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Potential For Establishing A Feeder Cattle Futures Market Delivery Point in North Dakota

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PREFACE

This report represents a continuation in investigating factors that affect livestock marketing in North Dakota. Recent publications by the authors include Live Beef Cattle Basis Patterns in North Dakota and Related Hedge-Lifting Strategies, Feeder Cattle Basis Patterns in North Dakota, and Feeder Cattle Hedge-Lifting Strategies in North Dakota. Copies are available from the Department of Agricultural Economics, P.O. Box 5636, North Dakota State University, Fargo, North Dakota 58105.

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Introduction

During the past decade cattle producers have experienced increasing production costs and widely fluctuating livestock prices. Producers have expressed the need for management techniques which offer protection from adverse price movements. Forward price contracting and futures market hedging are methods of reducing price risk.

Forward price contracting during the spring and summer months of feeder cattle to be marketed in the fall has occurred in North Dakota on a somewhat limited basis for many years. Futures trading in feeder cattle began at the Chicago Mercantile Exchange (CME) in 1972. Because futures market hedging is relatively new, it is not widely understood and has been used only in isolated cases by larger feeder cattle producers in North Dakota.

When a futures contract is initiated, a seller agrees to deliver and a buyer agrees to accept delivery of a commodity at a specified future time, place, price, quantity, and quality.¹ The person who sells the contract has a short position and the person who buys the contract has a long position. Positions in the futures market may be liquidated by either making an offsetting transaction (buying a short position or selling a long position) or by actual delivery. Deliveries to fulfill the terms of the futures contract may be made to either par-delivery or discount-delivery points. Par-delivery points refer to locations where the commodity defined in the futures contract may be delivered at the price specified in the futures contract. Prices are discounted a specified amount at discount-delivery points. One or more delivery points is necessary for any commodity traded in a futures market. Most feeder contracts are terminated by offsetting transactions, but some deliveries do occur.

A feeder cattle producer considering futures market hedging needs to "localize" the futures price so that it relates more closely to the local cash market. The method used to localize or adjust the futures market price is called the "basis." Basis is defined as the price of a specified futures contract month minus the current cash market price. Each cash market where feeder cattle are sold has a unique basis. This basis often refers mainly to location of the cash market relative to the nearest futures market par-delivery point.

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¹A full description of feeder cattle contract specifications and requirements for delivery can be found in a CME pamphlet titled Futures Trading in Feeder Cattle.

The basis is a key element in successful hedging of a commodity. Much of the potential for successful hedging rests on accurate prediction of what the basis will be on the day the hedge is lifted or closed out. This is the critical point in time for the basis value. Adjustments and changes in the basis between the time a hedge is placed and the time it is lifted are of minor concern, as long as the hedger maintains the required margin and continues to hold the hedge. Ideally, the basis on the day the hedge is lifted will be the same value as the hedger estimated when the hedge was placed. An unexpected or "windfall" gain will occur in the profitability of a short hedge if, on the day the hedge is lifted, the actual basis is narrower or more negative than the value the hedger originally estimated. The hedger will receive lower than expected returns on a short hedge if the actual basis is wider or less negative than the estimated basis. If the basis is wider than expected, delivery may be more profitable than purchasing an offsetting contract.

Basis relationships are, in theory, largely dependent upon cash price differences between futures delivery points and local markets. Cash and futures prices at par-delivery points tend to equalize due to arbitrage as the contract approaches maturity. Arbitrage is the act of buying in the lower-priced market and selling in the higher-priced market. Arbitrage at par-delivery point markets is easily accomplished.

Differences in cash prices among markets are determined by patterns of trade among geographic locations and costs of transportation between the two markets. The futures-cash basis should, in theory, be stable and predictable if trade patterns and transfer costs are relatively stable from year to year. Theoretically, the basis at a par-delivery point should differ from zero only by additional transaction costs associated with delivery. The fact that some deliveries do occur indicates that the basis may sometimes be wider than transaction costs.

Any short hedger, regardless of location, has the opportunity to deliver to fulfill the terms of a futures contract. However, as the distance to the delivery point increases, a lower local market cash price becomes a more acceptable alternative. A feeder cattle delivery point in North Dakota would make the basis for area producers more predictable and the risk associated with delivery would be less.

Delivery Point Criteria

Although the CME is not actively seeking additional feeder cattle delivery points, there is uncertainty as to the optimum number and location of delivery points.² The board of directors of the National Cattlemen's Association, in August 1982, accepted a recommendation from a special Cattle Futures Market Surveillance Committee concerning trading in cattle futures (1:12). Included in this resolution was a recommendation that additional delivery points be established where needed.

²Information received through a telephone conversation with research department personnel at the CME in July 1982.

A study was conducted for the CME in 1980 to develop criteria necessary for approving delivery points.³ In addition to price relationships, the factors adopted by the CME to consider when studying a request for delivery point designation are as follows:

I. Physical Facilities

A. Location of facility.

B. Facility design and size.

1. Loading chute capacity.
2. Number and capacity of receiving pens with feed and water available.
3. Areas available for sorting, grading, and health inspection.
4. Number and capacity of scales.
5. Number and capacity of holding pens with feed and water available.
6. Physical capacity for delivery numbers.
 - a. Should be determined by pen space available (with feed and water) and number of loads that can be graded, inspected and weighed per day assuming 15 minutes per load.
 1. If space is available for grading, inspection, and weighing, more than one team of graders can be used.
 - b. Should take into account space and time needs for conducting normal business.
7. Availability of market information on which cash quotes of cattle in the area are normally based.

II. Delivery Point Personnel

A. Names of bonded commission merchants available.

1. Names and experience of person(s) in each firm primarily responsible for cattle deliveries.

B. Names of order buyers located at or near the facility.

³Results of a study conducted for the CME by Dr. Dell Allen of Kansas State University to determine the criteria necessary to evaluate potential delivery points.

- C. Location and number of USDA Market News personnel available.
- D. Names and addresses of agencies responsible for health inspection.

III. Tariffs (delivery costs)

- A. Commission fee per head.
- B. Yardage costs.
- C. Weighing.
- D. Feed costs.
- E. Health and brand inspection costs.

IV. Transportation Facilities

- A. Number of local trucking firms.
- B. Highway systems.
- C. Railroads (if available and/or used).

V. Industry Size

- A. Number of cattle produced and marketed within a 100-mile radius of proposed facility.
 - 1. Number marketed during preceding five years with year by year breakdown.
 - 2. Weekly market numbers for proposed facility during previous year.
 - 3. Weekly market numbers for the trade area during the previous year.
- B. Average size and type of cattle production unit.

VI. Support Industry Capacity in Trade Region (100 Mile Radius)

- A. Names and locations of slaughter plants.
- B. Weekly slaughter capacity of trade region slaughter plants.
- C. Numbers of animals slaughtered during preceding year.
- D. Available market for animals not meeting CME delivery specifications.

The criteria used to evaluate a proposed delivery point are subjective. The weight of individual factors among the criteria also is subjective. Minimum requirements pertaining to facilities or marketings or other measurable values were not available from the CME.

Location of Facility

Although there may be several locations in North Dakota where a CME feeder cattle delivery point could be established, the West Fargo Union Stockyards was chosen as a potential site because adequate USDA statistics on number of feeder cattle marketed and prices were available for comparative analysis.

The CME had designated 11 locations as delivery points for feeder cattle in 1984 (Figure 1). Par-delivery could be made at approved livestock yards in Omaha, Nebraska; Oklahoma City, Oklahoma; and Sioux City, Iowa. Deliveries could be made at a \$0.25 per hundredweight discount at livestock yards at Kansas City and St. Joseph, Missouri. Deliveries could also be made at a \$0.50 per hundredweight discount at livestock yards in South St. Paul, Minnesota; Greeley, Colorado; Dodge City, Kansas; and Amarillo, Texas. In addition, deliveries could be made at Billings, Montana at a \$0.75 per hundredweight discount and at Montgomery, Alabama at a \$6.00 per hundredweight discount.

South St. Paul and Billings are the nearest feeder cattle delivery points for livestock producers in North Dakota. A delivery point at West Fargo would represent a considerable savings in transportation costs and shrinkage for any producer east of the Dickinson, North Dakota area. This area includes eight of the top 10 counties in cattle production in North Dakota. The northwestern portion of Minnesota also would realize similar savings with West Fargo as a delivery point.

Facility Design and Size

General information was obtained from West Fargo Stockyard personnel regarding facility design and size in 1984. Pen space for more than 6,000 cattle was available and most pens had automatic, electrically-heated waterers. Stockyard personnel indicated that sorting facilities and areas for grading and health inspection were more than adequate to facilitate handling the 6,000 head capacity.

There were seven inbound cattle chutes and 10 outbound cattle chutes at the stockyards. In addition, eight combination cattle and hog chutes were available. There were eight scales at the stockyards, each with a capacity of 50,000 pounds.

Delivery Point Personnel

Five bonded commission firms operated at the West Fargo Union Stockyards in 1984. They included Central Livestock Association, Dakota Livestock Commission Co., Farmers Union Marketing and Processing Association, McDonald Livestock Co., and Montgomery & Sons, Inc.

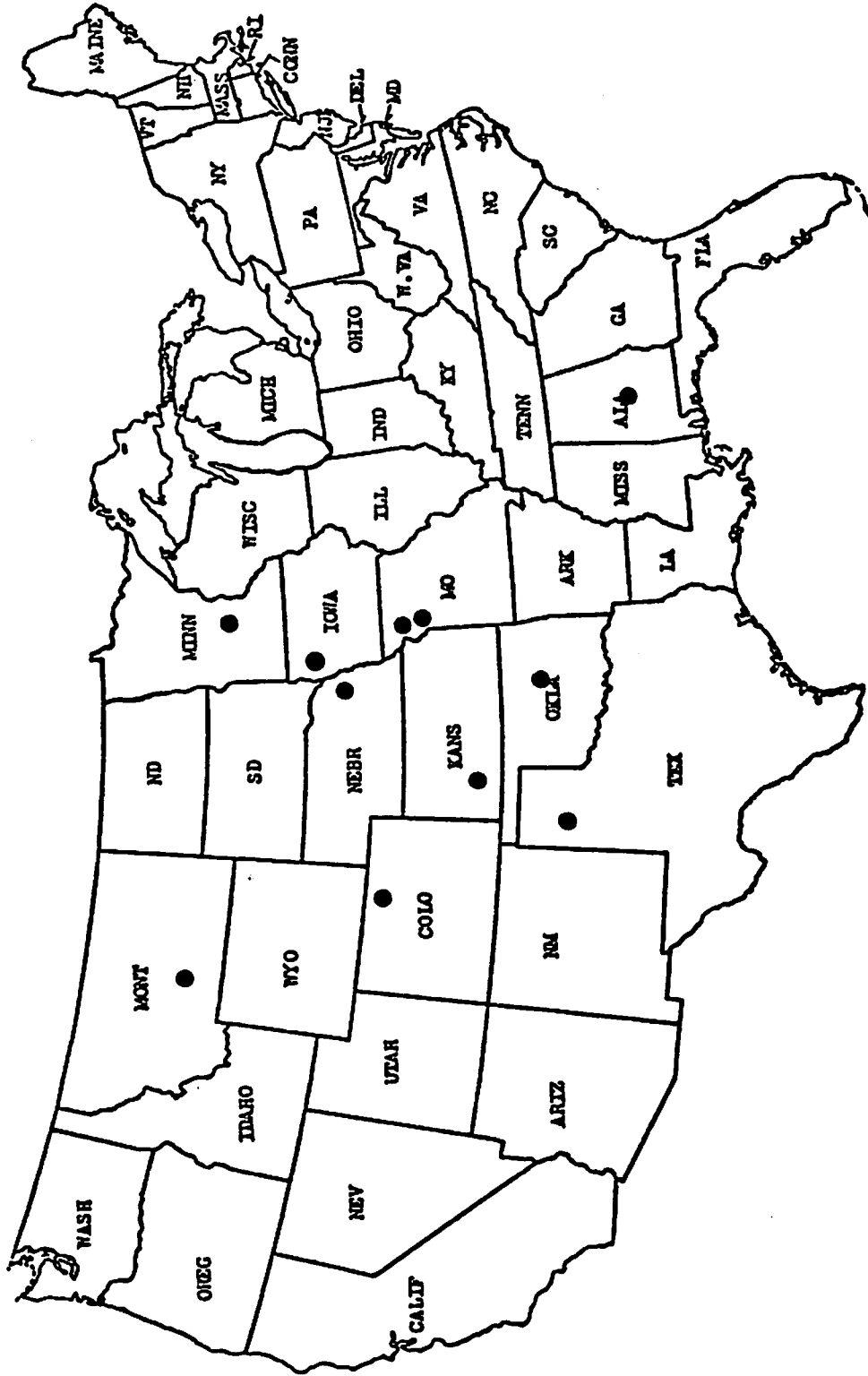


Figure 1. Delivery Points for Chicago Mercantile Exchange Feeder Cattle Contracts, 1984

Seven order buying firms dealt in cattle at West Fargo in 1984. They were Balthauser & Moyer, Central Livestock Order Buying, Dejong Cattle Company, Erickson Cattle Company, J. & R. Cattle Company, Taylor Cattle Company, and Wegner Livestock. In addition, several independent buyers, feedlots, and farmer feeders purchase feeder cattle regularly at West Fargo.

One USDA Market News Reporter, along with an office staff, was located at the stockyards. The Stockyards Veterinary Service was responsible for health inspection on a contract basis with the Union Stockyards Company.

Tariffs

Commission fees for feeder cattle as of January 1, 1984, at the West Fargo Union Stockyards were \$3.00 per head. Yardage and weighing costs combined amounted to \$2.80 per head. Feed and bedding costs were \$0.36 per head per day and varied with the length of stay. Health and brand inspection costs amounted to approximately \$0.50 per head. Beef promotion fees were \$0.50 per head.

Transportation Facilities

Two livestock carriers were located at the West Fargo Union Stockyards in 1984. They regularly haul livestock throughout the U.S. In addition, many other reputable livestock carriers haul livestock to and from West Fargo on a regular basis.

Interstate 94 and Interstate 29 provide easy access to the yards. These two highways provide direct routes east-west and north-south. Rail transport of livestock is no longer used.

Industry Size

Total marketings of all cattle at West Fargo from 1978 to 1983 are shown in Table 1. All cattle marketings at the 11 markets designated as CME delivery points also are included in Table 1. The number of cattle marketed at West Fargo was near the median of designated CME delivery point markets for all six years.

The West Fargo Stockyards is one of the leading feeder cattle markets in the United States. Several markets sell more total cattle, but stockyard personnel indicated that only three markets consistently sell more feeder cattle. West Fargo cattle receipts have consistently averaged over 70 percent feeder cattle. There were 232,552 total cattle marketed at West Fargo in 1983. Of this total, 165,273 or 72 percent were feeder cattle.

Weekly marketings of feeder cattle during 1983 at West Fargo are shown in Table 2. The average number of feeder cattle marketed per week was 3,178 head, but considerable variation existed from week to week. The lowest weekly volume was 690 head in the second week in July, while the largest volume, 6,816 head, was marketed the fourth week in April.

TABLE 1. ALL CATTLE MARKETINGS AT CME FEEDER CATTLE DELIVERY POINTS AND WEST FARGO, 1978-1983

Market	1978	1979	1980	1981	1982	1983	Average
-----number of head-----							
West Fargo	322,598	263,864	289,457	264,453	268,179	230,621	273,195
Omaha	828,858	720,765	745,000	742,174	611,975	570,130	703,150
Sioux City	707,001	693,458	566,163	554,068	425,475	442,441	564,768
South St. Paul	839,096	645,407	661,480	573,201	549,280	505,575	629,007
Greeley	115,085	108,252	99,440	111,264	123,019	109,153	111,036
Kansas City	313,115	296,163	206,627	245,324	244,635	229,958	255,970
St. Joseph	252,433	200,124	196,076	182,780	185,004	193,193	201,602
Dodge City	418,424	368,857	364,907	310,132	294,673	298,227	342,537
Oklahoma City	981,270	1,011,060	1,031,084	853,705	957,956	885,729	953,467
Amarillo	684,290	714,716	624,409	505,845	484,045	390,075	567,230
Billings	247,744	243,018	272,227	279,058	269,259	260,557	261,977
Montgomery	208,024	170,255	153,669	163,032	162,068	137,547	165,766
Average	493,162	452,995	434,212	398,753	381,297	354,434	419,142

SOURCE: USDA, Economic Research Service, Livestock and Meat Statistics, 1976-1983.

TABLE 2. NUMBER OF FEEDER CATTLE MARKETING AT WEST FARGO BY WEEK, 1983

Week Ending	Number	Week Ending	Number	Week Ending	Number	Week Ending	Number
01-07	3,449	04-08	3,909	07-08	690	10-07	2,353
01-14	5,290	04-15	3,190	07-15	1,108	10-14	2,805
01-21	4,181	04-22	6,816	07-22	830	10-21	3,762
01-28	4,096	04-29	6,491	07-29	757	10-28	3,436
02-04	2,264	05-06	3,456	08-05	788	11-04	4,167
02-11	3,823	05-13	2,822	08-12	614	11-11	4,505
02-18	4,992	05-20	3,841	08-19	1,130	11-18	5,523
02-25	6,248	05-27	3,672	08-26	2,637	11-25	1,687
03-04	6,246	06-03	2,524	09-02	1,259	12-02	5,498
03-11	2,149	06-10	2,454	09-09	763	12-09	5,826
03-18	5,720	06-17	2,114	09-16	1,802	12-16	5,252
03-25	4,687	06-24	1,558	09-23	1,651	12-23	2,322
04-01	3,562	07-01	1,677	09-30	1,936	12-30	941

SOURCE: USDA Livestock Market News, West Fargo, ND.

An area encompassing a 100-mile radius of West Fargo extends from Polk County, Minnesota on the north to Roberts County, South Dakota on the south, and from Stutsman County, North Dakota on the west to Hubbard County, Minnesota on the east (Figure 2). All cattle on farms in these counties total approximately one million head (4). The area from which West Fargo draws livestock was considerably larger, especially to the north. The area closer to West Fargo than to delivery points at South St. Paul, Sioux City, and Billings is shown in Figure 2.

An adequate market existed at West Fargo for animals not meeting CME delivery specifications. This was evident from the large number of feeder cattle marketed and from the level of the prices relative to both futures price and prices at delivery point markets. Research by Petry, Toman, and Aakre indicated that the average historical basis (futures price minus cash price) at West Fargo for all contract months from 1972 to 1981 was \$0.99 (2).

A comparison was made of cash prices at West Fargo and at Sioux City for 501-700 pound feeder steers (Table 3). Sioux City was selected because it was the nearest par-delivery point to West Fargo. The comparison indicated very favorable prices have existed at West Fargo and would indicate a good market for nondeliverable animals. Over the 11-year period the price of 501-700 pound feeder steers averaged \$0.38 higher at West Fargo than at Sioux City. Eight out of 11 years West Fargo prices were higher than prices at Sioux City. The maximum difference was in 1978 when West Fargo showed a \$3.07 advantage. The lowest relative prices at West Fargo were in 1974 when Sioux City had a \$1.79 advantage.

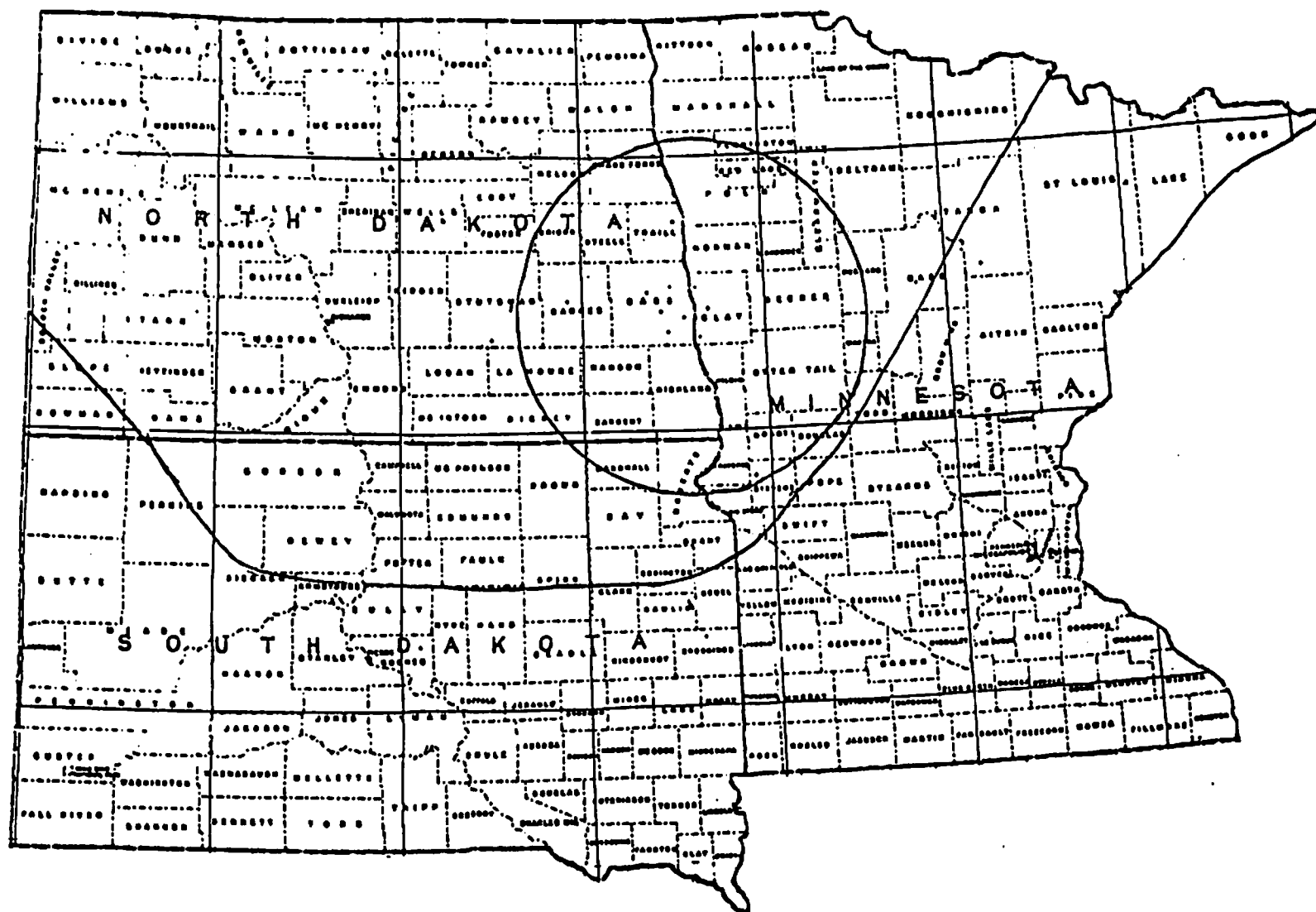


Figure 2. One Hundred Mile Radius From West Fargo Terminal Market and Area Closer to West Fargo Than CME Designated Delivery Points, 1984.

TABLE 3. SUMMARY OF AVERAGE PRICES RECEIVED FOR 501-700 POUND FEEDER STEERS*
AT WEST FARGO AND SIOUX CITY, 1973-1983

Year	<u>West Fargo</u> Mean	<u>Sioux City</u> Mean	West Fargo Minus Sioux City
-----in dollars per hundredweight-----			
1973	54.90	54.45	+0.45
1974	38.08	39.87	-1.79
1975	33.34	33.25	+0.09
1976	40.02	40.08	-0.06
1977	41.31	41.07	+0.24
1978	61.26	58.19	+3.07
1979	85.09	84.60	+0.46
1980	77.16	75.26	+1.90
1981	66.24	66.01	+0.23
1982	64.83	64.58	+0.25
1983	64.32	65.02	-0.70
Average	56.96	56.58	+0.38

*USDA choice grade prior to 1979 and USDA medium frame, no. 1 muscle thickness after 1979.

SOURCE: USDA, Livestock Market News, West Fargo, North Dakota and Sioux City, Iowa.

Procedure to Apply for Delivery Point Designation

Requests for designation of additional delivery points for feeder cattle should be submitted to the president of the CME. Such requests should initiate with an organized group of interested feeder cattle hedgers such as a state stockmen's association. The application, with sufficient documentation attached, should state that the proposed facility meets established CME criteria. The CME evaluates individual requests which, if approved, are then submitted to the Commodity Futures Trading Commission (CFTC) for final approval.

Summary and Conclusions

An examination of facilities and related criteria necessary for delivery point designation indicated that West Fargo would be a suitable CME feeder cattle delivery point. Three points warrant emphasis when considering a delivery point at West Fargo. These include prices received for feeder cattle relative to futures market prices and par-delivery point cash prices, volume for feeder cattle marketings, and location.

Feeder steer prices at West Fargo have consistently averaged above comparable prices at Sioux City, a par-delivery point. Prices at West Fargo have historically averaged close to the CME futures prices, resulting in a

narrow basis. This indicates that the West Fargo market is a price leader in the feeder cattle industry.

The volume of feeder cattle marketings is a strong point for the West Fargo market. From 1978 to 1983 more cattle were marketed at West Fargo than at several of the markets that were feeder cattle delivery points. In addition, the relatively high percentage of feeder cattle sold results in West Fargo selling more feeder cattle than most of the CME delivery markets.

Producers throughout North Dakota are a considerable distance from existing delivery points, so use of the delivery option when hedging is limited. A delivery point at West Fargo would permit more flexibility in marketing alternatives and would make basis estimating much easier. Furthermore, designation of West Fargo as a CME feeder cattle delivery point would increase the economically deliverable supply of feeder cattle and would better serve the cattle industry in the Northern Great Plains, a major national source of high quality feeder cattle.

It is recommended that North Dakota feeder cattle producers seriously consider seeking CME feeder cattle delivery point status for the West Fargo Stockyards.

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