraska or the dryland feed-grain areas of Colorado and Kansas).
- (3) An increase in the proportion of the irrigated cropland used to produce sugar beets and feed crops.

Although each of these factors influence the number of cattle fed, they are not necessarily independent variables. Favorable location relative to surplus feed-grain undoubtedly helps to account for the concentration of commercial feeders in some areas.

The Denver Terminal Market declined in importance as a marketing channel for slaughter cattle during the 1950's. Both the percentage and the actual numbers of all slaughter cattle moving through the terminal dropped. At times, less than 30 percent of the cattle slaughtered in the Denver area came through the Denver Terminal Market.

There are indications that the study area will continue to increase its cattle feeding; by 1970 it might be fattening as many as 1,500,000 head of cattle. Cattle feeding will continue to become more concentrated in fewer establishments. The number of commercial-sized feedlots might almost double in the next 8 years. Many of these new commercial feedlots will have expanded from operations at present classified as farmer-feeders. Others will develop as an appendage of firms that have complementary relationships with cattle feeding. By 1970, farmer-feeders probably will be feeding not more than 20 percent of all cattle fed in this area, and likely about half of this percentage will be owned by operators in the commercial-feeder group.



# CHANGES IN THE CATTLE-FEEDING INDUSTRY ALONG THE NORTH AND SOUTH PLATTE RIVERS, 1953-1959

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## INTRODUCTION

A major cattle-feeding area of the United States is located in the irrigated valleys of the North Platte and South Platte Rivers in northeastern Colorado, southeastern Wyoming, and the Panhandle of Nebraska (fig. 1).

Within this area, the feeding of cattle for slaughter is a major agricultural activity. Directly or indirectly it is responsible for a considerable portion of the area's agricultural income. About 60 percent of the 5,600 irrigated farms in the area fed cattle in 1959. During the past decade, the number of cattle fed has increased more rapidly than the national rate of increase, and major changes have occurred in the structure of the feeding industry. The number of operators feeding cattle has declined significantly, and changes have occurred in marketing methods and the general type of cattle fed.

The objective of the study reported here is to describe the trends in structure and organization of the cattle-feeding industry, to evaluate the impact of changes on the industry, and to appraise possible future changes within the industry in the area.

The data used are from the 1959 Census of Agriculture, the U. S. Department of Agriculture livestock and meat statistics, and the annual livestock surveys made by the Great Western Sugar Company within the area under consideration.

## THE AREA STUDIED

For the purposes of this study, the feeding area was divided into two sub-areas: (1) The South Platte, including six counties in Colorado (Adams, Larimer, Logan, Morgan, Sedgwick, and Weld); and (2) the North Platte, including six Nebraska counties (Deuel, Garden, Keith, Lincoln, Morrill, and Scottsbluff) and one county in Wyoming (Goshen) (fig. 1).

Livestock feeding and finishing have contributed significantly to the agricultural income in both areas for more than 50 years. Cattle feeding has increased considerably during the last decade, while the finishing of sheep has declined. Initially, the feeding industry was based primarily upon roughages grown on irrigated cropland in the area and the byproducts from the rather extensive sugarbeet industry of the area, which are still important sources of feed. The development of hybrids for corn and grain sorghum has stimulated grain production in the area and in adjacent dryland, hence the amount of locally-grown grains available for livestock feeding has increased.

Significantly enlarged acreage of irrigated feed crops since World War II, combined with increased production per acre, has expanded the feed base available for livestock feeding. The completion of the Colorado-Big Thompson Project has increased and improved the supply of water for lands previously irrigated and has brought additional acreage under irrigation. This development has increased feed production within the area and has helped to stabilize it.

The volume of farm products sold in the North and South Platte Valleys for the year 1959 was approximately \$360 million (table 1). A large portion of this income came



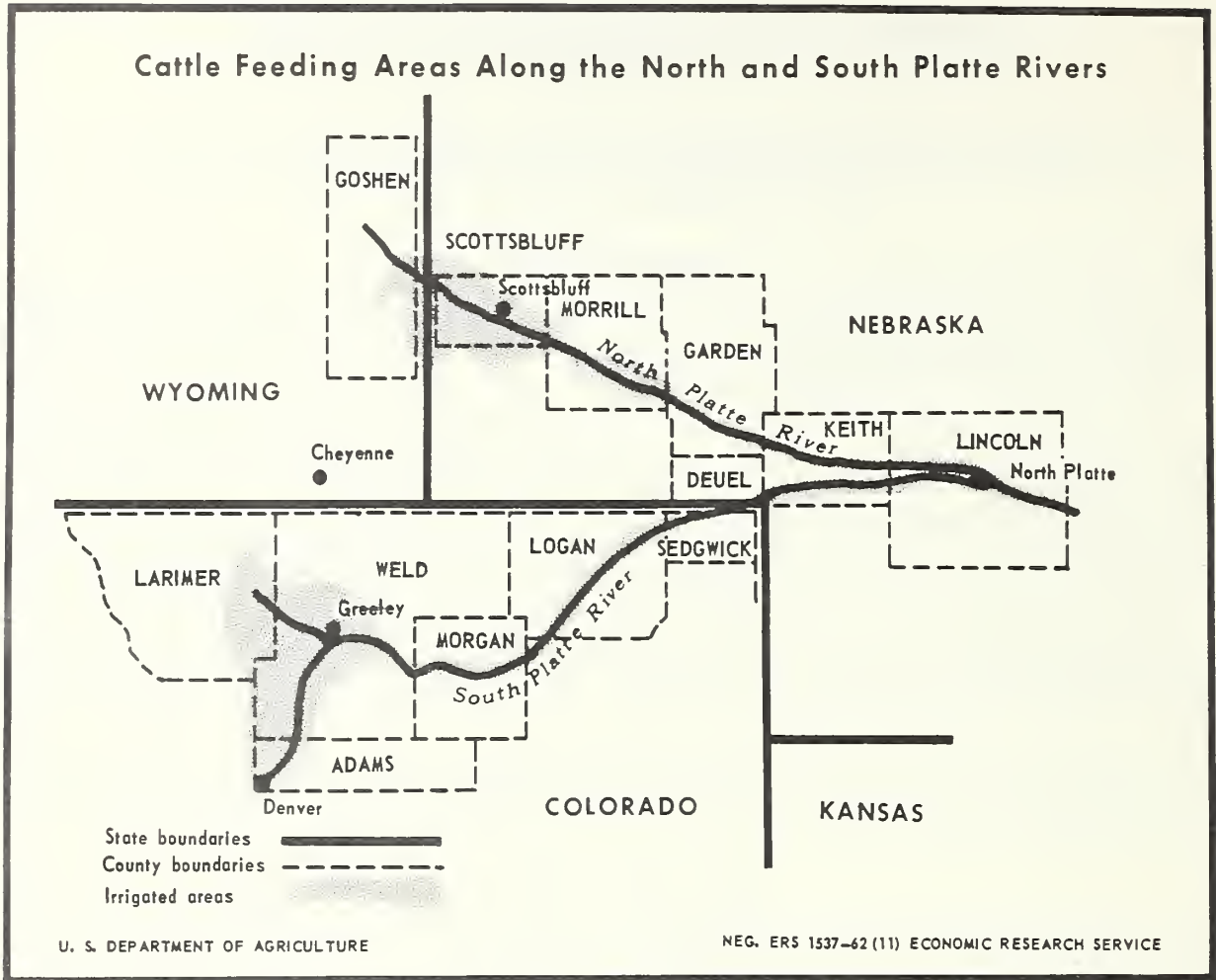


Figure 1

TABLE 1.--Sales of products from farms in the North and South Platte Valleys, 1959<sup>1</sup>

Item	North Platte		South Platte		Total	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
Cattle (excluding calves)...	40.5	38.3	140.6	55.3	181.1	50.3
Calves.....	11.4	10.8	10.1	4.0	21.5	6.0
Sheep and lambs.....	4.4	4.2	5.3	2.0	9.7	2.7
Horses, mules, hogs, and wool.....	3.3	3.1	5.4	2.1	8.7	2.4
Hay, corn, barley, and sorghums.....	9.3	8.8	22.8	9.0	32.1	8.9
Sugarbeets.....	14.1	13.4	27.9	11.0	42.0	11.7
All other.....	22.6	21.4	42.1	16.6	64.7	18.0
Total.....	105.6	100.0	254.2	100.0	359.8	100.0

<sup>1</sup> Source: U.S. Census of Agriculture, 1959.

TABLE 2.--Number of animals slaughtered commercially in the United States and Colorado in 1950 and 1961<sup>1</sup>

Type of livestock	Number of animals slaughtered				Colo. slaughter as a percentage of U.S. slaughter	
	United States		Colorado		1950	1961
	1950	1961	1950	1961		
	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>Percent</u>	<u>Percent</u>
Cattle.....	17,901	25,610	490	1,118	2.7	4.4
Calves.....	9,973	7,684	41	10	.4	.1
Sheep and lambs..	12,852	17,159	668	1,810	5.2	10.5

<sup>1</sup> Source: Livestock and Meat Statistics. Statis. Bul. 230, Agr. Mktg. Serv., U.S. Dept. Agr., July 1958, and supplement for 1961 (June 1962).

directly or indirectly from the livestock-feeding industry. Fed cattle did not account for all cattle sales; however, they probably accounted for more than 80 percent of the value of all cattle sold, or more than 40 percent of all farm products sold. In addition, some cattle fed in the area were not reported as sold because they were fed for or by meat packers and chain stores and were, in reality, not sold within the area.

Most of the hay, barley, sorghum, and corn sales reported for the area were purchased by local cattle feeders. These sales in reality would be a double entry if one were computing the net income of the area. The sugarbeet crop not only produces a substantial portion of the area's agricultural income (11.7 percent in 1959), but it also complements the feeding industry because its byproducts, such as beet tops, beet pulp, and molasses, are used in the feeding of livestock. Thus, it is clear that the feeding of livestock, and cattle in particular, is the major generator of agricultural income within this area (table 1).

The livestock-slaughtering industry in the Denver market area has been closely associated with the cattle-feeding industry of the South Platte Valley, and undoubtedly has been an important factor in its expansion. Out of 42 States or livestock reporting areas in 1960, Colorado ranked tenth in the number of cattle slaughtered, thirty-first in the number of calves slaughtered, and second in the number of sheep and lambs slaughtered.<sup>1</sup> In mid-1961, Colorado's packers and meat processors under the supervision of the Packers and Livestock Division of the U. S. Department of Agriculture numbered 46. Nine of these slaughtered cattle, 5 slaughtered cattle and processed meats, and 32 processed meats only. Thirty-seven out of the 46 were federally inspected and were cleared for the interstate shipment of meats. All of the packing plants and meat processors that were under federal supervision were located in the Denver market area, which extends from Pueblo on the south to Greeley on the north. In 1961, this area slaughtered approximately 98 percent of the cattle and calves slaughtered in the State and almost all of the sheep and lambs.<sup>2</sup>

From 1950 to 1961, the proportion of the total national slaughter of cattle in Colorado increased from 2.7 to 4.4 percent, and of sheep and lambs from 5.2 to 10.5 (table 2). The State's substantial gains during the 1950's were merely an acceleration of a trend that had been going on for over 50 years. This relatively large packing industry in the Denver market area, no doubt, has contributed to the expansion of the area's cattle-feeding industry.

<sup>1</sup> Reporting areas, for the most part, are States. The exceptions are the New England area, which includes six States, and the Delaware-Maryland area, which includes these States plus Washington, D. C.

<sup>2</sup> Source: Colorado Crop and Livestock Reporting Service, U. S. Department of Agriculture.

## CHANGES IN THE CATTLE-FEEDING INDUSTRY

The number of cattle fed within the North and South Platte Valleys almost doubled during the 1950's. The cattle-feeding industry expanded faster in this area than in the United States as a whole (table 3). During the 1940's, the area averaged 3.7 percent of all cattle on feed on January 1, as compared with 4.9 percent during the 1950's. The estimated number fed annually within the area, as indicated in table 3, is slightly more than twice the January 1 number of cattle on feed. The average turnover rate of the January 1 inventory during the 1950's was 2.09 for the area and 1.71 for the Nation. Because of the widespread practice of feeding cattle in the area the year around, the area averaged slightly more than 6 percent of all cattle fed in the Nation during the 1950's.

Within the area studied, two types of cattle feeders are generally recognized--the farmer-feeder and the commercial feeder. Analysis of the Great Western Sugar Company's Annual Livestock Survey data for 1953 and 1959 indicates that when an operator feeds more than 500 head of cattle annually, regardless of the size of his farming operation, the cattle-feeding enterprise predominates. These commercial type feeders are primarily feeders, not farmers. Their cropping programs, if any, are closely integrated into their feeding enterprises. When less than 500 head of cattle are fed annually, the operator's cropping program influences the scale of his feeding program and the cattle-feeding enterprise is integrated with the other farming enterprises.

TABLE 3.--Estimated number of cattle on feed January 1 and fed during the calendar year in the Platte Valley Feeding Area and in the United States, 1950 to 1961

Period	On feed Jan. 1 <sup>1</sup>		Fed. during year		Percentage areas of U. S.	
	In area	In U. S. <sup>2</sup>	In area <sup>3</sup>	In U.S. <sup>4</sup>	Jan. 1	during year
	1,000 head	1,000 head	1,000 head	1,000 head	Percent	Percent
1940-49 average.....	152	4,165	( <sup>5</sup> )	6,301	3.65	( <sup>5</sup> )
1950-59 average.....	273	5,536	571	9,447	4.93	6.04
1950.....	204	4,390	409	7,411	4.65	5.52
1951.....	229	4,534	474	7,198	5.05	6.59
1952.....	297	4,961	543	8,013	5.99	6.78
1953.....	306	5,762	536	8,648	5.31	6.20
1954.....	241	5,370	605	8,893	4.49	6.80
1955.....	272	5,795	569	10,071	4.69	5.65
1956.....	275	5,929	630	10,642	4.64	5.92
1957.....	285	6,122	562	10,623	4.66	5.29
1958.....	278	5,898	696	10,844	4.71	6.42
1959.....	340	6,601	797	12,125	5.15	6.57
1960.....	397	7,173	830	13,200	5.53	6.29
1961.....	404	7,587	( <sup>5</sup> )	( <sup>5</sup> )	5.32	( <sup>5</sup> )

<sup>1</sup> Source: Livestock and Meat Statistics. Statis. Bul. 230, Agr. Mktg. Serv., U.S. Dept. Agr., July 1958 and its supplements.

<sup>2</sup> Number on feed Jan. 1 in the United States is based on estimated number of cattle on feed in the 26 major feeding States.

<sup>3</sup> Source: Great Western Sugar Company, Annual Livestock Survey for 1949-1961.

<sup>4</sup> Source: Demand and Prices for Meat. Tech. Bul. 1253, Econ. Res. Serv., U.S. Dept. Agr., December 1961.

<sup>5</sup> Not available.

The crop plan is of major importance, and the number and type of cattle fed depends upon the feeds produced.

Throughout this publication, operators are designated as "farm-feeders" if they feed less than 500 head of cattle annually and "commercial feeders" if they feed 500 or more.

### Distribution of Feeding Enterprises by Size

From 1953 to 1959 the number of operators feeding cattle within the area declined by 525, or 14 percent (table 4). The number of farmer-feeders declined from 3,755 to 3,131, while the number of commercial-feeders increased from 83 to 182.

TABLE 4.--Number of operators feeding cattle and number fed annually, grouped by size of feeding enterprise, North and South Platte Valleys, 1953 and 1959<sup>1</sup>

Head fed annually	1953			1959		
	Operators	Cattle fed	Cattle fed	Operators	Cattle fed	Cattle fed
	Number	Number	Percent	Number	Number	Percent
<b>Farmer-feeders:</b>						
1- 25.....	661	11,100	2.1	405	6,780	0.8
26- 125.....	2,267	146,070	27.2	1,837	122,615	15.4
126- 225.....	532	89,215	16.6	534	91,780	11.5
226- 325.....	188	51,575	9.6	219	59,890	7.5
326- 425.....	71	26,160	4.9	109	42,310	5.3
426- 499.....	36	17,060	3.2	27	11,755	1.5
Total.....	3,755	341,180	63.6	3,131	335,130	42.0
<b>Commercial feeders:</b>						
500- 999.....	45	31,820	5.9	103	65,430	8.2
1,000-1,999.....	17	20,565	3.8	42	51,675	6.5
2,000-4,999.....	13	35,100	6.6	23	69,300	8.7
5,000-9,999.....	4	21,835	4.1	3	15,000	1.9
10,000 and over....	4	86,000	16.0	11	260,520	32.7
Total.....	83	195,320	36.4	182	461,925	58.0
All feeders....	3,838	536,500	100.0	3,313	797,055	100.0

<sup>1</sup> Source: Tables 9 and 10, Appendix.

The number of cattle fed annually increased by approximately 260,500 head, or 48.6 percent. The farmer-feeders as a group fed fewer cattle in 1959 than in 1953 despite the fact that the average number per farm had increased from 91 to 107 head. The relative importance of the farmer-feeders to the industry declined during this period, as the percentage of cattle they fed dropped from 63.6 to 42.0 percent.

Commercial feeders fed approximately 266,500 more cattle in 1959 than in 1953. The increase of about 75,000 head (28.1 percent) of this number was due to the entry of new feeders in the area. The other increase, 191,500 head (71.9 percent), was on farms that were feeding in 1953. About 100,000 head (37.6 percent) of the expansion came from operators who were classified as commercial feeders in 1953. Feeders who were classified as farmer-feeders in 1953 but as commercial feeders in 1959 accounted for 91,500 head (34.3 percent) of the increase.<sup>3</sup> The shifts from farmer feeders to commercial feeders usually were the result of intrafirm expansion, consolidation of firms, and outside capital brought into existing firms.

<sup>3</sup> Based on analysis of individual feeder listings of Great Western Sugar Company, Annual Livestock Surveys for 1953 and 1959.



Some of the new cattle-feeding enterprises were created to complement established businesses within the area. The desire of feed dealers, packers, and retail food stores to obtain greater economies for their established businesses prompted them to integrate vertically into cattle feeding. Most of the other new cattle-feeding enterprises were established by individuals or firms that already had cattle-feeding enterprises outside the area.

### Comparison of Sub-Areas

The cattle-feeding industry in the area expanded by about 49 percent during the period of 1953-59. It increased 50.8 percent in the South Platte Valley and 35.2 percent in the North Platte Valley. The increase was higher in Adams County (84 percent) and Morgan County (105 percent) as shown in table 5.

Areas that experienced the most rapid growth rate were usually those with the highest percentage of cattle fed by commercial feeders (table 5). Although it cannot be inferred that commercial feeders are the primary cause of cattle-feeding expansion in the area, their impact seems to have been an important factor.

TABLE 5.--Number of cattle fed and proportion in commercial feedlots in 1953 and 1959 by county and sub-areas, North and South Platte Valleys<sup>1</sup>

County and sub-areas	Cattle fed		Increase 1953 to 1959		Fed by commercial feeders	
	1953	1959			1953	1959
	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
South Platte:						
Adams.....	30,060	55,405	25,345	84.3	50.8	70.9
Larimer.....	45,930	46,090	160	.3	9.3	26.0
Logan.....	86,480	121,790	35,310	40.8	41.1	65.8
Morgan.....	52,720	108,190	55,470	105.2	41.6	75.8
Sedgwick.....	9,965	12,130	2,165	21.7	21.6	29.1
Weld.....	233,510	348,240	114,730	49.1	46.1	65.2
Total.....	458,665	691,845	233,180	50.8	40.6	64.2
North Platte <sup>2</sup> ....	77,835	105,210	27,375	35.2	11.0	16.9
Total.....	536,500	797,055	260,555	48.6	36.4	58.0

<sup>1</sup> Source: Table 11, Appendix.

<sup>2</sup> County data not available.

Another factor that has contributed to the variation in the expansion of cattle feeding in the various counties and sub-areas is the availability and cost of shipped-in feed grain. Larimer County, with the least increase in cattle feeding (0.3 percent) is the farthest from the important dryland feed-grain-producing areas of all the counties in the study. Likewise, it is the farthest in terms of transportation, from surplus irrigated corn areas in Kansas and Nebraska. Morgan County, on the other hand, which experienced an increase of 105.2 percent in number of cattle fed, is much more advantageously located. The easy access to relatively cheap feed grains appears to be a major factor in the development of commercial feeding and the expansion of the feeding industry in this county.

## Ownership of Cattle Fed

Data presented in tables 4 and 5 show the number of feedlot operators and the number of cattle fed in a specific year. These data do not necessarily indicate who owns the cattle. Many of the cattle fed by farmers and by some commercial feeders were owned by persons or firms other than the feedlot operator. These cattle were fattened for an agreed fee. Therefore, ownership of cattle fed was more concentrated than that indicated by the number of feedlot operators.

County assessors' records of the ownership of cattle in 1959 reveal, for example, that 5 commercial feeders who fed 51,700 head of cattle in their own feedlots were the owners of 28,000 head of cattle in 35 other feedlots (20,000 head in 11 feedlots classified as commercial and 8,000 head in 24 feedlots classified as farmer-feeder). In the 11 commercial feedlots, no cattle were recorded for the owners or operators of the lots. Therefore, if ownership of cattle were the criteria instead of the place at which the cattle were fed, 171 rather than the 182 operators of commercial feedlots would be indicated in table 4. The assessors' records also reveal that 8 other commercial feeders owned 32,000 head of cattle that were fed in approximately 100 farmer-feeders' lots in 1959. This would mean that the 171 commercial feeders, on the basis of ownership of cattle as indicated by assessors' records, either fed or had fed for them about 63 percent of all the cattle fed within the area, rather than the 58 percent based on the data of feedlot operators. This estimate is conservative because the assessors' records do not always indicate actual ownership; also assessors' records indicate only the number being fed on a certain date, and not the total number fed during the year.

As data on ownership of cattle were not available for 1953, no comparison could be made for the area between the years of 1953 and 1959. But it should be kept in mind that ownership of cattle fed is likely to be more concentrated than the number of feedlot operators indicates.

## Changes in Marketing Fed Cattle

The manner in which fed cattle in the area were marketed shifted significantly during the 1950's, as information available on the Denver market indicated. In the early 1950's, most fed cattle were sold at the terminal markets, at present almost two-thirds of the cattle are sold direct, that is to say, packer representatives buy more than half of their cattle at the feedlot direct from the feeders.

Data in table 6 illustrate the decline in importance of the Denver Terminal Market as a market for slaughter cattle. Comparison of the number of cattle sold for slaughter on the Denver market with the number of cattle slaughtered in the State for the years 1953, 1957, and 1961, shows the significant decline in the importance of the Denver market. In 1953, 77.7 percent of all cattle slaughtered in the State were sold at the terminal market; by 1961 the percentage had dropped to 46 percent. These data include fed cattle, canner and cutter cows, bulls, and other types of slaughter cattle. According to a study recently released by the Denver Union Stock Yard Company, 66 percent of the fed fat cattle slaughtered in the Denver market area in 1961 moved directly from the feedlots to the packing plants.<sup>4</sup> This means that not more than 34 percent of the fed cattle were sold on the terminal market. The terminal during some months sells less than 30 percent of the fed cattle slaughtered in the State.

Approximately 98 percent of the cattle and calves slaughtered in Colorado are slaughtered in the Denver market area, according to the Colorado Crop and Livestock Reporting Service.

Large commercial feedlot operators have tended to increase the volume of direct marketing. Because these operators market frequently and in substantial quantities, the

<sup>4</sup> "Low Man on the Totem Pole." Denver Union Stock Yard Company, March 26, 1962.



TABLE 6.--Number of cattle sold for slaughter at Denver Terminal Market and total number of cattle slaughtered in Colorado, 1953, 1957, and 1961

Item	Year		
	1953	1957	1961
	<u>Head</u>	<u>Head</u>	<u>Head</u>
Colorado slaughter <sup>1</sup> .....	743,000	857,000	1,118,500
Denver terminal sales <sup>2</sup> .....	577,300	473,200	514,700
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Percentage of Colorado slaughter..	77.7	55.2	46.0

<sup>1</sup> Source: Colorado Crop and Livestock Reporting Service.

<sup>2</sup> Source: Denver Union Stockyard.

packers are willing to purchase their cattle without prior inspection, based on an average or standard established by each commercial feeder. When significant deviations from the average or standard occur, appropriate price adjustments are made. Thus the commercial feedlot operators and packers have a common basis on which they can bargain effectively on direct sales. On the other hand, the farmer-feeders who do not have this common basis for direct selling, tend to sell their cattle on the terminal market.

## MAJOR FACTORS INFLUENCING THE CATTLE-FEEDING INDUSTRY

Several factors have influenced the growth of the feeding industry in the Platte Valleys: (1) the sugarbeet industry, which produces considerable quantities of feed; (2) an increase in irrigated cropland acreage; (3) introduction of hybrid corn adapted to the area for grain production; and (4) increased production of feed grains in adjacent dryland areas.

### Sugarbeet Industry

More than 15 percent of the irrigated cropland acreage harvested in the North and South Platte Valleys produced sugarbeets in 1959. Each harvested acre of sugarbeets produces livestock feed in the form of beet byproducts, such as beet tops, pulp, and molasses, equivalent to about 0.9 acres of corn harvested for grain.

To sustain the production of sugarbeets or other irrigated crops over a long period of time, the crop rotation should include alfalfa and small grain. These crops in the rotation help to keep the soil in good condition and free of diseases and insect pests. While the acreages of these "required" crops are not as large as they were 20 years ago, they are still important and contribute to the total feed produced within the area.

The interest of sugarbeet companies in increased yields of sugarbeets has benefited land productivity. Through publications and field men, the companies transmit to their growers information on improved farming methods and the results of research. The beet companies have been instrumental in extending the use of balanced fertilizer programs, cropping systems which include alfalfa, increases in livestock feeding, and better farming practices, thus contributing to the increase in the production of livestock feed and fed cattle in the areas in which they operate.

## Changes in Production of Feed

The feed utilized by the cattle-feeding industry is produced on both dry and irrigated croplands in and adjacent to the area studied. Over the last 10 years, irrigation development, a shift toward more intensive feed grain production and less roughage, and improved varieties of crops and cropping practices (including the use of hybrids and commercial fertilizer) have helped to increase feed production in the area.

The Colorado-Big Thompson Irrigation Project substantially increased the available supply of water in the South Platte Valley by the year 1956. In addition, during the last 10 years there has been a marked increase in the number of deep-well irrigation pumps throughout the area. Increases in the acreage of cropland irrigated within the study area during the period 1949-60 are shown in the following tabulation:

<u>Year</u>	<u>North Platte</u>	<u>South Platte</u>
1949	211,550	566,100
1950	216,350	576,250
1951	214,750	571,350
1952	215,450	554,450
1953	215,150	570,000
1954	213,350	582,500
1955	209,800	569,950
1956	208,850	566,000
1957	211,350	582,650
1958	211,700	606,250
1959	216,500	617,800
1960	232,350	633,550

<sup>1</sup> Source: Great Western Sugar Company, Annual Livestock Surveys for 1950-61.

Not only has the irrigated acreage of cropland increased, but the water supply for a considerable portion of the acreage has been improved. These two factors are responsible for a rather substantial increase in crop production within the area.

The acreage of irrigated cropland in the area increased by 19 percent during the period 1954-59 (table 7). The increase was greater in the South Platte Valley (21 percent) than in the North Platte Valley (16 percent).

The acreage of feed crops (including sugarbeets) in the area increased by 18 percent--about the same as the acreage of irrigated cropland. All of the increase in feed crop acreage, which was 30 percent, occurred in the South Platte Valley. In the North Platte Valley the feed crop area decreased 1 percent. These data help to explain the relatively greater increase in the number of cattle fed in the South Platte Valley, 51 percent, as compared with 35 percent in the North Platte Valley (Appendix table 11).

The irrigated cropland devoted to oats, barley, and alfalfa actually declined during 1954-59. Acreage devoted to corn and sugarbeets increased rather substantially during the same period. Corn growing increased by approximately 156,000 acres; corn for grain represented approximately 75,000 acres of this total. Sugarbeets increased by approximately 46,937 acres during the same period. These changes in production resulted in the area producing a higher proportion of concentrates and a relatively smaller proportion of forage in 1959 than in 1954.

TABLE 7.--Acreage of irrigated cropland, feed crops, and sugarbeets, North and South Platte Valleys, 1954 and 1959<sup>1</sup>

County and sub-areas	Acreage irrigated, 1954				Acreage irrigated, 1959				Percent feed crops and sugarbeets are of total irrigated cropland	
	Cropland	Feed crops <sup>2</sup>	Sugarbeets	Total feed and beets	Cropland	Feed crops <sup>2</sup>	Sugarbeets	Total feed and beets	1954	1959
									Acres	Acres
South Platte:										
Adams.....	29,440	16,148	2,598	18,746	42,270	26,653	2,959	29,612	63.7	70.1
Larimer.....	75,353	53,272	5,846	59,118	99,083	52,508	8,748	61,256	78.5	61.8
Logan.....	66,620	46,123	9,533	55,656	73,664	52,444	9,865	62,309	83.5	84.6
Morgan.....	106,949	65,265	18,774	84,039	116,590	78,010	19,716	97,726	78.6	83.8
Sedgwick.....	17,660	8,188	3,740	11,928	20,769	14,823	4,087	18,910	67.5	91.0
Weid.....	297,480	150,513	47,650	198,163	364,733	216,820	68,427	285,247	66.6	78.2
Total.....	593,502	339,509	88,141	427,650	717,109	441,258	113,802	555,060	72.1	77.4
North Platte.....	374,795	235,574	40,533	276,107	435,653	212,763	61,809	274,572	73.7	63.0
Total.....	968,297	575,083	128,674	703,757	1,152,762	654,021	175,611	829,632	72.7	72.0

<sup>1</sup> Source: Census of Agriculture, 1954 and 1959.

<sup>2</sup> Includes only acres of irrigated cropland harvested for oats, barley, alfalfa, sorghums, and corn.

Feed production (based upon total digestible nutrients of harvested crops) increased more than 53 percent in the period 1954-59. The increased production per acre and the change in composition of the feed grain acreage--more corn and less oats and barley--accounts for the increase in feed produced within the area. Production per acre increased because of improved crop varieties, better farming methods, and increased application of fertilizer. A larger percentage of the cropland received commercial fertilizer in 1959 than in 1954. In addition, the increase in livestock feeding made available additional quantities of manure that has improved productivity.

The changes in the number of cattle fed are related to the changes in irrigated acreage used for feed crops but the relationship is not statistically significant in each instance. Some counties and sub-areas obtain feed from sources outside their area, and some of the feed produced in one county is fed in another county. Also, adjacent dryland farms substantially increased production of feed grains in recent years because of land use adjustments under Government farm programs. Much of this feed was fed in the study area.

### PRICE COMPARISONS AMONG VARIOUS MARKETS

Prices paid for various classes of slaughter-grade cattle were not materially different among the central markets (Chicago, Denver, Kansas City, and Omaha) during the period 1954-61 (table 8). The reported prices paid for both slaughter and feeder steers were slightly lower at Denver than in the other markets. Heifer prices for both calves and slaughter animals appeared to be relatively higher on the Denver market than the other markets. Among the trade, Denver is known as a "good heifer market," and this appears to be borne out by the data in table 8.

TABLE 8.--Average prices per 100 pounds for cattle of various grades at four terminal markets, 1954-1961<sup>1</sup>

Grade and type	Denver	Omaha	Kansas City	Chicago
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Choice slaughter steers, 900-1,100 lbs.	24.52	24.65	24.55	25.41
Choice feeder steers, 500-800 lbs.....	23.89	24.74	24.55	25.04
Good feeder steers, 500-800 lbs.....	21.81	22.05	22.15	22.51
Good-choice steer calves, 300-500 lbs..	26.16	26.16	25.51	( <sup>2</sup> )
Choice slaughter heifers, 700-900 lbs..	23.72	23.58	23.71	24.12
Good-choice heifer calves, 300-500 lbs..	23.43	23.01	22.43	( <sup>2</sup> )

<sup>1</sup> Source: Livestock Division, Agricultural Marketing Service, U.S. Department of Agriculture, unpublished data.

<sup>2</sup> Data unavailable since December 1958, due to lack of volume sales at Chicago.

Of the 321,000 head of cattle on feed in Colorado on October 1, 1961, 169,000 (52.6 percent) were heifers and heifer calves.<sup>5</sup> On that date, more than 9 percent of all the heifers and heifer calves but less than 4 percent of the steers and steer calves on feed in the 26 major cattle-feeding States were in Colorado.

<sup>5</sup> Crop Reporting Board, Cattle and Calves on Feed, Cattle Sold for Slaughter--Selected Markets, October 1, 1961. Statis. Rptg. Serv., U. S. Dept. Agr.



## PROSPECTS BY 1970

The reduction in the number of farmer-feeders and the increasing importance of the commercial cattle feeders in the 1950's may have been influenced by several factors. Among these may have been the actual reduction in number of farms, relatively greater opportunities outside of agriculture and the changing market forces in the cattle-feeding industry. As the adjustment of the industry to these forces is still in process it appears likely that, during the 1960's, the structure of the cattle-feeding industry in the area will continue its present trends.

This would mean that the present commercial feedlot operations likely will continue to increase in size and that new commercial-sized firms likely will enter the industry. Four new commercial feedlots have been built within the area since 1959. They have a total feedlot capacity of approximately 25,000 head--an annual capacity of 60,000.

If these trends continue, the number of farmer-feeders within this area probably will be reduced by a third, from 3,131 in 1959 to 2,000 in 1970. Though the average size of the feeding enterprise may be larger, these feeders as a group, likely will be feeding fewer cattle than they did in 1959. Thus farmer-feeders would be feeding approximately 20 percent of the cattle in the area. Likely at least half of the cattle fed by the farmer-feeder group will be either owned or finished by commercial feeders.

If the rate of expansion in cattle feeding in the 1960's approximates that of the 1950's, the area should be fattening more than 1,500,000 head of cattle by 1970.

Farmer-feeders who do not have sufficient volume to sell their fed cattle under relatively favorable conditions may find it advantageous to join with other farmers in a cooperative feeding enterprise. A cooperative or joint-venture feeding enterprise might do more than improve their position in the market place. Because the merged feeding operations will have a larger volume, certain economies of scale in investment and feed purchases may be obtained for the joint venture without materially reducing farmer-feeders' traditional advantages. It must be recognized that the farmer, in adopting this method of remaining competitive, in essence may create a commercial-sized enterprise, but in a form different from that we usually visualize.

Small farmer-feeders who do not join a cooperative feeding group might find it more advantageous to feed cattle for others on a contract basis. These cattle, for the most part, would be owned by the commercial feeders and finished in a commercial feedlot. The farmer-feeders' function will be primarily to winter these cattle, or "warm them up." Based on recent trends, it is expected that the cattle-feeding industry in this area in the 1960's will integrate faster than in the 1950's.

With the increase in the number of commercial feeders, a higher proportion of the fed cattle will be sold direct; actually fewer fed cattle will be sold at the Denver Terminal Market. As the terminal market declines and the number of cattle fed by the farmer-feeder is reduced, the major outlet for the farmers' fat cattle will be the auction markets located at country points.

In summary, it appears that the cattle-feeding industry in the study area likely will continue to grow at a rather rapid rate, will become more concentrated and more integrated.

## APPENDIX

TABLE 9.--Distribution of operators by size of cattle-feeding enterprise and acreage of irrigated cropland, North and South Platte Valleys, 1953<sup>1</sup>

Number cattle fed	Acres irrigated cropland in farm										Cattle fed	
	0	1-120	121-200	201-280	281-360	361 +	Total		Number	Percent		
	Operators	Operators	Operators	Operators	Operators	Operators	Operators	Percent				
None.....	0	1,903	651	92	33	14	2,693	--	--	--		
1-25.....	5	486	145	18	7	0	661	17.2	11,100	2.1		
26-125.....	11	1,164	901	130	47	14	2,267	59.1	146,070	27.2		
126-225.....	5	172	251	60	32	12	532	13.9	89,215	16.6		
226-325.....	1	40	101	22	12	12	188	4.9	51,575	9.6		
326-425.....	0	13	33	19	4	2	71	1.9	26,160	4.9		
426-499.....	2	9	16	7	1	1	36	0.9	17,060	3.2		
500-999.....	3	10	12	9	5	6	45	1.2	31,820	5.9		
1,000-1,999.....	4	2	5	4	0	2	17	.4	20,565	3.8		
2,000-4,999.....	6	2	3	1	0	1	13	.3	35,100	6.6		
5,000-9,999.....	3	1	0	0	0	0	4	.1	21,835	4.1		
10,000 and over..	3	1	0	0	0	0	4	.1	86,000	16.0		
Total feeders.	43	1,900	1,467	270	108	50	3,838	100.0	536,500	100.0		
All operators.....	43	3,803	2,118	362	141	64	6,531	--	--	--		
Distribution:	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Cattle feeders.	1.1	49.5	38.2	7.1	2.8	1.3	100.0	--	--	--		
All operators..	.7	58.2	32.4	5.5	2.2	1.0	100.0	--	--	--		
Cattle fed.....	16.7	34.6	33.0	9.2	3.3	3.2	100.0	--	--	--		
Cattle fed.....	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	536.5	--		
	89.4	185.5	177.3	49.4	17.5	17.4	536.5	--	--	--		

<sup>1</sup> Source: Great Western Sugar Company, 1960 Annual Livestock Survey.



TABLE 10.--Distribution of operators by size of cattle-feeding enterprise and acreage of irrigated cropland, North and South Platte Valleys, 1959<sup>1</sup>

Number cattle fed	Acres irrigated cropland in farm										Cattle fed	
	0	1-120	121-200	201-280	281-360	361 +	Total		Number	Percent		
	Operators	Operators	Operators	Operators	Operators	Operators	Operators	Percent				
None.....	0	1,242	820	195	69	37	2,363	100.0	0	0		
1-25.....	1	246	127	19	5	7	405	12.2	6,780	0.8		
26-125.....	5	704	832	200	64	32	1,837	55.5	122,615	15.4		
126-225.....	2	120	242	91	49	30	534	16.1	91,780	11.5		
226-325.....	5	26	121	32	17	18	219	6.6	59,890	7.5		
326-425.....	1	13	44	26	14	11	109	3.3	42,310	5.3		
426-499.....	1	3	9	9	3	2	27	.8	11,755	1.5		
500-999.....	6	16	44	15	13	9	103	3.1	65,430	8.2		
1,000-1,999.....	8	5	5	11	6	7	42	1.3	51,675	6.5		
2,000-4,999.....	5	3	4	4	3	4	23	.7	69,300	8.7		
5,000-9,999.....	2	0	0	0	1	0	3	.1	15,000	1.9		
10,000 and over.	9	1	0	1	0	0	11	.3	260,520	32.7		
Total feeders.	45	1,137	1,428	408	175	120	3,313	100.0	797,055	100.0		
All operators.....	45	2,379	2,248	603	244	157	5,676	--	--	--		
Distribution:	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Cattle feeders	1.4	34.3	43.1	12.3	5.3	3.6	100.0	--	--	--		
All operators	.8	41.9	39.6	10.6	4.3	2.8	100.0	--	--	--		
Cattle fed.....	32.5	15.1	24.6	14.8	7.1	5.9	100.0	--	--	--		
Cattle fed.....	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	--	--	--		
Cattle fed.....	259.2	120.4	195.8	118.3	56.4	46.9	797.0	--	--	--		

<sup>1</sup> Source: Great Western Sugar Company, 1954 Annual Livestock Survey.

TABLE 11.--Number of operators, farmer-feeders, and commercial feeders, and number of cattle fed by type of feeder, North and South Platte Valleys, 1953 and 1959<sup>1</sup>

Item	South Platte Counties						Weld	South Platte	North Platte	Total
	Adams	Larimer	Logan	Morgan	Sedgwick	Weld				
1953										
Number of operators:										
Farmer-feeders.....	142	378	560	321	128	960	2,489	1,266	3,755	
Commercial feeders.....	9	6	6	10	3	42	76	7	83	
Nonfeeders.....	376	275	306	115	52	846	1,970	723	2,693	
Total.....	527	659	872	446	183	1,848	4,535	1,996	6,531	
Cattle fed:										
Farmer-feeders.....	14,775	41,660	50,930	30,770	7,810	125,950	272,395	69,285	341,680	
Commercial feeders.....	15,285	4,270	35,550	21,950	2,155	107,560	186,270	8,550	194,820	
Total.....	30,060	45,930	86,480	52,720	9,965	233,510	458,665	77,835	536,500	
1959										
Number of operators:										
Farmer-feeders.....	136	260	417	263	113	808	1,997	1,134	3,131	
Commercial feeders.....	11	12	25	23	4	97	172	10	182	
Nonfeeders.....	345	287	260	118	39	785	1,834	529	2,363	
Total.....	492	559	702	404	156	1,690	4,003	1,673	5,676	
Cattle fed:										
Farmer-feeders.....	16,130	34,090	41,635	26,235	8,600	121,030	247,720	87,415	335,135	
Commercial feeders.....	39,275	12,000	80,155	81,955	223,530	227,210	444,125	17,795	461,920	
Total.....	55,405	46,090	121,790	108,190	232,130	348,240	691,845	105,210	797,055	

<sup>1</sup> Source: Great Western Sugar Company, 1954 and 1960 Annual Livestock Surveys.

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