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## South Dakota's Beef Industry Marketing Systems and Alternatives

R. O. Gaarder

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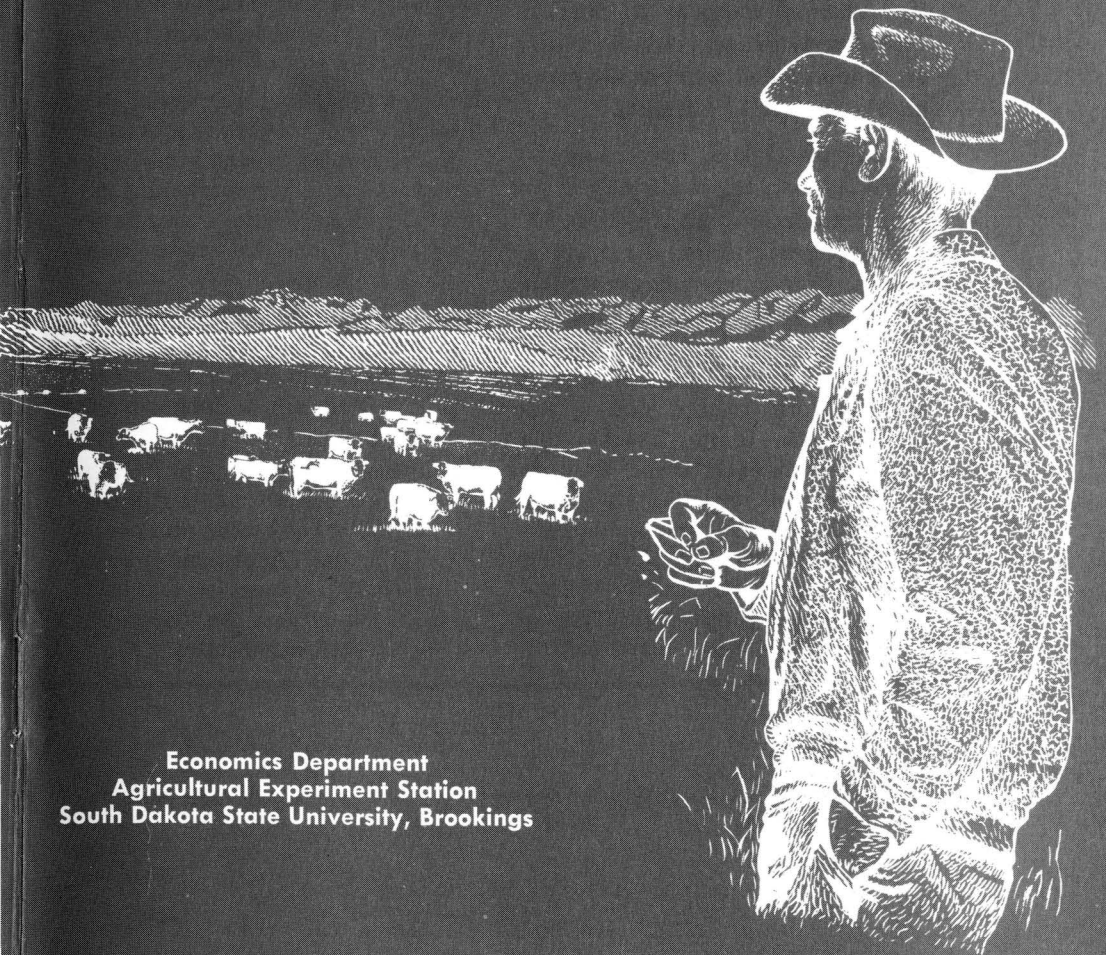
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Bulletin 604  
October 1972

Marketing Systems  
and Alternatives

# *South Dakota's Beef Industry*



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## Conclusions

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Any livestock marketing method or channel can be organized to provide a high level of efficiency and fairness. It can also be organized and can operate in an inefficient manner or in a manner that results in discrimination against one party or another. It is important, therefore, to realize that some of the disadvantages that are usually listed for a given marketing method or channel are the result of the way that channel happens to operate. Most disadvantages could be lessened or eliminated without abandoning the method in question.

In South Dakota most slaughter cattle are marketed directly from feedlot to packing plant with neither auction nor terminal market to provide producer representation, public market news reports, or uniform practices and terminology. While terminal and auction markets are costly to operate and do not provide some of the services that livestock producers want, they do contribute in important ways to market information and to competition. Past trends suggest that their survival, as far as slaughter cattle are concerned, is threatened. Yet, so far as conventional marketing is

concerned, little has been done to either develop programs to insure the survival of these markets, or to fill any voids they may leave, should they pass from the scene.

A number of alternatives are open to the South Dakota beef industry, and some of them are discussed in this report.<sup>1</sup> For example, farmers who sell fed cattle could consider:

1. letting the terminal market for slaughter cattle fade away, assuming that competition between packers will be sufficient to provide a fair and efficient system.
2. encouraging and supporting terminals and selected auctions in their attempts to meet some of the new needs of the marketing system, perhaps finding ways to encourage them to make some needed changes.
3. working together through their own organizations to develop suitable alternatives to these markets so they are no longer needed, such as:
  - a. legislation requiring or encouraging much more standardization of direct marketing practices—and a new direct market price reporting system—so that bids and offers can be compared easily and accurately,

- 
- b. enabling legislation for state marketing orders requiring producers to use some type of central marketing system, as has been done for slaughter hogs in Ontario, Canada,
  - c. contract marketing of slaughter livestock based on collective bargaining.

The above are just some of the possible ways that slaughter cattle marketing could develop. The problems and opportunities in feeder cattle marketing are also complex and varied. A number of these are reviewed in this report.

Until farmers are more successful in working together on marketing arrangements, the first alternative (above) may be the only one for slaughter cattle that will be open to the South Dakota beef industry. National bargaining legislation, another possibility, is not the subject of this report although a nation-wide computerized trading system is described.

None of the above alternatives, with the possible exception of the most comprehensive form of national bargaining legislation, would do much to solve the price problem because none would coordinate production with demand to meet a

price goal. There is little coordination between producers in planning breeding decisions, and all voluntary and some compulsory output control programs in agriculture seem ineffective.

Next to its basic structure, perhaps the important characteristic of a market is the quality of communication in it. In this report, considerable attention is given to the quality of information transfer in the South Dakota (and United States) livestock industry. Ways to achieve better market news systems and better use of grading are discussed. It is pointed out that calf producers have little incentive to breed for meat-type beef, but that South Dakota beef production could easily be worth an extra \$40 to \$50 million if improved by one yield grade.

As a state with both ranching and feeding areas, South Dakota could be a leader in beef quality improvement. To make this happen without the help of outside investors, South Dakota calf producers, cattle feeders, market agencies and meat-packers need to establish better communications systems so that information *and* rewards get from plant to feedlot to ranch.

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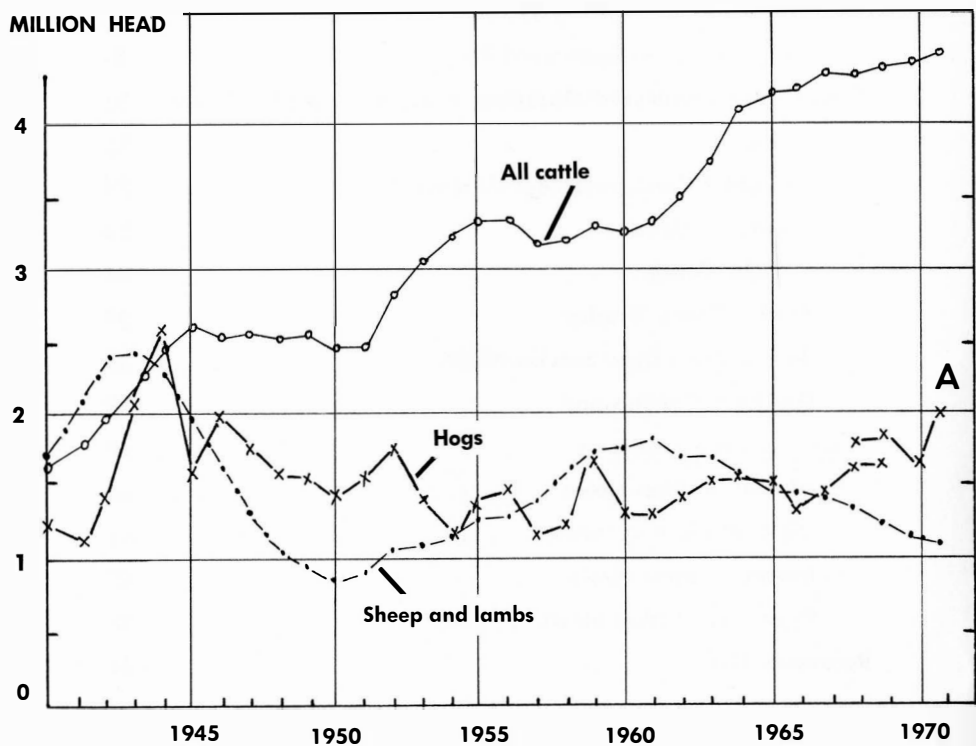
<sup>1</sup>For those desiring more information, a selected reference list is attached to this report.

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Figure 1. Livestock on farms January 1—South Dakota.



A=Reporting time moved back to Dec. 1, preceding year.

# *South Dakota's Beef Industry*

## Marketing Systems and Alternatives

By  
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### INTRODUCTION

#### Importance of the Beef Industry in South Dakota

Beef is South Dakota's most important agricultural product. Cattle and calf sales account for about half of all cash receipts from South Dakota farm marketings. By 1971 (January 1), the state ranked 6th in the number of beef cows and was the 11th ranking state in the number of cattle on feed. In 1970, South Dakota was the 13th state in number of cattle slaughtered.

South Dakota cattle numbers have increased substantially. The state's farmers and ranchers had nearly three times as many cattle in 1970 as they had in 1940, while hog and sheep numbers showed no overall trend for the 30 years (Figure 1).

#### Purpose of This Report

The purpose of this report is to describe and evaluate:

1. the development and structure of the present marketing system for South Dakota beef cattle and calves,
2. some of the conditions or forces presently at work that may lead to additional changes in the way South Dakota beef cattle are marketed, and

3. alternative marketing services and programs that could be considered by the South Dakota beef industry or possibly used to better advantage.

#### Summary of Changes in South Dakota Cattle Marketing

Since the late 1950's, auctions have been the fastest-growing livestock marketing method in South Dakota, due primarily to feeder cattle. In 1957, public stockyards handled more South Dakota cattle and

Table 1. Percentage of ALL South Dakota cattle and calves sold by indicated marketing outlet, 1957, 1964 and 1969.\*

Marketing outlet	Year		
	1957†	1964†	1970‡
	Percent		
Direct to packers .....	6	11	12
Public stockyards .....	38	29	12
Auction markets .....	34	48	64
Farm-to-farm and other‡ ..	22	12	12
<b>TOTAL .....</b>	<b>100</b>	<b>100</b>	<b>100</b>

\*See Table 2 for *feeder* cattle, and Table 7 for *slaughter* cattle.

†Source: Reference 31.

‡The 1964-to-1970 change in direct (farm-to-farm) marketing of feeder cattle is not known. In order that estimates could be made for other marketing outlets, direct marketing of feeder cattle was assumed to be of the same relative importance in 1970 as it was in 1964. See Table 3.

calves than did auction markets. By 1970, auctions were handling nearly two-thirds of the state's total cattle and calf marketings (slaughter and feeder) and public stockyards about 12% (Table 1). Table 1 refers to *all* cattle. As will be shown, public stockyards (terminal markets) still handle more *slaughter* cattle than auctions do.

As shown in Table 2, the 1957-to-1964 shift to auctions for feeder transactions was mainly at the expense of direct farm-to-farm transactions. The public stockyards share of the South Dakota feeder business

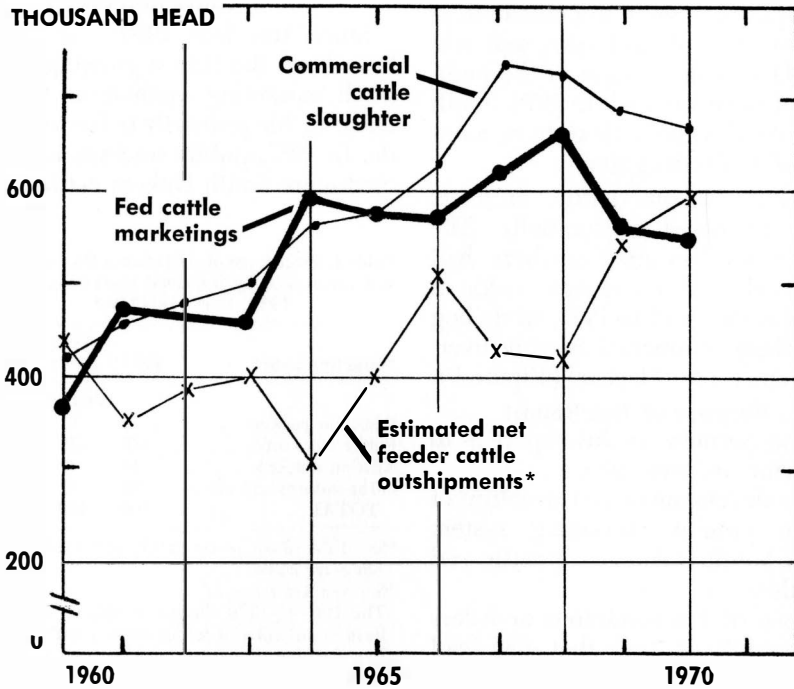
Table 2. Percentage of South Dakota FEEDER cattle and calves sold by indicated marketing outlet, indicated years.\*

Marketing outlet	Year†	
	1957	1964
	(percent)	(percent)
Public stockyards .....	17	14
Auction markets .....	48	68
Farm-to-farm and other .....	35	18
TOTAL .....	100	100

Computed from: Reference 31.  
 \*See Table 1 for *all* cattle, and Table 7 for *slaughter* cattle.  
 †In 1947, the percentages were 35, 41, and 24 for public yards, auctions, and other.

dropped only slightly between 1957 and 1964.

Figure 2. Fed cattle marketings, compared with net feeder cattle outshipments and commercial cattle slaughter—South Dakota.



\*For estimating procedure, see South Dakota Ag. Exp. Sta. Bul. 585.

Cattle slaughter and feeding in South Dakota grew during the 1950's and 1960's, but declined slightly since 1968 (Figure 2). It is estimated that South Dakota's net feeder cattle outshipments nearly doubled between 1964 and 1970. The decline in cattle feeding was

partly responsible, but coupled with that was the continued increase in beef calf production in the state. South Dakota, in the late 1960's, became more important as a feeder cattle exporter, and less important in cattle feeding and in beef slaughter.

## Present Structure of South Dakota Livestock Marketing System

### Number of Marketing Firms

More than 200 livestock dealers and marketing agency firms were registered with the U. S. Department of Agriculture as operating in South Dakota in September 1971 (Reference 42). There were:

54 auction markets, 27 firms registered at the Sioux Falls terminal stockyards, and 137 dealers or market agencies at other locations, for a total of 218 livestock marketing agency firms.<sup>2</sup>

Most *slaughter* livestock bypassed the above markets and went directly to packers. There were:

8 Federally inspected slaughter plants in South Dakota (as of June 1971, Reference 21), and

49 plants under state meat inspection (as of February 1971, Reference 22).

There are well over 200 marketing agency and meatpacker firms in the state of South Dakota that want farmers' business when they have livestock to sell. Some of these firms are large enough to provide a good quality and variety of services and to experiment with new services. However, others are too small to provide some services well, and could not afford to test or develop some new programs.

### Cattle Volumes—South Dakota Marketing Channels

Transactions involving about 3½ million cattle are estimated to have occurred in South Dakota in 1970 (Table 3). The figure includes ani-

Table 3. Number and percentages of cattle involved in transactions handled by South Dakota marketing agencies, direct purchases of cattle by South Dakota meatpackers, and estimated farm-to-farm and other sales of South Dakota cattle in 1970.

Market channel	S. D. cattle marketings	
	1,000 head	Percent
South Dakota auctions* .....	2,161	64
Sioux Falls terminal† .....	392	12
Direct purchases of South Dakota meatpackers‡ .....	418	12
Farm-to-farm and other transactions§ .....	405	12
<b>Total</b> .....	<b>3,376</b>	<b>100</b>

\*Fiscal year 1970-1971 (South Dakota Livestock Sanitary Board, Reference 33).

†Salable receipts at Sioux Falls, 1970 (Reference 30).

‡Direct purchases by South Dakota slaughter plants 1970 (Reference 41).

§Data on within-state direct (farm-to-farm) marketings of feeder cattle and other marketings were estimated from the percentages for 1964 in Table 1.

<sup>2</sup>In addition to the above count, 24 of the auctions were also registered as dealers and nine bought on a commission basis. Of the nine, seven were also among the 24 dealer-auctions. Thirteen of the Sioux Falls firms were registered as both commission agencies and as dealers, and eight were registered as dealers only. Of the 19 commission firms at Sioux Falls, nine bought *and* sold, and 10 were buying agencies.

Table 4. United States and South Dakota packer purchases of cattle and calves; percentages of total by class of livestock— and market source, 1970.

Source	South Dakota*			United States			
	Steers and heifers	Cows and bulls	All Cattle	Steers and heifers	Cows and bulls	All Cattle	Calves
	(percent)			(percent)			
Direct, country dealers, etc. ....	71.0† (+9.4)*	44.8 (+11.9)	66.7 (+12.2)	72.8 (+3.3)	33.4 (+9)	65.3 (+3.5)	34.0 (-1.2)
Terminal markets .....	24.1 (-5.8)	11.4 (-6.1)	22.0 (-5.1)	17.7 (-3.0)	21.3 (-1.7)	18.4 (-2.8)	11.4 (-1.6)
Auction markets .....	4.9 (-3.2)	43.8 (-5.7)	11.3 (-7.0)	9.5 (-0.2)	45.2 (+7)	16.4 (-6)	54.6 (2.7)
TOTAL .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number head (1,000) .....	523 (+7)	104 (-65)	626 (-59)	26038 (+470)	6160 (-592)	32198 (-122)	3920 (-760)
Percent all cattle .....	83 (+8)	17 (-8)	100	81 (+2)	19 (-2)	100	-----
Percent all cattle and calves .....	83	17	-----	72 (+3)	17 (-1)	-----	11 (-2)

Source: Reference 41.

\*Very few calves are slaughtered in South Dakota.

†Numbers in parentheses refer to the percentage point (or head) change from 1969—of the figure immediately above.

mals that were marketed twice or more during the year. The figure also includes cattle from other states that were handled by South Dakota market agencies and meatpackers, but does not include South Dakota livestock for which the first market or buyer was out of state.

Because of the importance of auctions in handling *feeder* cattle, nearly two-thirds of all the cattle traded in South Dakota in 1970 were handled at auctions (Table 3). However, the state's meatpackers purchased nearly twice as many *slaughter* cattle at terminals than they did at auctions (Table 4). Yet, direct marketing was by far the most important meatpacker source of slaughter cattle, especially steers and heifers (Table 4).

Table 5. Percentage of distribution of South Dakota cattle and calf marketings, by class, 1957 and 1964.

Class	Year	
	1957	1964
	(percent)	(percent)
Slaughter .....	43	41
Feeder .....	52	56
Breeder .....	5	3
TOTAL .....	100	100

Computed from Reference 31.

Since the late 1950's, more South Dakota cattle and calf marketings have been as feeder rather than as slaughter animals. Data in Table 5 show that between 1957 and 1964 the proportion going as feeders may have increased slightly. Data in Figure 2 show large increase in net feeder cattle exports from South Dakota after 1964.

## DIRECT AND COORDINATED MARKETING OF SLAUGHTER CATTLE

Direct marketing is a term that has meant direct movement of livestock from seller to buyer, bypassing such market agencies as auctions and terminal markets. The term is usually applied to slaughter animals sold to meatpackers, country dealers, etc., and has meant that marketing agencies are not involved in the transaction. Feeder cattle can also be sold directly by the calf producer to the feedlot operator. In some areas, in recent years, a livestock producer may be represented by a "country commission man" employed by a market agency, while the livestock move directly to the buyer. Therefore, the meaning of the term direct marketing is less clear than it once was. A distinction could be made between:

1. direct movement with representation, and
2. direct movement without representation.

However, unless otherwise indicated, the term "direct marketing" will be used in the second sense.

Direct marketing eliminates some marketing charges, and may result in shorter hauls of animals. Some producers may feel that their livestock are better than average, or may be trying to improve their livestock. They may have difficulty getting weight and grade data and price premiums on individual carcasses unless the livestock go direct. In some situations, greater convenience and less price risk to the seller are also advantages of direct marketing. The marketing jobs must still be done, but when direct mar-

keting results in savings the result can be higher prices to farmers and cheaper livestock to meatpackers. However, the theoretical possibility of higher returns does not guarantee them. Farmers who market direct need to have more marketing knowledge and skill than those who hire commission men to help them, or those who sell at auction.

### Growth During 1960's

At the beginning of the 1960's, U. S. packers purchased more *slaughter* cattle from terminal markets than from any other source, and 38% were purchased direct. By 1970, direct buying accounted for 65% of U. S. packer cattle purchases (Table 6). For South Dakota, the increase in direct buying of slaughter cattle appears to have been even more pronounced. A larger increase (from 29% to 67%) appears to have occurred during a shorter time (Table 7).<sup>3</sup> The 1969-to-1970 shift was particularly large in South Dakota (see parenthetical figures — Table 4).

**Table 6. Meatpacker sources of slaughter cattle; United States, 1960 and 1970.**

Source	Year	
	1960	1970
Direct, country dealers, etc.....	38	65
Terminal markets .....	46	19
Auction markets .....	16	16
<b>TOTAL .....</b>	<b>100</b>	<b>100</b>

Source: Reference 41.

<sup>3</sup>Since the 1964 and the 1970 data in Table 7 are from different sources, conclusions drawn from comparing the data for the 2 years should be tentative. It does appear, however, that South Dakota slaughter cattle marketing channels have become more like those of other states in the move toward direct marketing.

### Custom Feeding

By having his cattle custom fed, a rancher can reduce the number of market transactions between himself and consumers — thus he can market more directly than if he sold his calves as feeders. Eventually, small seasonal family-farm type feedlots may not be able to compete with the economies of size available to larger lots. Even so, smaller farmers and ranchers can get or stay in the feeding business without expanding individual operations. By custom feeding, they can combine their cattle to get the services of an economical-sized feedlot with proper equipment.

Better access to carcass information through dealing direct with meatpackers is another reason for calf producers having their cattle custom fed instead of selling them to a feedlot operator. Some potentials for getting and using these data will be discussed in the section on grading.

### Packer Feeding

Even more "direct" than the bypassing of terminal markets is vertical integration, with cattle feeding and meatpacking in the same firm. Feeding their own livestock is one

way for packers to get better control of scheduling of their inputs according to the qualities and quantities needed by their customers, and for the efficient operation of the plant.

Farmers fear that, by feeding some of the cattle they slaughter, packers could time the use of their own cattle in a way that prices could average lower than they would if packer feeding were not permitted. A statistical analysis of 1962 prices in one market area indicated that some depressive price effect of packer feeding appeared to exist under the conditions at that market at that time (Reference 2).

The importance of packer feeding varies from state to state. In 1970, it accounted for over 40% of total fed cattle marketings in the state of Washington, but practically none in some of the central and eastern corn belt states (Reference 41). In 1970, 1.5% of South Dakota cattle finished in feedlots were fed by meatpackers, compared to 5.6% of cattle fed in 39 leading cattle feeding states (Table 8). Packers in both South Dakota and the U. S. fed less cattle in 1970 than they did in 1969 (Table 8). This increase does not necessarily represent a downward trend, because the proportion

Table 7. Meatpacker sources of slaughter cattle, South Dakota, 1957, 1964 and 1969.\*

Marketing outlet	Year		
	1957†	1964†	1969‡
	(percent)		
Direct, country dealers, etc. ....	16	29	67
Terminal markets ....	65	51	22
Auction markets ....	19	20	11
TOTAL .....	100	100	100

\*See Table 1 for all cattle and Table 2 for feeder cattle.

†Computed from Reference 31.

‡From Reference 41.

Table 8. Packer feeding as a percent of fed cattle marketings, South Dakota and the United States, 1965-1970.

Year	United States	South Dakota
1965 .....	6.8	2.9
1966 .....	7.2	3.6
1967 .....	7.1	4.0
1968 .....	6.0	2.6
1969 .....	6.6	4.5
1970 .....	5.6	1.5

Source: Reference 41.

has varied considerably from year to year.

While packer feeding may not have increased in importance in recent years, the importance of cattle fed by persons and firms financially related to or otherwise influenced by meatpacking firms is not known. Any increase in advance purchasing, longer-term contracting, or informal coordination would make packer feeding less necessary for the coordination of slaughter cattle movements with plant needs.

### **Contracting and Other Coordinating Systems**

Producer - agency and agency-packer contracts are one form of direct marketing, but with representation. They will be discussed in a later section on agency-sponsored contract marketing programs. Meatpackers can also contract directly with individual feeders without going through a marketing agency. Contractual arrangements in some form are expected to increase as the food processing industry seeks to stabilize and standardize its raw material in-flow. Recent research has, however, cast doubt over the assumption that meatpackers benefit from stable supplies. While lower slaughter costs are associated with stable volume, the relationships between livestock prices and meat prices, at least for hogs, may allow packers to profit from instability in spite of its effect on operating cost (Reference 6).

Large vertically integrated and large contractual or coordinated beef production-marketing-processing systems may be complex and

difficult to manage. However, in addition to their product-flow scheduling advantages, they have an advantage in their theoretical ability to respond immediately to problems for which corrective action must be taken at some other level. Poorly-muscled or overly-fat carcasses may be discovered in the slaughter plant, for example. But the main place for corrective action is in the livestock selection and culling programs.

Farmer feeders who both raise and finish calves are automatically integrated across one hurdle. This advantage of farm feeding over specialized ranching and feeding as separate operations can take on new importance if farmer feeders make use of it.

### **Feedlot Size**

Feedlot size, without considering other factors such as contracting or integration, can by itself affect market coordination possibilities. In some areas, feedlots are larger, and fewer feedlots are needed to supply each packer. The flow of livestock from feedlot to plant can be more easily planned than when each packer deals with hundreds of small cattle feeders.

As South Dakota cattlemen deal with the larger feedlots, both at home and in other states, there will be increasing need for them to work together. Such services as guaranteed quantity, quality and timing of delivery and direct movement of feeder cattle, could make it unnecessary for the large lots to integrate back into ranch ownership or feed production to assure and control their inputs.

## MARKETING AGENCIES

Auctions and terminals refer to themselves as competitive markets because of the more visible nature of the competition at these markets. Auction markets, and the commission firms at the terminal markets are also called marketing agencies.

### Auction Marketing of Feeder Cattle

#### Number of Auction Markets and Business Volume

Livestock auctions have become increasingly important in South Dakota. During the 1960's, the number of livestock auctions in South Dakota stayed about the same, but the average number of cattle handled per auction increased by about 60% (Table 9).

Feeder cattle production is scattered throughout the state (Figure 3), but more South Dakota farmers and ranchers are within convenient distance of at least one auction (Figure 4).

In the 1960's, cattle marketings through South Dakota auctions were over three times as great as any of the following: marketings from South Dakota feedlots, cattle slaughter in South Dakota, net shipments of feeder cattle from the state, or salable receipts of cattle at the Sioux Falls terminal (Figure 5).

While South Dakota auctions are, on the average, larger operations than in the past, there are still more auction markets in South Dakota than would be necessary for all farmers to have nearby competitive markets for their livestock. It was suggested (Reference 3) in 1969 that eastern South Dakota could be

Table 9. Number of auctions and number of cattle marketed at auction—South Dakota 1960 and 1971; and percentage change.

Item	Fiscal year		Change
	1959-60	1970-71	
	(number)	(number)	(percent)
No. of auctions .....	59	57	+2
	(1,000 head)		(percent)
Cattle handled			
total number ....	1,374	2,161	+57
average number			
per auction ....	23.2	37.3	+61

Source: References 3 and 33.

better served with fewer, larger and more efficient auctions. In Reference 10 it was reported that there were 63 livestock auctions in Kentucky in 1968, and suggested that 10 could handle the state's livestock more efficiently. A North Dakota study (Reference 19) suggested a volume equivalent to at least 30,000 head of cattle per year would be necessary for an auction to keep its costs at a competitive level. An Oklahoma study showed that variable costs of auction markets may drop as size increases to an annual volume of at least 75,000 cattle-equivalent animal units (Reference 16). In the future, even larger sizes may be needed as high levels of service and sufficient resources to experiment with new marketing programs become as important as low unit operating costs.

The twenty largest of the 57 South Dakota auctions handled more than 50,000 head of cattle each in the 1969-70 fiscal year, and the five largest auctions handled more than 75,000 (Figure 6).

Figure 3. Beef cows on farms, January 1, 1967—South Dakota.

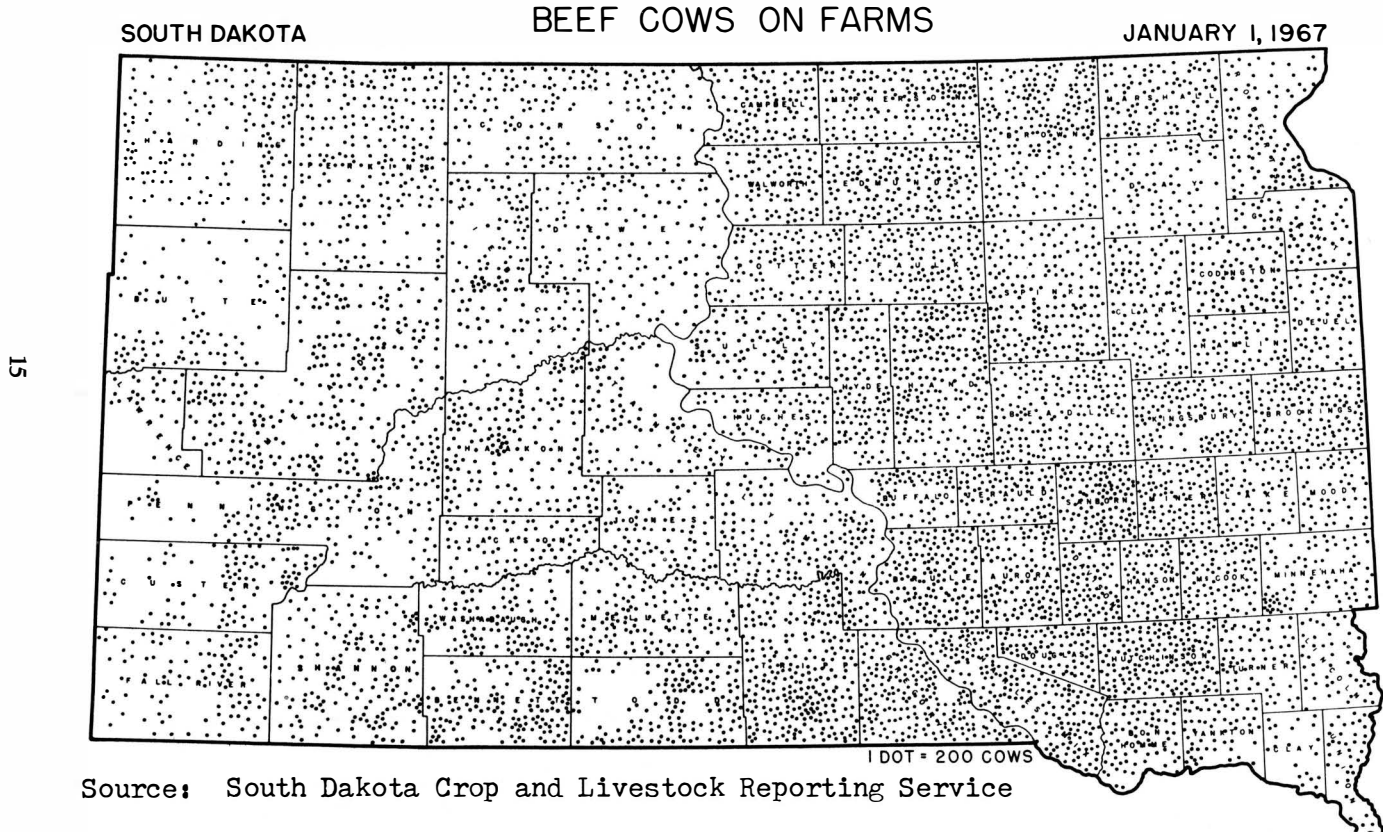
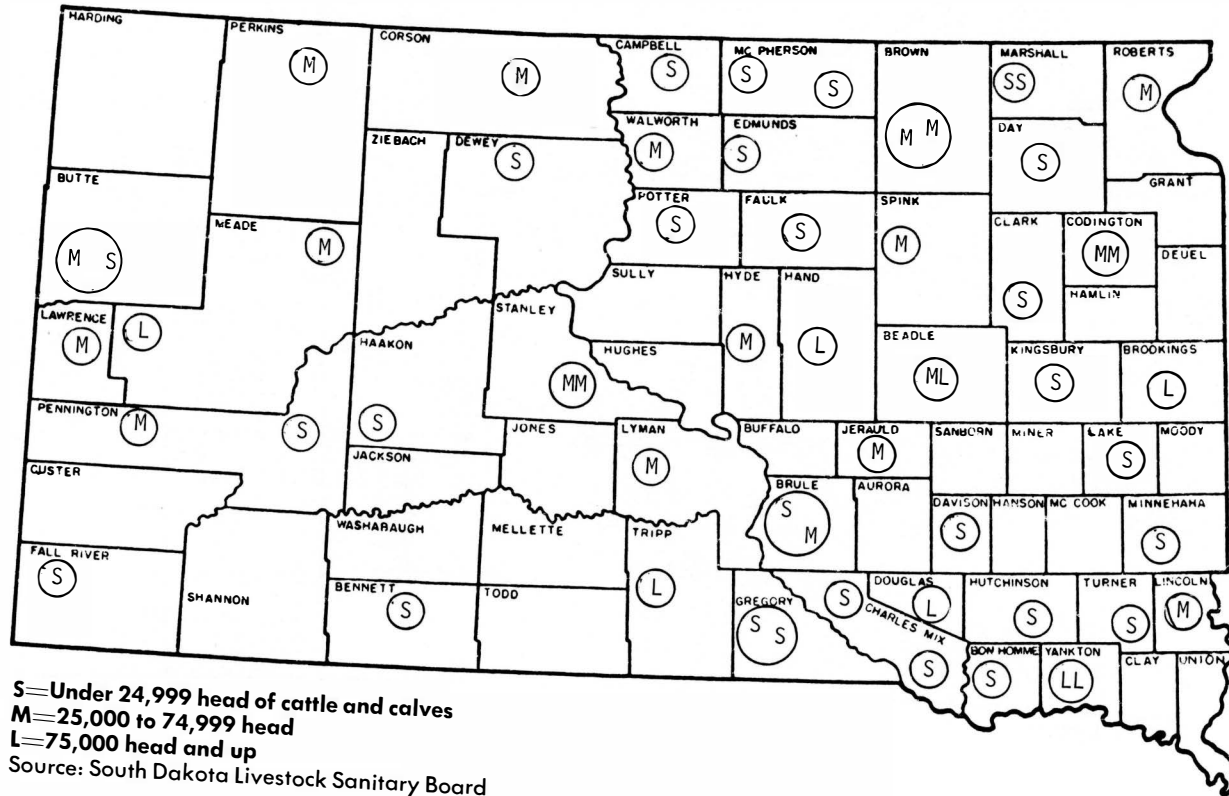


Figure 4. Location and size class (cattle) of South Dakota auctions, fiscal year 1969-1970.



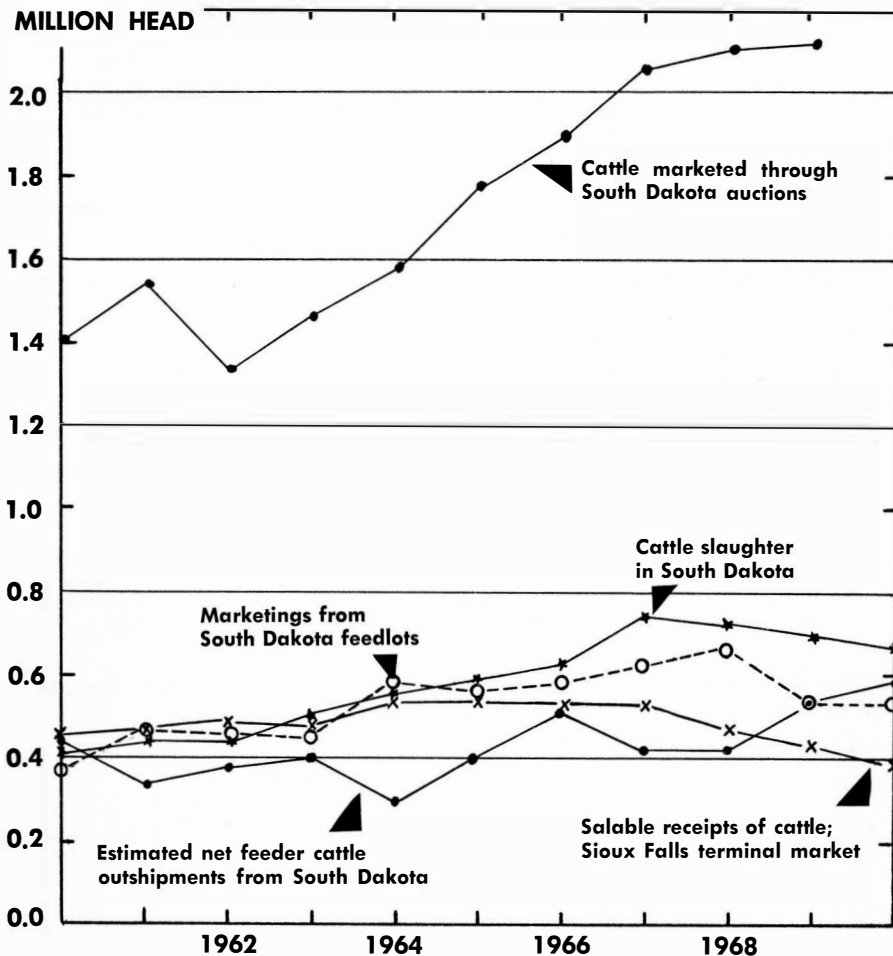
### Importance of Cattle to South Dakota Auctions

Cattle account for most of the business of most South Dakota auctions. This is shown by the small difference between Figure 6 (auction markets classified by only the number of head of cattle handled) and

Figure 7 (auction markets classified by total number of animal units handled.<sup>4</sup>)

<sup>4</sup>In 1964, 3¼ hogs or 4 sheep returned the same gross income to an average South Dakota auction as 1 head of cattle (Reference 3). These weightings were used in Figure 7 to put South Dakota auctions in size classes based on total income in terms of cattle.

Figure 5. Comparison of selected cattle marketings data, South Dakota 1960 to 1970.



Sources: South Dakota Livestock Sanitary Board, USDA, Sioux Falls Stockyards Co., South Dakota Ag. Exp. Sta. Bul. 585

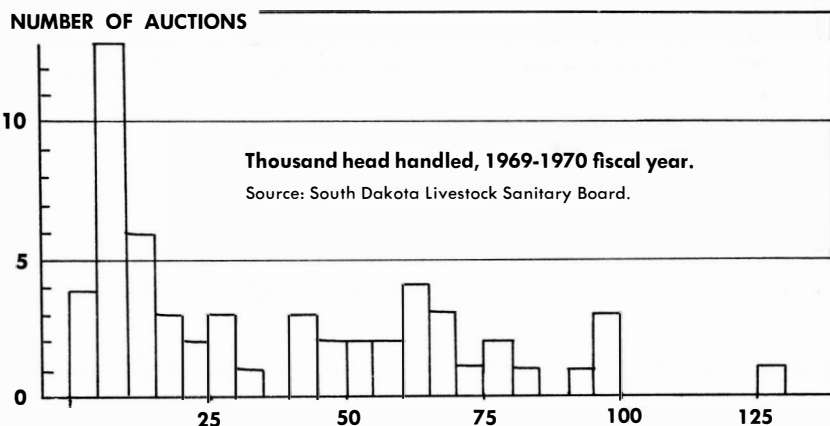


Figure 6. Auction markets—South Dakota—classified by number of head of cattle handled, fiscal year 1969-1970.

Figure 7. Auction markets—South Dakota—classified by total number of animal units\* handled, fiscal year 1969-1970.

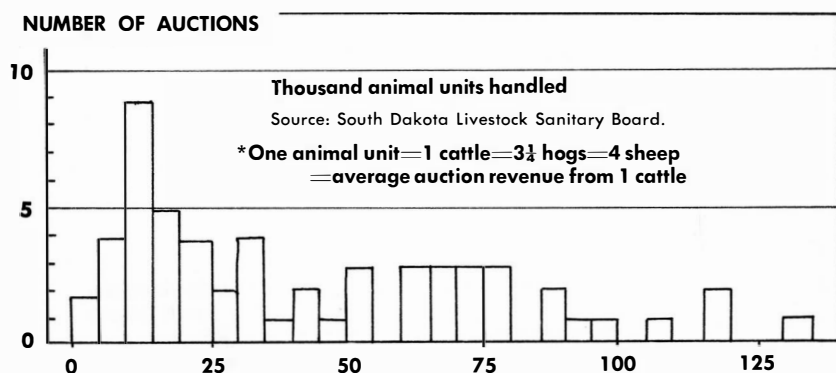
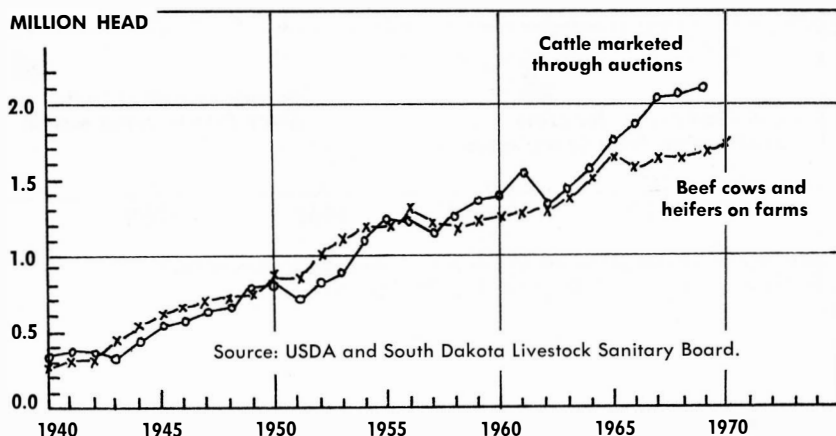


Figure 8. Beef cows and heifers 2 years old and older on South Dakota farms January 1, and cattle receipts at South Dakota auctions.



### **Reasons for Growth of Auction Marketing of Feeder Cattle**

Some reasons for growth of the South Dakota auction cattle business are:

1. additional marketing steps caused by a change to feedlot finishing and the fact that the calf producer and the feedlot operator tend to be two separate specialists,
2. growth in beef cow (and calf) numbers in the state (Figure 8),
3. convenience, compared to more scattered terminals, for producers scattered across the state,
4. the open and obvious competition at auctions,
5. the fact that many calf producers and cattle feeders were not large operators, and, possibly,
6. the social factors of a neighborhood market.

### **Factors Affecting Future Growth of Auctions**

Since feeder cattle are by far the most important class of livestock handled by South Dakota livestock auction markets, their potential business can be roughly indicated by the size of the beef cow herd in the state. Beef cow numbers in South Dakota, and cattle marketings at livestock auctions in the state, have both grown remarkably since World War II (Figure 8).

Larger ranchers are said not to be using auction markets in some areas, but are marketing their feeder cattle direct. In a 1967 study of the range cattle industry in the Northern Great Plains (western South Dakota and adjacent areas in other states) feeder cattle market-

ing channels of that area were summarized as follows (Reference 47):

1. larger ranches (having over 200 animal units) generally used a direct sales contract for the sale of calves and yearlings; sending cull livestock to a local auction, and
2. about half the smaller ranches channeled all their marketings through auctions and the other half followed the practice of the larger ranches.

Because of the great increase in beef cow numbers, much of the state's range and pasture land is being overgrazed, and in the future, the increase in South Dakota beef cow numbers may have to slow or stop (Reference 9). Thus, the state's auctions face the possibilities of a shift to direct marketing, especially by the larger feeder cattle producers, and of a slowing of the growth in beef cow numbers in the state.

### **Terminal Marketing**

A terminal market (also referred to as a public stockyard or a central market), differs from an auction market in that at a terminal both buyer and seller are represented by professionals. At an auction, buyers bid against each other, and after a reasonable time the auctioneer pronounces the animal or animals sold to the highest bid then made. The selling method used in the terminal market is called private treaty because a commission salesman bargains privately with one potential buyer's agent at a time. The salesman will accept an offer, possibly the first one he gets, when he thinks he cannot do better for his client, the owner.

## Most South Dakota Feedlots Near Terminals

Feeder cattle are raised throughout South Dakota, but most of the state's cattle feeding is done in southeast part of the state (Figure 9). The Sioux Falls (S. D.) and Sioux City (Ia.) terminal markets are conveniently located for the marketing of most South Dakota fed cattle, and the Omaha (Neb.) and South St. Paul (Minn.) markets are within reach.

Traditionally, cattle from smaller feedlots are more likely to go to terminal markets. The nearness of a terminal and the smaller average size of South Dakota feedlots suggest that terminal marketing would be popular in the state. While the difference is not great, this was borne out by data in Table 4 in which South Dakota and United States slaughter cattle purchases were compared. In 1970, United States packers purchased 18% of their cattle from terminals, while South Dakota packers purchased 22% from terminal markets. See Table 4 for 1969-1970 changes. In South Dakota, terminal (and auction) markets lost more rapidly to direct marketing than in other areas.

## Business Volume Trends

While South Dakota has more than 50 livestock auction markets, the state has only one terminal stockyard (at Sioux Falls). The Sioux Falls stockyards has done a better job than some terminals in building and holding cattle volume, almost doubling its salable receipts of cattle between 1946 and 1965, with some weakening since 1967 (Figure 10).

As shown earlier (Table 4) South Dakota's meatpackers purchased more slaughter cattle at terminals than they did at auctions. However, a small and shrinking proportion of slaughter cattle go through terminals. Over 90% of all United States packer purchases of cattle were obtained through terminal markets in 1925. Since then the trend has been downward:

Year	% from Terminals
1930	88.3
1940	75.1
1950	74.9
1960	45.8
1965	34.0
1970	18.4
(Reference 41)	

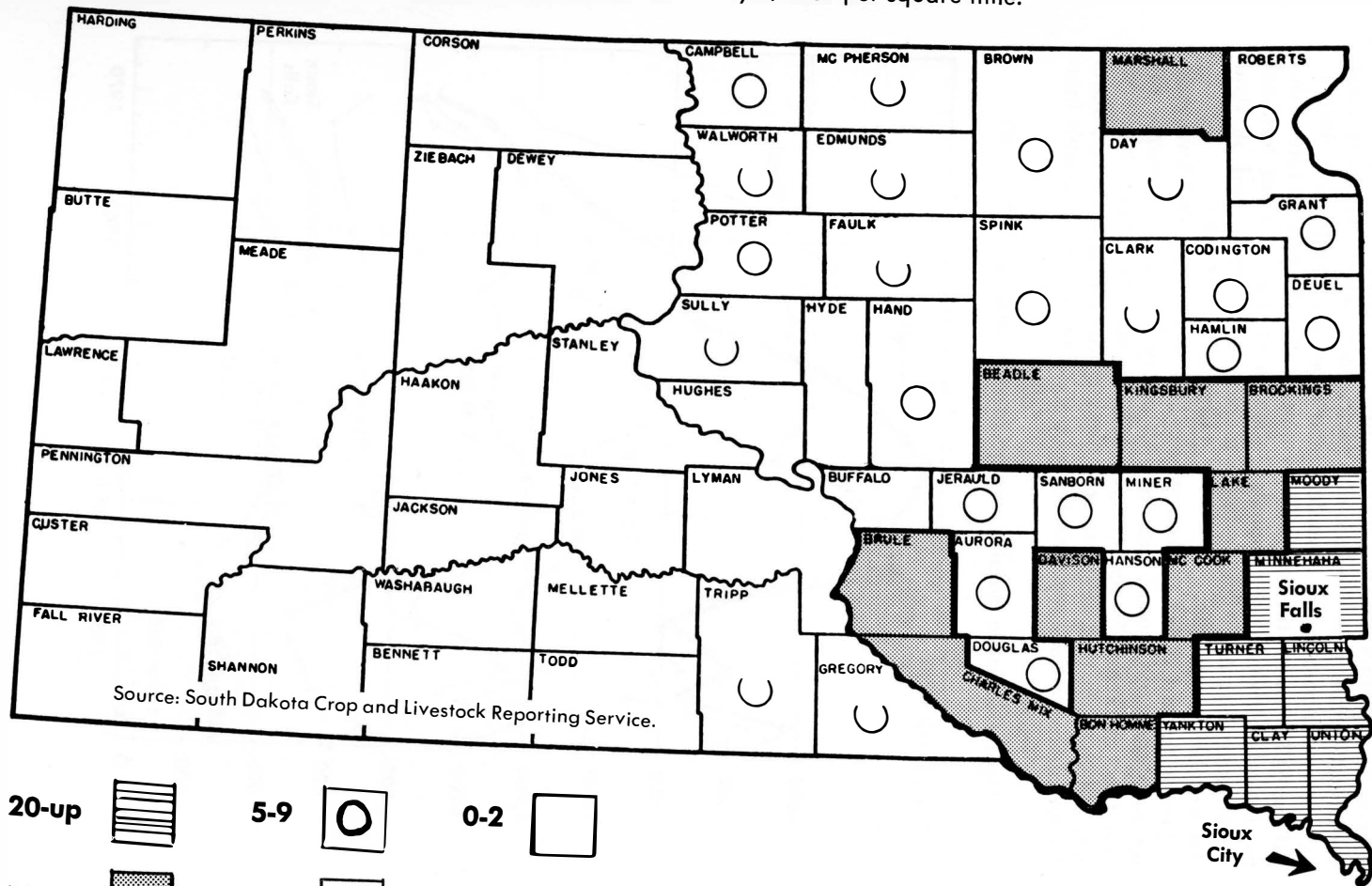
To minimize its per-unit operating costs, a terminal market commission firm appears to need around 100,000 marketing units of business volume a year (Reference 25). At the Sioux Falls terminal, in 1970, the 27 firms shared total salable receipts of about 800,000 animal units—cattle and cattle-equivalents in other livestock (see Table 10). In addition to lack of volume per com-

Table 10. Recent trends in salable receipts at Sioux Falls stockyards, and in slaughter at Sioux Falls

Item	1968	1969	1970
(thousand head)			
Salable receipts			
Cattle	479	439	392
Calves	11	14	6
Hogs	856	802	871
Sheep	391	328	296
Stocker and feeder shipments			
Cattle	127	149	115
Calves	11	14	6
Hogs	4	2	22
Sheep	52	67	64
Local slaughter			
Cattle	174	156	111
Hogs	312	472	263
Sheep	123	159	113

Source: Reference 30.

Figure 9. Cattle on feed January 1, 1969 per square mile.



Sioux City →

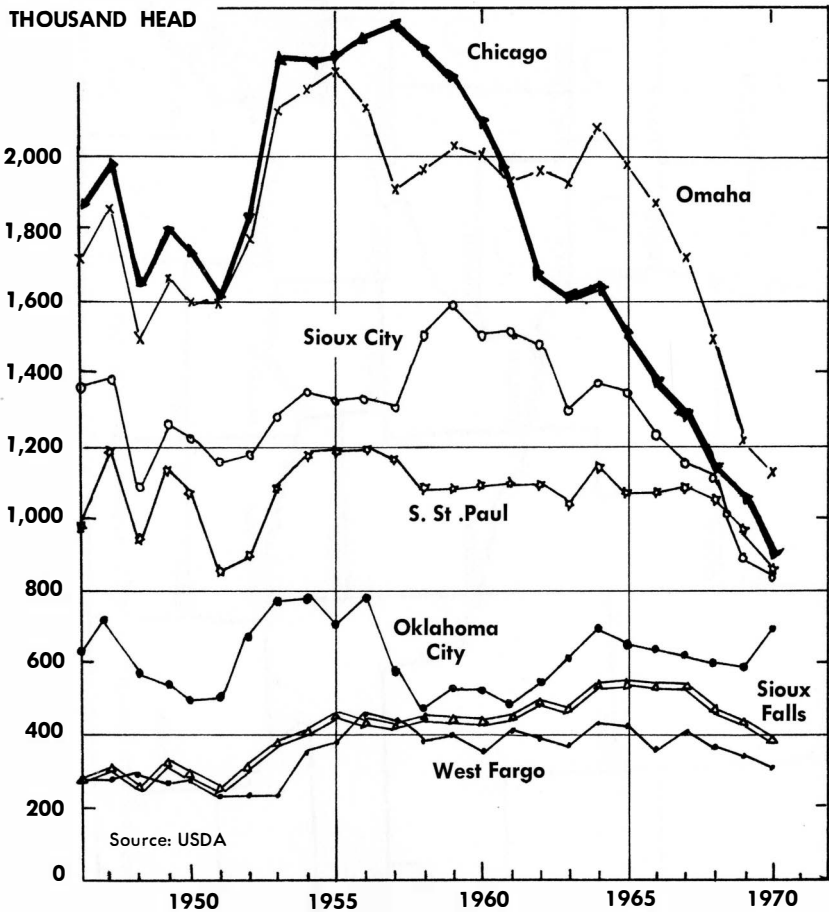
mission firm, another source of inefficiency at terminals is the lack of volume on the market as a whole. Substantially underutilized facilities are a burden to most terminals (Reference 26). As volumes fall, these problems intensify.

Trends toward direct marketing for slaughter cattle, toward auctions and direct marketing for feeder cattle, and the fact that auctions are located more conveniently to feeder

cattle producers and buyers, are factors with which the Sioux Falls and other stockyards must deal. It appears that the present rate of decline in volume of most terminal markets will create real survival problems in the future.

Cattle volume trended downward at many terminals through the 1950's and at most terminals through the 1960's. However, based on strict rules and a favorable loca-

Figure 10. Cattle—salable receipts at selected public stockyards.



tion—and mainly on its feeder cattle auction, started in 1961—the Oklahoma City Terminal, has not shared the fate of the others (Figure 10). It has, in effect, avoided the fate of other terminals by becoming an auction.<sup>5</sup>

Potential advantages for future growth in feeder cattle handling for the Sioux Falls terminal are that it lies between major feeder cattle production areas and Corn Belt feeding areas, and that the new interstate highway system will put Sioux Falls on a major intersection of east-west and north-south highways. For feeders that are trucked, Sioux Falls will be the first terminal market many of these livestock will encounter.

### **Implications of Shift from Terminal Marketing**

Although terminals developed in a time when both transportation and slaughtering systems were much different than they are today, these markets are still important in

livestock marketing, and for good reason. At the terminal are found a concentration of all types of buyers. In addition, expert sales help is available to those who bring their livestock to the terminal to be sold. The fact that the terminal markets participate more fully than most markets in the nationwide market news system is also an advantage, or at least a reason for their importance. Since terminal markets have helped provide the price basis for direct marketing and also for contract marketing, even those producers who do not use them benefit from their existence.

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<sup>5</sup>Of total salable receipts at the Oklahoma City Stockyards, less than 5% sell at private treaty (the rest at auction). Of the salable receipts as of October 1971, about 90% were feeder cattle and less than 10% slaughter cattle. At the Oklahoma City Stockyards, the auction was operated 4 days a week as of October, 1971. The Thursday stocker and feeder sale was started in 1961. A Tuesday auction sale (slaughter cattle followed by stockers and feeders) was started in 1963, a Wednesday sale in 1964, and in 1968 a Monday sale was added (Reference 17).

## **FIRM-SPONSORED MARKETING PROGRAMS FOR THE BEEF INDUSTRY**

Livestock marketing is complicated, and terminal and auction markets have knowledgeable personnel who know livestock and who keep themselves up-to-date on market conditions. However, there seems to be a tendency for some of these agencies not to offer their help to farmers who want to try less traditional marketing methods such as direct farm-to-plant movement, grading and commingling, contract marketing, selling on a carcass basis, etc. Adoption of some of the new services could possibly strengthen certain "competitive" markets and help them survive and grow.

There are good reasons for an auction or terminal being cautious about making changes. First, is the fact that some changes, even though they could result in increased demand for the services of market personnel, could also result in direct movement of the livestock, bypassing the physical facilities of the market. Another is that changes made to please producer sellers may appear disadvantageous to packer and other buyers. A market needs buyers as well as sellers. Another is that competitors do not like to lose business to an innovator who will, if successful, change some of the rules of the game. As one terminal market commission agent said, about an attempt at commingling, "You have all your competitors right there trying to make sure you don't succeed. When we tried it, other commission agents were able to get as much for their average lambs as

we were able to get for our best lambs."

Some of the attempts to establish a country commission man service for cattle have failed due to lack of producer support. An attempt by a livestock market cooperative to provide California cattle feeders with a teletype auction service failed partly for the same reason. Also, new programs have failed that might have succeeded with better support by employees of the marketing agency. For some new services, great care is needed to make sure that employees do not fear that the new program will lessen the need for their experience, knowledge, and skill.

### **Carcass Selling and Buying Programs**

In 1970, a total of 34% of South Dakota slaughter cattle were sold on some sort of carcass basis compared to 19% for the U. S. Differences between some states were quite large as were year-to-year changes within some states. South Dakota experienced a substantial increase in carcass-basis marketing between 1969 and 1970 (Table 11). Marketing on a carcass grade and weight basis is expected to continue to increase as producers become more involved in livestock improvement programs.

If carcass buying programs are well designed, full advantage can be taken of the fact that:

1. grade data can be more accurate and can be made available on individual animals, and

Table 11. Cattle slaughter; 13 leading states and United States, 1970; and number and percentage purchased on a carcass basis; by class of cattle, including 1969 percentage for "all cattle."

State	Steers and heifers			Cows and bulls			All cattle			
	Thous. head slaughtered		Pct.	Thous. head slaughtered		Pct.	Thous. head slaughtered		Pct. carcass	
	Total	Carcass		Total	Carcass		Total	Carcass	1970	1969
Nebraska .....	3,934	971	25	300	20	6	4,233	990	23	31
Iowa .....	3,613	1,178	32	340	155	46	3,954	1,333	34	41
Texas .....	1,966	205	10	784	224	28	2,750	429	16	15
California .....	2,311	198	9	411	30	7	2,722	228	8	5
Colorado .....	1,932	559	29	88	34	38	2,019	592	29	20
Kansas .....	1,451	124	9	187	30	16	1,639	153	9	17
Missouri .....	1,427	185	13	155	20	13	1,582	205	13	14
Minnesota .....	1,163	303	26	408	127	31	1,571	430	27	31
Illinois .....	1,027	86	8	78	6	8	1,105	92	8	10
Wisconsin .....	472	86	18	469	101	22	942	187	20	14
Ohio .....	764	140	18	157	27	17	921	167	18	18
Pennsylvania .....	397	67	17	236	41	17	633	108	17	9
South Dakota .....	523	183	35	104	29	28	626	211	34	23
Oklahoma .....	458	25	5	145	12	8	603	37	6	13
United States .....	26,038	4,854	19	6,160	1,154	19	32,198	6,009	19	20

Source: USDA, P&SA (Reference 41).

2. weight information is more useful (fill is ignored) and is also available on individuals.

Pricing accuracy can be improved through use of carcass weight and grade, and data on individual animals allows producers with adequate herd records to estimate rate-of-gain and meat quality (and quantity) potentials of parent animals.<sup>6</sup> Even producers who do not have detailed records on individual market cattle can get much useful information from data in carcass grade and weight settlement sheets. They may discover, for the first time, the amount of variation in weights marketed. This can result immediately in more careful sorting before marketing.

Since the live market still predominates, returns to selling on a carcass basis must be in line with returns from selling on a live basis. Comparison of carcass returns with returns from selling alive is difficult.

For example:

1. dressing percentages can vary with the time of weighing the live animal and with other weighing conditions,
2. trimming before the carcasses are weighed is not completely standardized,
3. the packer can deduct weight discounts from the base price for any carcass just one pound under or over the base weight range, and the value to the packer of this "sort benefit," when he buys livestock on a carcass weight basis, is difficult to estimate and understand,
4. where live prices are used as the basis for figuring carcass prices, the packer can also benefit from the perfect grade sort resulting from having each

<sup>6</sup>A new U. S. Department of Agriculture Service, to be discussed, may provide these data to ranchers even on cattle that are sold as feeders to unknown buyers. (Numbered ear tags follow the animals from ranch to slaughter.)

individual carcass graded (the live choice grade price includes some animals that will not make the carcass-grade),

5. when wholesale (chilled) carcass prices are used as a base for converting to a warm carcass price, then allowance must be made for byproduct values, carcass shrink, packer costs, and the changing demand for packers' services,
6. when live cattle prices are used as a base, for converting to a warm carcass price, weighing conditions and dressing percentages at the market from which the base price comes must be considered, and
7. the time between the slaughter and the grading of the carcass, and cooler temperature, humidity and other conditions will affect the appearance of the carcasses to the grader. (Animals killed just before a weekend or holiday may look better to the grader, having more time to firm up in the cooler before the grading.)

### **Marketing Agencies**

Marketing agencies have knowledgeable and experienced livestock marketing personnel who could help producers who want to sell on a carcass basis. Because of the complexities of carcass selling, the knowledge and skill of these marketing experts could be of great value to producers who want to sell on that basis. Terminals and auctions could consider the advantages of carcass selling and of their providing the expert help needed. If auctions and terminals do not

strongly and obviously encourage improved quality, producers of better livestock may feel that they must sell direct to packers.

One way could be to help farmers bargain on a carcass basis for direct movements (farm-to-plant). Examples of this will be discussed under the heading of "Country Commission Man Programs," and "Advance Contracting of Slaughter Cattle." Another possible service does not require direct movements. It has been tried by an auction in Ohio (Reference 4) and could also be used by terminals. That auction experimented with taking regular auction bids, but on a carcass weight basis. Exact returns were computed after slaughter and after carcasses had been weighed and graded. Carcass bidding, combined with teletype auctioning is required, under a Provincial marketing order, for all slaughter hogs in Ontario, and is used on a voluntary basis in some other Canadian provinces.

### **Meat Packers**

With the help of computers—and carcass data—even large plants dealing with small producers can know what grades of cattle they are getting, and from where. Packers who try to average out in their buying appear to be losing business, and perhaps quality, to packers who purchase on a carcass basis. In South Dakota, with a third of all slaughter cattle purchased on a carcass basis, the practice may soon reach a level where it could lead to increasingly rapid changes in all aspects of cattle and beef production and marketing.

Among the changes expected, are that:

1. producers who have not developed meat-type cattle will, in the future, be more severely penalized, and
2. marketing agencies that do not get carcass data and value differentials back to producers will continue to lose slaughter cattle business.

#### **Grading and Commingling (Pooling) Programs**

A North Dakota study (Reference 19) suggested that auctions grade and commingle animals from different owners to speed selling time and improve quality recognition. Loads of mixed-type cattle (or hogs) from several farms or ranches would be sorted and weighed into two or more sales lots that are uniform as to class and quality, and large enough for speedy economical handling. Selling in pooled lots (with several producers' livestock) has been tried at scattered auctions for feeder cattle (Reference 34) and feeder pigs (Reference 12). It also has been tried for slaughter sows at the East St. Louis, Illinois *terminal market*, for slaughter barrows and gilts at *auctions* belonging to a cooperative, the Michigan Livestock Exchange, Detroit.

Auctions or terminal market selling of lots of pooled (commingled) ownership but of uniform quality and weight can:

1. save time and money for the buyers and for the market by speeding the selling process,
2. provide animals sorted according to buyers' needs and in convenient lot sizes, in return for higher prices,

3. result in more clearly identified quality premiums to producers (each animal is put into a weight-grade class) so that better quality livestock are attracted to the market and their production encouraged.
4. given unbiased grading, and sufficiently uniform lots, make telephone bidding by distant buyers possible, thus widening the market for South Dakota livestock, and
5. prevent any suspicion of collusion between a commission salesman and a buyer, to give special treatment to one producer at the expense of others.

The grading and commingling idea was designed especially to help smaller producer members of cooperatively-owned auctions. Small producers felt they were in a weak bargaining position because of their small shipments. However, larger producers could also benefit. More careful topping off at the most desirable market weights could result in small shipments coming from larger producers as well as from the smaller ones. Disadvantages, some of which could be lessened by careful planning and skilled grading, include the facts that:

1. handling and medication before the sale may not have been uniform,
  2. commingling of disease problems could accompany commingling of the animals, and
  3. for feeder stock, the mixed genetic quality may result in uneven rates of gain.
- Some of the advantages, disadvantages and problems of a grading

and commingling service are discussed in References 12, 34 and 35. In an analysis of feeder cattle prices at five Colorado auctions (Reference 18) ideal lot size was generally between 20 and 50 head. Both larger and smaller lots tended to bring lower prices. Differences depended on the market, however. At one of the markets, lots over 50 head did best. At another, lot sizes under 10 did about as well as larger lot sizes. In another analysis (Reference 5) of data from eight special feeder cattle sales, lots of five head or less received \$0.75 per hundred less than those in the 16-25 head size.

### **Country Commission Man Programs**

Livestock marketing is complex, but expert marketing help has not been available to most producers who want the savings of direct selling. However, some cattle feeders obtain the advantages of direct marketing, expert help, and guaranteed payment by hiring country commission men to represent them in their marketing.

A few livestock marketing cooperatives, both terminal-based and auction-based have tried offering "country commission man" programs (Reference 27 and 20). While such operations do not require as great a member investment of money in market facilities as do auctions or terminals, they do require a more scarce commodity—member loyalty:

1. to get members to use the program, and
2. to keep members who use the program from taking advantage of it without paying for it.

A country commission man service is one possible way to give the

producer expert help and, at the same time, to move the livestock by the most direct and economical route.

### **Advance Contracting of Slaughter Cattle**

#### **Producer Contracts with Marketing Agencies**

No single livestock marketing channel or method will always return the top dollar. This is not to say that producers should always shop around. Without some customer loyalty and support, a market cannot innovate and new programs will not be tried. Cooperative, or privately owned auction markets, or terminal market commission agencies could consider asking producers to sign contracts making the market their exclusive agent for all their market livestock, or for a given class of livestock.

From the viewpoint of the producer, signing such a contract could mean foregoing an occasional gain from being able to shop around for the best offer for his livestock. However, the producer:

1. may know that the agency he signed with is competent, and can usually do a good job,
2. may be willing to assume that with the help of an assured supply of livestock from a number of contracts such as his, the agency may be able to lower marketing charges or offer new or improved services.

From the viewpoint of the marketing agency, having contracts with producers to be their exclusive marketing agent would be a way to formalize and encourage producer support and loyalty so that:

1. a new marketing service would have a chance to prove itself before producer-patrons could be taken away by competing agencies or meatpackers.
2. more farm visits could be for the purpose of giving marketing advice and service rather than for market promotion, and
3. the farmer getting the advice would pay for it and could not engage in the costly practice of using one visitor against another.

Soliciting patronage can be a necessary but costly activity. The army of market-agency solicitors traveling South Dakota's roads to get livestock for the many competing markets adds to marketing costs. The average cost of each farm visit was over \$4.00 in a 1963 study (Reference 14).

Producer-agency contracts are being used by some livestock marketing cooperatives that offer the country commission man service. In one case, the contracts were found to be necessary so that farmers who used the country commission man's advice and help would later use the program and pay for the service that they had requested. In these contracts, the farmer agrees that the cooperative will be his sole marketing agent for all his slaughter cattle. If he rejects the direct offers obtained for him by the country commission man, the farmer must use one of the other marketing programs of the cooperative.

#### **Market Agency Contracts With Meatpackers**

Producer-agency contracts can be the basis for agency-packer con-

tracts. They can give the agency the assured supply of livestock it will need if it is to secure a contract with a meatpacker.

Extensive study and experimentation are required to develop a proposed packer contract, test it under market conditions, and then convince both farmers and packers that it will be equitable day in and day out. The research and pilot studies involved are beyond the budget of most market agencies, but might be carried out by the very large ones, by farm organizations, or by a federation of agencies or of cooperatives.

A producer or his organization will not want to guarantee delivery of cattle to a meatpacker at some time in the future (advance contracting) unless he also has a firm contract in advance as to either.

1. what the price will be at delivery time (closed price contract) or
2. the formula by which the price will be determined at delivery time (open price contract).

#### **Advance Contracting at Open Prices**

In advance contracting at open prices, the formula must make prices at delivery time competitive with prices received then by non-participants. Ordinarily, cooperators will not long tolerate a program that costs them money. One problem is that it is difficult to develop a pricing formula that is consistently fair to both buyer and seller as conditions change. Contract provisions allowing occasional renegotiation will likely be needed, which means that either party must be free to cancel on relatively short notice.

If advance contracts at open

prices can be made to match the open market at slaughter time, plus a payment to producers for the value of the guarantee, they can be used as the basis for a regular portion of a meatpacker's needs.

#### **Advance Contracting at Closed Prices**

Some packers do advance contracting at closed prices for slaughter cattle and hogs. They use the futures market as a basis for closing or locking in a price to producers, perhaps months before the producer is to deliver the animals. While this service can be offered by market agencies, great care, firm guidelines, a clear understanding of purpose and close supervision are needed. Proper use of the futures market can take some of the uncertainty out of cattle feeding and practically insure a price, but its improper use can be costly. One cooperative livestock market agency reportedly lost more than a million dollars because of unwise use of the futures market (Reference 7).

Advance contracting at closed prices is basically the same as hedging and "locking in" a price on the futures market except that a packer or market agency does the hedging for the producer. One problem is that there are sometimes situations in which hedging would be unwise. Therefore, although this type of program can sometimes be a useful one to all parties, it cannot be blindly followed and cannot be developed as *the* way an individual producer would want to sell or an individual packer would want to buy. Advance contracts at closed prices may eventually be based on cost of production, but until then

they cannot be counted upon to keep a packer supplied with livestock day in and day out.

#### **Comments**

Turkey and broiler producers contract because they must. Livestock producers and their organizations contract with processors because they want to cooperate with them to the benefit of both, or because they feel that contracting is the way of the future and want experience, and some voice in how contracting develops. While livestock producers still contract by choice, a tipping point may exist. After a certain point is reached, the percentage of slaughter cattle signed to contracts may be great enough that those producers and processors not participating could find their markets and sources of supply drying up. If they all scramble for a contract, the marketing system could "tip" suddenly to a totally contractual one. The concern about a tipping point intensifies the race for the control of agriculture.

#### **Other Programs**

##### **Telephone Auctioning**

When telephone auctioning is used, the auctioneer talks not only to those present but also to prospective buyers who are listening via a special long distance telephone arrangement. The advantage in making it possible for more buyers to "attend" is obvious. However, no one will buy "sight-unseen" until he can trust and understand the description of the livestock. Trust can be enhanced:

1. if the livestock are described by a grader who is a neutral third party, acceptable to both buyer and seller, and

2. if uniform, universally understood grade standards are used. The official United States Department of Agriculture standards for grades of feeder and for slaughter cattle were developed to provide a part of the uniform language.

### **Teletype Auctioning**

Practically all of the slaughter hogs in the province of Ontario, Canada are sold through one central market system, using a teletype auction. Hogs are auctioned alive from country assembly points, but bids are on a carcass weight and grade basis.

The cooperative's central teletype offering machine starts at just above the top price possible and works down. Each packer hog buyer watches these offers on the bidding machine in his office. The first packer to push his "buy" button gets the load of hogs being auctioned. The price for the base carcass grade and weight is determined on the auction. Weight and grade price spreads are prearranged so as soon as the hogs have been taken to the plant and butchered, and the carcasses weighed and graded, a check can be written for the exact amount. (Hogs are identified by tattoo numbers, which can be read after the hair is removed.) Ontario farmers and meatpackers are required by law to use the system, which was developed when farmers became concerned about the trend toward direct marketing.

A California livestock marketing cooperative attempted to provide its members with a teletype auction service for slaughter cattle. The manager of the cooperative stated,

"Our system failed because we did not have the supply of livestock definitely committed and we found that the verbal assurances of livestock people were not sufficient or firm enough for us to guarantee dependable supplies to the buyers who were the subscribers. It is my opinion that for a plan of this type to succeed, growers would have to be tied firmly to a supply contract or it would have to work under a quasi-government program such as the one of the . . . very successful program with hogs in Ontario Province, Canada." (Reference 15)

### **Computerized Trading Systems**

Comprehensive computerized trading systems are also under study. Reference 28, for example, is entitled "The Electronic Egg Exchange, An Alternative System for Trading Shell Eggs." The concepts are:

1. to use nationally uniform third-party grade standards,
2. to encompass most or all of the nation in one central market system so that each unit of the commodity offered is exposed to every bidder that would possibly be interested in it, considering location and hauling costs,
3. to transfer ownership through a centralized system but to move the product directly by the most economical way from seller to buyer, and
4. to provide all buyers and sellers with instantaneously updated information on volumes, prices and movements.

### **Conclusions—Firm-Sponsored Programs**

Telephone or teletype selling, third-party grading, and commingling programs can be put together to complement each other. In 1970, a North Carolina Farm Bureau Marketing Association hog program was putting parts of the above programs together in a hog marketing service. Hogs were assembled and weighed, and sorted according to USDA standards. Then telephone bids were solicited from packers in North Carolina and surrounding states. “. . . at first, some packers were reluctant to bid on unseen hogs, but after they found that the quoted grades proved to be accurate, these reservations disappeared.” (Reference 1)

Teletype or computerized trading systems could be as economical as direct marketing—and even more competitive than terminal or auction marketing. More buyers could bid on each lot and market news could be more complete. However, comprehensive nationwide computerized exchange systems or state-

wide teletype auction systems have one major problem, the same as any central public market system. Although they can restore the central market concept and can sharpen competition and lower some marketing costs, they cannot prevent “surpluses” and low prices.

As presently conceived, the new and proposed central market systems do not provide a way for the coordination of production with market needs. For example, if their use is made compulsory, which may be necessary if they are to succeed, meatpackers could not contract with producers or their organizations. Meatpackers in Ontario must use the teletype auction system, and buy every hog they kill on the open market. Even those hogs that meatpackers raise themselves cannot be scheduled into the plant as needed but must be marketed along with farmers' hogs through the central system. Although this makes vertical integration impossible, it also makes any other form of coordination impossible, perhaps delaying a solution to the problem of production and price instability.

## GOVERNMENT-SPONSORED MARKETING SERVICES TO THE BEEF INDUSTRY

The line between firm-sponsored marketing programs and government-sponsored marketing services is not always clear. Teletype auction systems or computerized trading systems, to succeed, might need to be authorized and required by law. Grading is an example of a service that can be provided by a marketing firm, a producer group, a state government, or purchased from the Federal government. At any rate, government services are involved in some way in most firm-sponsored marketing programs.

Many government services are important to good competition and efficient livestock marketing. Two of them—grading, and market news—are discussed in some detail in this report in connection with cattle and beef marketing.

### Grading

One purpose of grading is to segment a product mix into batches of uniform quality so that marketing can be more economical, and the pricing system can operate more efficiently. When proper market structures and communications exist, a good grading system can help make marketing efficient and fair by:

1. seeing that a farmer is paid for the quality he produces,
2. directing resource use so the most desired products (considering cost) are produced,
3. providing an unbiased third-party to do grading according to nationally uniform standards so that all parties in market trading have good (and

equal) information so that one cannot take advantage of the other,

4. facilitating trading, by providing an unbiased description of a product so that neither buyer nor seller needs to go to the expense of traveling to examine the product personally before making offers or bids, and
5. making possible contracts for future production and delivery.

Uniform universal unbiased third-party grading systems have been developed by the U. S. Department of Agriculture for both feeder and slaughter cattle. Although improvements in the standards are possible, their wider use could benefit producers. Grade standards are man-made. They have been changed to adjust to changing conditions, or to reflect new research information regarding the effect of animal or carcass characteristics on palatability. For example, new information on the effect of maturity resulted in a 1965 change in the official standards for carcass beef (Reference 38).

Feeder cattle from two South Dakota ranches could go to a Nebraska auction to an Iowa order buyer to two Indiana feedlots (with similar feeding programs) to the Indianapolis terminal to an Ohio meatpacker. One string of carcasses in the Ohio meatpacker's cooler could average grading U. S. Choice 2 (outstanding meat type and Choice quality). Another string could average U. S. Choice 4 (Choice quality but overly fat).

The ranchers responsible for the different inherent meatiness of the two groups, may not learn how their animals turned out. The Indiana feeders, themselves, may not find out. Also the ranchers may never know the rates of gain of their animals in the Indiana feedlots.

Specialization and exchange in production, and an inadequate market communications system make it difficult for the producer to get feedlot efficiency and slaughter grade information (and rewards) back from the feedlot and the slaughter market. This set of problems is one of the greatest facing the South Dakota beef industry because the basic purposes of grades are not being served.

#### **Slaughter Cattle and Beef Carcass Grades**

The official U. S. Department of Agriculture standards for grades of slaughter cattle, and also those for beef carcasses, consider quality and quantity separately. One part of the "dual" standards is for quality or eating satisfaction, and the other indicates the amount (yield) of lean meat versus excess fat. Federal grading is voluntary and the person paying for it can have the animals or carcasses quality graded, yield graded, or both.

In 1970, U. S. Department of Agriculture graders quality graded over 85% of the fresh beef sold as retail cuts—beef from steers and heifers on a feed grain ration—Reference 24. This amounted to about two-thirds of all beef produced in the U. S. On the 5th year that yield grades were available, 1970, about 25% of the quality-graded beef was also yield graded.

Meat quality and meat yield, the concepts on which the slaughter cattle grades are based, are considered by the buyer and the seller in any slaughter cattle transaction. However, except for futures trading, there is practically no official USDA (third-party) grading of *live* slaughter cattle. Most *beef carcasses* are federally graded to help retailers in their beef buying and merchandising programs. *Retailers demand third-party grading when they buy from packers, but farmers do not demand third-party grading when they sell to packers.* If the official grades were used more when farmers sell, they could provide for the achievement of more of the purposes of grading.

#### **Quality Grades**

U. S. Prime and U. S. Choice quality grades of beef have sufficient youthfulness, and marbling of fat flecks within the meat, that they will usually be tender, juicy and flavorful. U. S. Prime beef has fewer complaints about toughness than U. S. Choice, but is more expensive to produce and contains more fat than some consumers want. Beef in the next lower quality grade, U. S. Good, is sometimes tougher than Choice grade beef. Producers, processors, retailers and consumers have generally settled on U. S. Choice as *the* mass producible and mass merchandisable beef grade.

To make the Choice grade, cattle must generally be finished on a ration containing feed grain or other concentrates. The strong demand for Choice quality beef and the plentiful supply of feed grains in the U. S. has allowed grain-fed beef

production to more than triple since 1950.

### **Yield Grades**

The quality grades, Prime, Choice, Good, etc., have been in use for many years, but it was not until 1965 that the official USDA Yield grades were made available for beef industry use.<sup>7</sup> The terms "yield grade" and "carcass yield" have completely different meanings. "Carcass yield" or "dressing percent" refers to carcass weight as a percentage of live weight. Yield grade refers to lean meat weight as a percentage of carcass weight. Yield grading is also called cutability grading.

There are five USDA yield grades, numbered 1 through 5. Yield grade 1 animals or carcasses have the highest carcass percentage yield of lean meat retail cuts and yield grade 5 animals or carcasses the lowest carcass yield of lean (and the highest carcass yield of waste fat). In November of 1971, for U. S. Choice quality grade, the extra value to a retailer of one (better) yield grade was \$4.62 per carcass hundred-weight according to estimates from USDA (Reference 37). On 600-pound carcasses from 1,000-pound choice steers, that is a value difference of well over \$25 per animal just for one yield grade with no difference in the quality grade or carcass weight. For cattle two full yield grades apart, the value difference would be more than \$50.00 per animal. Such yield grade differences are common. Occasionally, a Yield Grade 1 or Yield Grade 5 carcass is produced.

Although value differences of \$50 are common between U. S. Choice

grade cattle of the same weight, having a \$50-per-head price premium for all 2's over all 4's would not be practical:

1. because grading accuracy cannot be perfect, and
2. because, for all but yield grade 3, most animals (or carcasses) are toward the grade 3 side of their yield grade boundaries.

Yield grading results in estimates of how the animal will cut out, not in perfect predictions of the exact yield of lean meat in each animal or carcass. If a grader could not distinguish meat yield differences at all, his grade 5's and his grade 1's would cut out the same lean-fat proportions on the average. Then the value difference between his grades would be zero (on the average in the long run). Only if he were perfect, would his mid-2's be worth around \$50 more than his mid-4's for carcasses from 1,000-pound steers (at October 1971 beef prices). The grader's instructions, in the specifications for the grades, insure some degree of accuracy. The natural animal-to-animal variation in relationships between lean yield

<sup>7</sup>Yield grades have also been developed for lamb. The official U. S. standards for grades of slaughter hogs and pork carcasses are basically yield grades. The number (yield) grades are only used on hogs or carcasses of satisfactory lean meat quality.

A USDA leaflet (Reference 46) describes the live beef animal and carcass grades for the general reader. The technical details of the beef carcass yield and quality grades can be found in Reference 38. Reference 40 contains the technical language for yield and quality grades for *live* slaughter cattle. The Cooperative Extension Service at South Dakota State University has a slide set and script explaining U. S. grades for slaughter steers (Reference 44), and for beef carcasses (Reference 43). Showing can be arranged through county Extension agents, or either package can be purchased from the U. S. Department of Agriculture for \$12.00.

indicators (such as fat thickness and loin muscle area) and actual lean yield make consistently perfect predictions of lean meat yield impossible.

Even if beef grades and graders were perfect, however, the full \$50 premium could not be paid for the average yield grade 2 over the average yield grade 4 600-pound choice steer carcass. Yield grade 3 is the most common grade. Most 2's are bunched toward the 2-3 boundary, and most 4's are bunched toward the 3-4 boundary. Therefore, the average yield grade 2 is fatter than a mid-2 and the average 4 is leaner than a mid-4.

The average grade 2 carcass and the average grade 4 carcass may be 1½ grades rather than 2 grades apart in cutability. Since each *full* yield grade was worth about \$25 on a 600-pound choice carcass, average 2's and average 4's could be \$37.50 apart in value rather than \$50.00. Other factors reduce the grade-price spread still further.<sup>8</sup>

To help bargainers develop reasonable grade-price premiums, particular attention should be given by marketing firms and researchers to determine the way animals are distributed among the grades, the accuracy of yield grading under field conditions, and the accuracy variation between and within graders.

Research on the effects of grading errors, on value differences between grades of hogs, and of the tendency for most animals to be near the average yield grade, is reported in Appendix B of Reference 8.<sup>9</sup> In that study, an increase in grading accuracy (a decrease of .07 inches in the standard deviation of the error of

estimation of backfat thickness) resulted in a 29% increase in the true value difference between hogs graded as 1's and 2's, and a 23% in-

<sup>8</sup>More fed cattle are yield grade 3's than any other yield grade, with relatively fewer 2's and 4's and very few 5's and 1's. This fact, plus the presence of inevitable grader errors in estimating or predicting the retail lean meat percentage (yield grade), further lowers the value differences between grades. For example, since there are relatively more 3's, presumably relatively more grading errors are made on 3's (3's put into 2 or 4 by mistake). Enough 3's will be misgraded as 2's to pull down the value of the total mix of carcasses graded as 2's. Since very few 1's exist to be misgraded as 2's there is little compensating pressure to pull the 2's value back up. The result is a lowered value for 2's, as graded by the grader, compared to the situation if the cattle population contained the same number of animals in each grade. The same reasoning can be used to show that 4's are raised in value by misgraded 3's with little compensating downward pressure from misgraded 5's. Therefore, while average 600-pound No. 2 and No. 4, U. S. Choice steer carcasses might average \$37.50 apart in value if all are graded perfectly, the real-life value difference between yield grades will be less.

<sup>9</sup>The Appendix is entitled "Wider Value Difference Between Grades Through Improved Grading Accuracy." In that study, several estimates were made of the value differences between grades of a group of 170 live hogs that were later butchered. It was estimated that:

1. the actual value difference between a mid-1 and a mid-2 was \$0.40 per live hundredweight at the time of that study.
2. because of the distribution of the sample of 170 hogs the average value of the grade 1 hogs was \$0.36 above the grade 2 hogs, assuming perfect grading,
3. when the grader errors were considered:
  - a. live grading by an experienced grader resulted in the pen of No. 1-graded hogs that differed in value from the No. 2's by only \$0.21 per hundredweight, and
  - b. when an ultrasonic machine was used on the live hogs to obtain a more accurate estimate of backfat thickness the difference between the 1's and 2's was \$0.27 per hundredweight.

The study was made before the 1968 revision of the hog grade standards. The results would be different for cattle because the average choice grade slaughter beef animal is toward the middle of a yield grade, not near a grade boundary, as was the case with the hogs in this study.

crease in the true value difference between hogs graded as 2's and 3's. More research is needed on several aspects of this question, for cattle as well as for hogs. It should be noted that the research on hog grade-price spreads assumed:

1. all hogs are to be graded, and
2. one price per grade (grades not divided into  $\frac{1}{2}$ 's,  $\frac{3}{4}$ 's, etc.)

Although farmers cannot expect to get all the hypothetical value premiums mentioned in published yield grade value-difference figures, yield grading is one of the most important developments in beef marketing. It can provide a uniform and universal market language for describing and classifying the meatiness of beef cattle and carcasses. By the addition of standards for this important characteristic, the U. S. beef grades have been greatly improved and the purposes of grading can be more fully achieved.

Although beef yield grades are not of immediate help to consumers unless they buy carcasses, halves or quarters, the long-run effect of their greater use would be to encourage production of meat-type beef and thus more beef and less fat per animal. In the long-run, the result would be lower production costs to farmers and more economical beef to consumers.

Since there are yield grades for live animals as well as for carcasses, yield grading can be used without interfering with traditional marketing methods.

### **Feeder Cattle Grades**

USDA grade standards have also been developed for feeder cattle, (Reference 39). Until 1964, there

were no official feeder cattle standards. Suggested guidelines were published by USDA in 1938 and revised in 1942. Official standards were issued in 1964. The guidelines and the official standards were of some value to the industry because they were used in USDA market news reports.

Official grades for feeder cattle now exist, and are used by market reporters. However, they are used very little by the trade except in some special sales. Descriptive terminology and meanings attached to words used in feeder cattle marketing are so diverse that buyers of feeder cattle or their representatives must see the cattle, or they must know and trust the individual from whom they buy. Even livestock dealers have this problem in negotiating with each other.

The best possible feeder cattle standards will provide only estimates of how the cattle will perform. Also, they must be supplemented with information on such items as sex, breeding, condition, weight, age, preconditioning, etc. Most of these are objective factors for which grade standards are not needed. Even so, wider acceptance and use of USDA feeder cattle grades would provide some badly needed uniformity of terminology, and could help in widening the outlets available to South Dakota feeder calf producers. Until a uniform universally understood feeder cattle language is adopted, such as the Official U. S. Standards for grades of feeder cattle, it will not be practical to use telephone auctioning to include buyers who cannot personally attend sales.

### **Beef Carcass Data Service (BCDS)**

Since the marketing system was not providing all the needed information (neither USDA feeder nor live slaughter cattle grades being used by or for farmers) the U. S. Department of Agriculture developed a service to "go around" the marketing system with the needed information. If the U. S. Department of Agriculture's experimental Beef Carcass Data Service (References 45 and 13) is established as a regular service, a rancher may be able to estimate feedlot rate-of-gain, and get carcass information on his feeder calves no matter where they are fed and slaughtered.

To use this service, beef calves at the ranch are individually identified with special ear tags. When the USDA meat inspector sees one of the official tags on an animal being slaughtered he has it fastened to the carcass. The USDA carcass grader at the plant will see the carcass in the cooler a day or two later. He will record the tag number, the carcass grade, weight and supporting data (Figure 11) and send the information to Washington. The data are then forwarded to the producer who raised and tagged the calves.

The U. S. Department of Agriculture has offered a carcass evaluation service since 1964, but until the BCDS program it was necessary for the farmer to make all the arrangements with the plant and with the grading service. It was only helpful to cattle feeders who owned the cattle at the time of slaughter and who could thus get much of the information through normal carcass marketing without paying for the special service.

As of September 1971 the BCDS was still in the testing stage and not enough cattle had been slaughtered in the pilot study to adequately test the operational aspects of the service. There is a definite need for this type of service and its implementation could make a significant contribution to beef cattle improvement. Feeder calf producers or A.I. breeding services could evaluate bulls on the basis of performance rather than on appearance, advertising claims or other such factors.

### **Grading—Conclusions**

At one time yield grades did not make sense; fat was worth about as much as lean. This is no longer true. In 1968, the U.S. Department of Agriculture estimated that retailers trim more than 2 billion pounds of waste fat from block (fed) beef, and that it cost producers over a billion dollars to put on the fat that the retailer had to dispose of as a low-value byproduct (Reference 46). It was also estimated that at least half of the excess fat then being produced could be eliminated through improved breeding and management without any sacrifice in eating quality. Further, if this waste fat were not produced in the first place, a net savings of \$30 *per head* could be realized on the cost of producing fed beef. This would amount to over \$16 million savings on the 552,000 fed cattle marketed from South Dakota feedlots in 1970.

At 1970 prices, the 1.8 billion pounds of net liveweight cattle production in South Dakota would have cost less to produce and would have been worth at least \$40 million more if it had all been one yield grade better, (about 1 billion

Figure 11. Beef carcass data service report form.

9-10-71

QUALITY DATA		B E E F	YIELD DATA	
Conformation	Choice		Fat thickness, nearest 1/10 in.	.4
Maturity	A+		Ribeye area in square inches by tenths	12.5
Marbling	Modest-		Pct. pelvic, kidney & heart fat	3%
Quality grade	Choice-	F	Yield Grade, by tenths	2.4

TAG NUMBER
011749
CARCASS WEIGHT
62.5
GRADER CODE
101

Original to Producer

pounds, carcass weight at an extra value of over \$4.00 a hundred-weight).

As a state with both ranching and feeding areas, South Dakota could be a leader in market cattle quality improvement. The beef industry in South Dakota should attempt to make wider use of USDA slaughter and feeder cattle standards, using official government graders where possible. Uniform, universally understood, third-party grading would widen market opportunities for South Dakota feeder cattle and add meaning to market news. Using yield grades for slaughter cattle could lead to more rapid cattle improvement and to helping South Dakota producers remain competitive in cattle production.

Coordinated follow-through programs among South Dakota calf producers, cattle feeders market agencies and packers to establish grading systems could be a significant step for beef quality improvement. The programs should be designed so that information *and* rewards get from plant to feedlot to ranch. Until something is done, the U. S. Department of Agriculture's Beef Carcass Data Service may be able to "go around" the marketing system to provide the needed information, but not the payments.

#### **Livestock Market News**

South Dakota is the most important state, in number of beef cows, that has neither Federal-State reporting of auction market prices, volumes and market conditions for feeder cattle; nor of direct-to-plant sales of slaughter cattle. Because of budget limitations, U. S. Depart-

ment of Agriculture market news reports on South Dakota livestock prices trade activity and trends come only from the Sioux Falls terminal market.

Information for State - Federal livestock market news reports is assembled by reporters employed by federal or state governments, or both. Reporting is based upon the official grade standards then in force, which the reporters must know and be able to apply.

#### **Auction Market News**

An auction market news reporting service was operated on an experimental basis in 1953-54 by the South Dakota Department of Agriculture, the SDSU Cooperative Extension Service and the Agricultural Experiment Station. Among the conclusions of a report on that experiment (Reference 23) were:

1. reporting 8 to 12 of the larger auction markets can afford a representative coverage of all auctions in the state,
2. the cost (in the 1950's) of operating such a limited auction market news service in South Dakota would be approximately \$15,000 to \$24,000 a year.
3. almost all dealers and auction operators interviewed were favorably inclined toward continuing the operation of the auction market news service,
4. the reporting service should be operated by an impartial agency,
5. reports from such a service could be used to acquaint buyers and feeders from other areas with South Dakota livestock, and

6. timely and impartial information could make all parties more alert, and result in more competitive practices being carried on.

Based partly on the above study, a larger program was budgeted for 1969 by an advisory committee to the Division of Markets of the South Dakota Department of Agriculture (Reference 32). The proposal suggested five full-time reporters and one part-time reporter to cover direct sales, contract sales and the western South Dakota wool market in addition to 25 sales a week at 20 auction markets. Estimated cost was about \$80,000 a year.

Five reporters may not be needed. A Colorado program, covering five livestock auctions, is handled by one reporter covering four of the markets one time per week and a second reporter covering a fifth market in addition to his office duties (Reference 18). The Colorado program was started in 1968 as a pilot project, but has been continued because of wide interest in such market information.

To report auction prices a market news reporter will sit in at the auction, estimating grade and recording prices for the various weights and grades. He may also telephone other auction operators, packer buyers, etc., before releasing a report.

#### **Direct Marketing News**

While the USDA-South Dakota Livestock Market News Service reports only from the Sioux Falls terminal market, nearly two-thirds of the slaughter cattle purchased by South Dakota meatpackers are ob-

tained directly from farmers or from dealers. Direct and contract selling of feeder cattle may be on the increase, at least in parts of the state. One protection for producers as direct marketing becomes more important, would be to broaden the market news service to cover direct sales. Direct sales are reported by State-Federal reporters in Iowa, eastern Nebraska, southern Minnesota, and elsewhere. While much of the reporting is done by telephoning, it is more difficult and expensive to cover the larger number of individual negotiations at scattered locations than to cover activities at a terminal. However, it is becoming increasingly needed as more slaughter cattle go direct and fewer go through the terminal.

At auction and terminal markets, weighing conditions and terms of the transactions are relatively uniform. It is argued by terminal market interests that direct sales to packers cannot be accurately reported because there are so many different ways of arriving at a price. Weighing conditions can be used to illustrate the argument. Animals can be weighed at the feedlot, enroute, upon unloading, or just before slaughter with or without a prior overnight stand with no feed. Arbitrary pencil shrink can be deducted, the amount depending upon place of weighing, bargaining conditions, other concessions, etc.

Reporters can report, or try to allow for, sale conditions. This, plus more uniformity in direct marketing procedures would improve the quality of information available to producers and feeders who wish to sell direct. Some of the reservations

that farmers have about direct marketing could be lessened:

1. if packers would standardize and simplify as much of the market terminology and killing and dressing practices as possible, and
2. if an adequate market news system existed so that a seller would know when or if he is in touch with the best bids available.

In the trading pits of futures markets, there is no question in a seller's mind about which bid to accept. Everything is as standardized as possible, and the financial condition of all parties is assured by margin deposits and other rules and regulations. Therefore, the highest bid is obvious, and it is the only one to consider.

For these reasons, the authors of an agricultural marketing text suggested than one way to simplify direct marketing of slaughter livestock would be to place government price reporters in all meat packing plants. The accuracy and uniformity of individual plant's broadcasts would be improved, especially if reporters have instructions to report all sales on the same basis—such as in terms of warm carcass weights and government grades. Farmers could “. . . ascertain the best markets for their livestock with the maximum accuracy and the minimum cost.” (Reference 29). However, requiring such practices of packers would further reduce the need for terminals and auctions and could result in speed-

ing their decline as handlers of slaughter cattle.

### **Instant Market News**

Terminal and auction market price reports are basically reports of the price history of a market after it is about to close and too late either to get more animals there, or to decide not to send them. On the other hand, the *direct* market price reports are partly forecasts rather than being strictly history. They are the responding packers' estimates of what, at that moment, they think the price announcement must be. The purpose of a packer's morning price announcement is to cause producers to bring in just the supplies needed for slaughter the rest of that day and the beginning of the next. There may be price changes during the day. In addition, a Federal-State livestock market news reporter on a terminal or auction market personally observes the transactions he reports. He determines the grade of the animals involved, having been trained as a grader as a part of his training as a market news reporter. State - Federal market news reporters usually do not see the livestock when reporting on direct sales (and may not see all the livestock they report in their auction market news reports).

If a direct and/or auction price reporting system is established in South Dakota, a convenient way is needed to help spread the information as it develops through the day, and to clarify the difference between terminal auction, and direct quotations. One way to provide continuously updated and instantly

available information is to use telephone answering devices.<sup>10</sup>

As with a grading service, there are advantages to having market news provided by an unbiased third-party, according to standard nationally - accepted terminology. Therefore, the best use of the system of telephone answering devices in South Dakota may need to await development of a Federal-State reporting system for direct and auction sales.

#### **Financing Market News**

The U. S. Department of Agriculture cannot help a state develop and maintain an auction or direct livestock market news system, or

provide telephone answering devices unless the state helps pay the cost. State marketing order check-off funds could be used if the USDA and the State legislature do not provide the needed money.

<sup>10</sup>In Nebraska, U. S. Department of Agriculture market News employees record the latest livestock market information on automatic telephone answering devices. The recordings are updated from two to five times daily, depending on the area services (Reference 36). By dialing the number of the nearest device at *any time of the day or night*, the latest USDA livestock market news recording for that area can be heard. As of January, 1972, there were 12 machines operating in Nebraska. Illinois had five, and Colorado and Iowa were next with three each. Fifteen other states had one or two. Most of the Nebraska machines are paid for by producer organizations or commercial concerns and a USDA reporter keeps the news material up-to-date.

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