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PRICING AND MARKETING PRACTICES FOR NORTH DAKOTA DURUM AND HRS WHEAT 1986 CROP YEAR

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Cash markets reflect demand and supply conditions for domestic and export use. Price adjustments, known as premiums and discounts, are established by the interaction of supply and demand for various quality factors. Merchandisers and country elevators communicate these in the form of premiums and discounts for each factor from markets to producers. Results of an annual survey of country elevator managers in North Dakota regarding marketing practices are presented in this report. Information on cash markets including premiums and discounts of durum and HRS wheat, selected organization and operational data, and information on the general characteristics of the responding elevators were collected.

Similar studies on the pricing adjustments for durum and HRS wheat were conducted for the 1984 and 1985 crop years. The 1984 survey was more comprehensive of the pricing and marketing practices than the 1985 and 1986 surveys, which were very similar in structure. The results of both 1984 and 1985 surveys are available from the Department of Agricultural Economics, North Dakota State University. The results of the 1986 survey with comparisons to 1984 and 1985 are the focus of this study.

General Characteristics of Participating Elevators

Surveys were sent to each of the elevators in North Dakota. Of those returned, 168 were completed or 33 percent of total population. Location, organizational structure, load-out capacity, distance to competition, storage capacity, board prices of durum and HRS wheat, and commission companies and track buyers used varied with participating elevators. A breakdown of general characteristics of elevators participating are presented in Figure 1 and Tables 1-7. (Throughout this report, reference is made to tables and figures containing data from the survey. These tables are located in Appendix A, and the figures are in Appendix B). Crop Reporting Districts (CRDs) were used to divide the responding elevators into different state locations.

The market shares among commission companies and track buyers were similar to previous years, with Harvest States dominating. Commission companies and track buyers varied by participating elevators in different regions. A breakdown of different grain buyers by region is presented in Table 8. Harvest States Cooperatives was the largest buyer of durum and HRS wheat in the majority of CRDs. Atwood-Larson, the second largest buyer, dominated in CRDs 4 and 5, and Benson-Quinn was generally the third largest buyer.

Legal ownership of participating elevators varied; 117 cooperatives and 56 private firms participated in the survey. Harvest States was the largest buyer of durum and HRS wheat from the cooperatives in North Dakota

(Table 9). Benson-Quinn was the next largest buyer and Atwood-Larson was third.

For purposes of analysis, Harvest States line elevators were classified as private firms. As a result, Harvest States was the largest buyer of durum and HRS wheat from private firms in North Dakota, and Cargill was the next largest buyer of HRS wheat.

The use of commission companies and track buyers varied by size of elevator (Table 10). Harvest States was the major buyer of durum and HRS wheat from firms with storage capacity ranging from 100,000 to 1,000,000 bushels. However, Cargill was the major buyer of durum and HRS wheat from firms with storage capacity larger than 1,000,000 bushels.

Premiums and Discounts

Managers were asked to report their base grade price for "No. 1 Hard Amber Durum" and "No. 1 Dark Northern Spring, 14 percent protein." Pricing adjustments for durum and HRS wheat were collected for both grade and nongrade factors. Grade factors analyzed in this study were test weight, damaged kernels, foreign materials, shrunken and broken kernels, contrasting class, and wheat of other classes. Nongrade determining factors included price adjustments for 14.5 percent moisture durum and HRS wheat, 12 and 16 percent HRS wheat protein, and "amber durum."

The average price adjustments for 1984 to 1986 are presented in Table 12. Most of the price adjustments for 1986 durum and HRS wheat crops averaged higher than those for 1984 and 1985 crop years. All but two price adjustments averaged the same or higher in 1986 than in 1985. These two included adjustments for "amber durum" and discounts on 4 percent damaged kernels for both durum and HRS wheat. Discounts were significantly higher in 1986 for "amber durum" and 4 percent damaged kernels. As a result of poor harvest conditions, quality levels were lower in 1986 as compared to 1985 (Table 13).

The range between high and low price adjustments indicates that the elevators varied considerably in their pricing adjustments. The frequency distributions given in Figures 2-16 indicate the dispersion of pricing adjustments for each factor. The distribution of responses varied among adjustments for each factor.

Analysis

Price adjustment responses were analyzed for significant differences by location in the state, organizational structure, load-out capacity, distance to competition, and storage capacity. The mean value was calculated for each factor as a measure for comparison. Price adjustments were found to differ among Crop Reporting Districts (CRD). It was found that price adjustments for durum were higher in CRD 7 than in all other CRDs. Weather induced quality variations may contribute to this discrepency. Price adjustments for 12 percent protein HRS wheat price have a wide range of variation (Table 14). The results indicate that CRDs 1, 4, and 7 have a significantly greater

discount for 12 percent protein, averaging 60 cents per bushel compared to 35 cents per bushel in eastern CRD regions. This occurrence may be attributed to the demand differential between Pacific Northwest (PNW) and Minneapolis/Duluth markets and due to protein supply differences in the east versus the western part of the state. Significant regional differences were observed for the discount for 5 percent wheat of other classes for HRS wheat. Discounts averaged 2.5 cents per bushel in Region 4 compared to 11.4 cents per bushel in Region 1. Discount variability for wheat of other classes in certain CRDs may be explained by the amount of HRW wheat produced in that CRD region. The high discounts discourage farmers from blending wheat of other classes.

An analysis of price adjustments among elevators with private and cooperative organizational structures is presented in Table 15. Three important differences were observed. Noticeable differences in price adjustments for durum were observed in discounts for wheat of other classes and for contrasting classes. Variation also occurred for discounts for wheat of other classes for HRS wheat. In all three cases cooperatives took larger discounts than private firms.

Averages of price adjustments varied among elevators with different load-out capacities (Table 16). A noticeable variation occurred for wheat of other classes for both durum and HRS wheat. In both cases, the larger the load-out capacity, the larger the discount. Firms with six-car loading capacity or less discounted 10.5 cents per bushel for durum and 7.7 cents per bushel for HRS wheat on average for wheat of other classes. However, firms that could load more than 54 cars discounted 16.6 cents per bushel for durum and 12.0 cents per bushel for HRS wheat. Larger capacity firms may not be able to take advantage of blending and therefore must pass the loss on to producers in the form of discounts. Another factor of significant variation was protein premiums and discounts for 16 and 12 percent protein HRS wheat. The larger the load-out capacity, the greater the discounts for 12 percent protein HRS wheat.

For durum and HRS wheat, price adjustments were significant among elevators with selected distances to competition. For durum, firms with competitors more than 10 miles away had generally greater discounts than firms with closer competitors (Table 17). For HRS wheat, the distance from the nearest competitor resulted in no changes in price adjustments. Location of firms may be a factor; elevator density is greater in eastern North Dakota than western North Dakota.

Storage capacity of elevators had an influence on price adjustments for durum and HRS wheat (Table 18). Firms with larger storage capacity took larger discounts for "amber durum" than smaller firms. Discounts were largest for firms with storage capacity of 300,000 to 399,999 bushels. Larger storage capacity resulted in larger premiums for 16 percent protein HRS wheat and smaller discounts for 12 percent protein. This may be the result of central market demand for protein wheats.

Economics of Cleaning Wheat

Managers were asked questions about the economics of cleaning wheat. Of the 168 elevators responding, 159 cleaned wheat prior to shipment. These elevators could clean an average of 1,538 bushels per hour with a range of 200 to 13,000 bushels per hour. At harvest, the managers called incoming wheat clean at an average of 2.6 percent dockage and did not physically clean that wheat. After harvest, incoming wheat was called clean if dockage was less than or equal to 2.1 percent and was not cleaned further. During harvest, wheat was cleaned down to an average .9 percent dockage. After harvest, wheat was cleaned down to an average .8 percent dockage.

The cost of cleaning, price of wheat screenings, dockage level of the wheat, and cost of transportation are the major factors determining the economics of cleaning wheat. The average cleaning cost was 4.0 cents per bushel among the responses. Wheat screening prices averaged $16.08 per ton (Table 20). Table 20 contains the average high and low estimated cleaning cost and wheat screening prices for 1985 and 1986. Screening prices have decreased from $33.12 per ton in 1985 to $16.00 per ton in 1986. Average cleaning costs were 4.0 cents per bushel in 1986 compared to 4.2 cents per bushel in 1985. Therefore, if transportation costs and dockage levels remain the same, cleaning wheat would be less profitable in 1986 than in 1985.

The economics of cleaning wheat were examined by using selected cleaning costs and prices for wheat screenings. A margin from cleaning was calculated using the following equation:

$$\text{Cleaning margin} = (W)\ (D)\ (S + T) - (CW)$$

where

W = the amount of wheat in lbs.
D = the percentage of dockage in the wheat
S = the price received for wheat screenings per lb.
T = the cost of transportation from the elevator to the destination market, and
C = the cost of cleaning wheat per lb.

Table 21 contains results of a sensitivity analysis which shows how much screening values and transportation savings can influence the economics of cleaning. Dockage is rounded to the nearest 1 percent. The figures in Table 21 are gross averages and should not be used for managerial decisions. It is shown that profitability of cleaning wheat fluctuates with cleaning costs. A one-cent decrease from 3.0 cents to 2.0 cents increases profitability for cleaning wheat at lower incoming dockage levels. Therefore, it is shown that profitability of cleaning wheat depends on the transportation costs, cleaning costs, and the price for wheat screenings, each of which varies by elevator.

Summary and Conclusions

Elevators responding to the survey varied considerably by location in the state, organizational structure, load-out capacity, distance to

competition, storage capacity, board price for durum and HRS wheat, and commission companies and track buyers used. Price adjustments varied throughout the state and significant differences were identified. The major source of price variability in 1986 came from the discount for 4 percent damaged wheat. Due to the poor harvest conditions, quality of the 1986 crop was lower than previous years. Nongrade factors also had a significant influence on price levels. Discounts for "amber durum" were significantly higher in 1986 compared to previous years. Protein premiums for 1986 were different between the eastern and western part of the state. Premium and discount averages used in 1986 were higher than price adjustment averages for 1984 and 1985 crop years.

The economics of cleaning wheat were also examined in the study. Using selected responses, the margin for cleaning wheat was calculated. The decrease in average screening prices in 1986 more than offset the decrease in average cleaning cost. As a result, cleaning wheat was less profitable in 1986 than in 1985.

Appendix A

TABLE 1. NUMBER AND PERCENTAGE OF RESPONSES FROM NINE REGIONS ACROSS NORTH DAKOTA

Region	Number of Elevators Receiving Questionnaires	Number of Elevators Responding	Percentage Responding
1. Northwest	64	24	38
2. North Central	44	8	18
3. Northeast	111	33	30
4. West Central	24	8	33
5. Central	50	25	50
6. East Central	82	27	33
7. Southwest	31	9	29
8. South Central	33	8	24
9. Southeast	73	26	34
Total	512	168	33

SOURCE: Question 2.

TABLE 2. ORGANIZATIONAL STRUCTURE OF RESPONDING ELEVATORS

Types	Number	Percentage
Locally owned cooperatives	104	62
Harvest states line elevator	17	10
Locally owned private elevator	28	17
Line elevator of large private company	19	11
Total	168	100

TABLE 3. LOAD-OUT CAPACITY OF RESPONDING ELEVATORS

Load-Out Capacity	Number	Percentage
6 or less cars/day	27	18
7 - 26 cars/day	89	59
27 - 54 cars/day	30	20
More than 54 cars/day	6	3
Total	152	100

SOURCE: Question 4.

TABLE 4. DISTANCE TO NEAREST COMPETITION OF RESPONDING ELEVATORS

Distance to Competition	Number	Percentage
Less than 5 miles	58	35
6 - 10 miles	70	42
More than 10 miles	39	23
Total	167	100

SOURCE: Question 5.

TABLE 5. STORAGE CAPACITY OF RESPONDING ELEVATORS

Storage Capacity	Number	Percentage
Less than 100,000 bushels	11	7
100,000 to 199,000 bushels	30	19
200,000 to 299,000 bushels	35	21
300,000 to 399,000 bushels	17	10
400,000 to 699,000 bushels	35	21
700,000 to 999,000 bushels	19	8
Over 1,000,000 bushels	21	13
Total	168	100

SOURCE: Question 6.

TABLE 6. AVERAGE BOARD PRICE FOR NO. 1 HARD AMBER DURUM AND NO. 1 DNS 14 PERCENT PROTEIN HRS WHEAT AMONG RESPONDING ELEVATORS IN EACH REGION, OCTOBER 31, 1986

Region	Average Durum Price	Average HRS Wheat Price
1. Northwest	2.44	2.40
2. North Central	2.52	2.35
3. Northeast	2.63	2.50
4. West Central	2.37	2.43
5. Central	2.62	2.50
6. East Central	2.68	2.51
7. Southwest	2.60	2.44
8. South Central	2.51	2.41
9. Southeast	2.66	2.50
State	2.58	2.47

SOURCE: Question 15 and 17.

TABLE 7. MARKET SHARE OF COMMISSION COMPANIES AND TRACK BUYERS BY RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT (FALL 1986)

Company	Durum	HRS Wheat
	----- percent -----	
Harvest States	38.4	33.6
Atwood-Larson	14.3	12.9
Benson-Quinn	11.9	12.1
Kellogg	11.7	10.2
Cargill	10.6	12.0
Peavey	2.6	4.3
Continental	2.5	3.7
International Multifoods	1.5	3.0
Others	6.5	8.2
Total	100	100

SOURCE: Question 7.

Note: Percentages shown are not weighted by the amount of durum and HRS wheat handled by each elevator and thus indicate the average among the elevators, not the amount of durum and HRS wheat handled by each company in North Dakota.

TABLE 8. MARKET SHARE OF COMMISSION COMPANIES AND TRACK BUYERS BY REGION FROM RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT (FALL 1986)

Commodity (Base Grade)	Company	Region 1	2	3	4	5	6	7	8	9
		percent								
Durum	Harvest States	45.6	64.0	47.9	33.2	26.9	30.5	54.3	33.3	29.4
	Atwood-Larson	5.1	13.2	8.8	48.3	23.6	8.4	4.3	32.5	14.3
	Benson Quinn	8.1	0.0	12.5	16.7	19.0	10.0	2.9	0.0	18.1
	Kellogg	24.0	1.7	4.0	0.0	9.1	3.2	13.6	0.0	27.6
	Cargill	11.4	17.7	1.1	0.0	8.1	31.8	14.3	0.0	6.7
	Peavey	.10	1.7	7.5	0.0	3.4	1.8	0.0	0.0	1.2
	Continental	3.4	1.7	2.8	0.0	5.3	1.6	0.7	0.0	1.5
	IMF	0.0	10.0	5.4	0.0	1.0	2.6	0.0	0.0	0.0
	Others	2.3	0.0	10.0	1.8	3.6	10.1	9.9	34.2	1.2
	Total	100	100	100	100	100	100	100	100	100
HRS	Harvest States	45.5	60.7	38.8	12.4	20.3	29.9	45.6	37.1	29.5
	Atwood-Larson	6.1	4.2	10.8	46.8	24.9	7.5	0.4	7.4	12.5
	Benson Quinn	6.6	0.0	13.0	23.8	13.1	18.7	19.4	13.6	15.8
	Kellogg	14.1	0.0	5.0	0.0	5.9	1.5	0.6	0.0	20.2
	Cargill	13.1	31.8	4.2	0.0	10.7	22.0	14.0	14.3	10.2
	Peavey	3.3	1.7	7.7	13.9	6.5	1.5	3.6	0.0	0.7
	Continental	3.0	1.6	5.8	1.5	3.7	8.2	6.8	0.0	3.5
	IMF	0.0	0.0	7.4	0.0	1.3	5.6	0.0	0.0	0.0
	Others	8.3	0.0	7.3	1.6	13.6	5.1	9.6	27.6	7.6
	Total	100	100	100	100	100	100	100	100	100

TABLE 9. MARKET SHARE OF COMMISSION COMPANIES AND TRACK BUYERS BY ORGANIZATION FROM RESPONDING ELEVATOR FOR DURUM AND HRS WHEAT (FALL 1986)

Commodity (Base Grade)	Company	Private	Cooperative
		------ percent -------	
Durum	Harvest States	25.1	50.9
	Atwood-Larson	17.3	11.8
	Benson Quinn	2.9	14.0
	Kellogg	13.6	8.9
	Cargill	22.6	5.6
	Peavey	4.8	1.5
	Continental	2.9	1.7
	IMF	1.4	.2
	Others	9.4	4.1
	Total	100	100
HRS	Harvest States	24.8	46.2
	Atwood-Larson	18.5	8.8
	Benson Quinn	1.6	15.2
	Kellogg	10.6	7.9
	Cargill	20.4	7.2
	Peavey	5.5	3.1
	Continental	3.2	3.4
	IMF	4.8	1.5
	Others	10.6	6.7
	Total	100	100

TABLE 10. MARKET SHARE OF COMMISSION COMPANIES AND TRACK BUYERS BY SIZE OF ELEVATORS FOR DURUM AND HRS WHEAT (FALL 1986)

Commodity (Base Grade)	Company	Elevator Size (By Bushels) 0 To 99,000	100,000 To 199,000	200,000 To 299,000	300,000 To 399,000	400,000 To 1,000,000	Over 1,000,000
		percent					
Durum	Harvest States	14.3	29.0	43.8	49.4	45.4	18.4
	Atwood-Larson	17.1	15.1	12.0	7.7	10.5	12.0
	Benson Quinn	12.9	17.7	7.6	15.4	8.3	18.2
	Kellogg	25.7	16.6	11.7	7.7	12.0	5.8
	Cargill	15.7	10.0	6.6	10.0	6.4	27.4
	Peavey	0.0	0.0	7.3	0.0	2.5	3.0
	Continental	1.4	1.6	1.8	2.8	2.8	6.4
	IMF	11.4	0.0	0.0	5.4	1.0	0.0
	Others	1.5	10.0	9.2	1.5	3.0	8.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0
HRS	Harvest States	14.3	29.7	39.6	39.6	36.2	16.2
	Atwood-Larson	24.3	13.1	15.9	10.6	11.3	8.9
	Benson Quinn	7.1	14.9	9.7	12.1	10.1	19.2
	Kellogg	21.4	9.8	7.6	18.8	11.0	4.3
	Cargill	21.4	14.2	5.4	4.6	11.4	25.5
	Peavey	1.4	5.7	8.9	1.6	3.4	3.2
	Continental	1.4	1.4	5.9	3.3	4.6	5.3
	IMF	8.6	0.0	2.2	3.1	3.3	4.8
	Others	0.0	10.2	4.8	6.3	7.5	12.6
	Total	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 11. MARKET SHARE COMMISSION COMPANIES AND TRACK BUYER BY LOAD-OUT CAPACITY FROM RESPONDING ELEVATOR FOR DURUM AND HRS WHEAT (FALL 1986)

Commodity (Base Grade)	Company	Load-out Capacity: Less Than 6 Cars	7 To 26 Cars	27 To 54 Cars	Greater Than 54 Cars
		percent			
Durum	Harvest States	22.8	38.7	37.2	64.0
	Atwood-Larson	5.8	18.6	12.8	0.2
	Benson Quinn	11.1	12.7	13.5	16.0
	Kellogg	32.1	9.7	6.3	2.0
	Cargill	13.9	5.6	19.4	7.0
	Peavey	0.0	3.8	1.2	2.0
	Continental	0.4	2.6	3.0	4.0
	IMF	2.8	1.4	1.7	0.0
	Others	5.0	3.6	5.9	2.8
	Total*	100	100	100	100
HRS	Harvest States	37.6	30.3	35.1	63.0
	Atwood-Larson	4.8	14.7	14.7	0.2
	Benson Quinn	9.5	12.8	14.5	16.0
	Kellogg	23.5	9.6	0.0	2.0
	Cargill	11.0	8.8	23.0	7.0
	Peavey	3.7	4.7	2.3	2.0
	Continental	0.3	4.6	2.0	4.0
	IMF	2.7	4.7	0.7	0.0
	Others	3.9	9.0	6.7	3.8
	Total*	100	100	100	100

*May not add to 100 due to rounding.

TABLE 12. AVERAGE PRICE ADJUSTMENTS FOR EACH FACTOR AMONG RESPONDING NORTH DAKOTA COUNTRY ELEVATORS (FALL OF 1984, 1985, AND 1986)

Commodity (Base Grade)	Factor	1984 Average	1985 Average	1986 Average
		---------- ¢/bu. ----------		
Durum	58 lbs. test weight	-2.2	-2.2	-2.7
#1 HAD	14.5% moisture	-6.0	-7.6	-7.2
	Amber durum	-5.7	-16.7	-21.0
	4% damaged kernels	-6.0	-6.9	-8.4
	1% foreign material	-2.8	-1.9	-1.9
	5% shrunken and broken kernels	-6.6	-3.9	-5.0
	2% contrasting classes	-2.0	-4.4	-4.8
	5% wheat of other classes	--	-9.9	-11.7
HRS	57 lbs. test weight	-1.9	-1.8	-2.9
#1 DNS	14.5% moisture	-5.9	-6.8	-6.5
14% Protein	16% protein	41	63.4	62.6
	12% protein	-38.0	-67.4	-43.9
	4% damaged kernels	-2.0	-6.6	-8.9
	1% foreign material	-1.4	-1.3	-1.7
	5% shrunken and broken kernels	-2.2	-3.0	-4.2
	2% contrasting classes	-1.6	-3.2	-3.5
	5% wheat of other classes	--	-7.0	-8.6

SOURCE: Questions 16 and 18.

TABLE 13. QUALITY OF 1985 AND 1986 DURUM AND HRS WHEAT CROPS

Commodity (Base Grade)	Factor	1985 Average Value	1986 Average Value
Durum	Test weight	60.7 lbs	59.3 lbs.
	Moisture	12.9%	12.4%
	Grade	1 amber durum	2 hard amber durum
	Shrunken and broken kernels	0.6%	1.2%
	Foreign material	0.1%	0.1%
	Damaged kernels	0.3%	0.8%
	Contrasting classes	0.7%	0.4%
HRS	Test weight	59.2 lbs	58.7 lbs.
	Moisture	12.9%	12.2%
	Protein	14.0%	14.0%
	Shrunken and broken kernels	1.3%	1.6%
	Foreign material	0.2%	0.0%
	Damaged kernels	0.2%	0.6%
	Contrasting classes	0.0%	0.0%

SOURCE: 1986 durum wheat and HRS wheat quality reports, Department of Food Science and Cereal Technology, North Dakota State University, Fargo, ND.

TABLE 14. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG ELEVATORS OF SPECIFIED REGIONS IN NORTH DAKOTA (FALL 1986)

Commodity (Base Grade)	Factor	Region 1	2	3	4	5	6	7	8	9
		¢/bu.								
Durum #1 HAD	58 lbs. test weight	-2.1	-1.7	-2.6	-3.5	-2.8	-2.6	-7.0	-2.7	-2.5
	14.5% moisture	-9.3	-7.0	-7.0	-5.5	-6.5	-7.8	-7.2	-7.0	-6.2
	Amber durum	-23.4	-22.1	-20.9	-21.0	-21.4	-18.4	-24.2	-21.2	-19.4
	4% damaged kernels	-8.4	-8.2	-8.7	-9.7	-8.1	-8.1	-8.0	-8.2	-8.9
	1% foreign material	-1.1	-2.6	-2.3	-1.5	-1.7	-2.8	-.25	-2.6	-1.9
	5% shrunken and broken kernels	-4.7	-5.2	-6.3	-3.0	-4.4	-4.5	-3.8	-5.2	-5.1
	2% contrasting classes	-4.7	-5.6	-4.5	-4.3	-4.9	-4.5	-4.3	-5.6	-5.1
	5% wheat of other classes	-10.0	-13.5	-12.2	-17.5	-10.8	-9.7	-21.0	-14.0	-10.9
HRS #1 DNS 14% Protein	57 lbs. test weight	-2.4	-3.5	-3.4	-1.7	-2.9	-3.3	-1.8	-2.8	-3.4
	14.5% moisture	-8.7	-6.1	-6.2	-4.6	-6.3	-6.8	-5.0	-5.1	-6.0
	16% protein	60.5	57.3	60.6	71.4	66.9	58.6	70.3	71.5	62.0
	12% protein	-55.6	-55.9	-40.1	-66.1	-44.4	-35.9	-61.9	-36.3	-31.3
	4% damaged kernels	-8.5	-8.8	-9.8	-9.2	-10.8	-8.4	-7.1	-7.7	-8.2
	1% foreign material	-9.3	-2.0	-2.2	-.8	-1.6	-2.4	-.14	-1.6	-1.0
	5% shrunken and broken kernels	-5.5	-5.8	-4.6	-2.0	-3.5	-3.8	-2.8	-8.4	-3.1
	2% contrasting classes	-4.8	-5.2	-3.4	-3.3	-3.3	-3.3	-1.8	-2.2	-3.2
	5% wheat of other classes	-11.7	-10.7	-8.8	-2.5	-8.5	-4.7	-10.6	-8.3	-7.7

SOURCE: Questions 2, 16, and 18.

TABLE 15. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG SELECTED TYPES OF ELEVATOR STRUCTURE ORGANIZATIONS (FALL 1986)

Commodity (Base Grade)	Factor	Cooperative	Private
		¢/bu.	
Durum #1 HAD	58 lbs. test weight	-2.8	-2.4
	14.5% moisture	-7.4	-7.4
	Amber durum	-21.3	-19.1
	4% damaged kernels	-8.5	-8.4
	1% foreign material	-1.8	-2.3
	5% shrunken and broken kernels	-5.2	-4.6
	2% contrasting classes	-5.3	-3.8
	5% wheat of other classes	-12.5	-10.8
HRS #1 DNS 14% Protein	57 lbs. test weight	-3.0	-3.2
	14.5% moisture	-6.8	-6.4
	16% protein	+62.7	+61.8
	12% protein	-43.6	-44.2
	4% damaged kernels	-8.7	-10.6
	1% foreign material	-1.6	-2.1
	5% shrunken and broken kernels	-4.6	-3.4
	2% contrasting classes	-3.6	-3.1
	5% wheat of other classes	-9.2	-7.1

TABLE 16. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG ELEVATORS WITH SELECTED LOAD-OUT CAPACITIES (FALL 1986)

Commodity (Base Grade)	Factor	Load-out Capacity: Less Than 6 Cars	7 To 26 Cars	27 To 54 Cars	Greater Than 54 Cars
Durum	58 lbs. test weight	-2.8	-2.7	-3.2	-2.7
#1 HAD	14.5% moisture	-7.6	-7.3	-7.5	-7.8
	Amber durum	-19.4	-21.0	-20.5	-25.2
	4% damaged kernels	-7.6	-8.6	-8.6	-8.8
	1% foreign material	-1.2	-1.9	-2.1	-1.4
	5% shrunken and broken kernels	-4.4	-5.7	-4.0	-4.6
	2% contrasting classes	-5.9	-4.7	-4.3	-4.4
	5% wheat of other classes	-10.5	-11.5	-12.3	-16.6
HRS	57 lbs. test weight	-2.9	-3.1	-3.0	-2.8
#1 DNS	14.5% moisture	-6.7	-6.3	-7.1	-7.8
14% Protein	16% protein	60.3	62.9	61.3	67.3
	12% protein	-44.9	-40.9	-46.4	-53.3
	4% damaged kernels	-8.5	-8.6	-10.7	-8.8
	1% foreign material	-1.7	-1.7	-1.6	-2.3
	5% shrunken and broken kernels	-4.5	-4.6	-3.4	-5.8
	2% contrasting classes	-3.8	-3.6	-3.4	-3.8
	5% wheat of other classes	-7.7	-8.5	-8.2	-12.0

SOURCE: Questions 4, 16, and 18.

TABLE 17. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG ELEVATORS WITH SELECTED DISTANCES TO NEAREST COMPETITION (FALL 1986)

Commodity (Base Grade)	Factor	Less Than 5 Miles	6 To 10 Miles	Greater Than 10 Miles
		---------- ¢/bu. ----------		
Durum	58 lbs. test weight	-2.5	-2.7	-3.4
#1 HAD	14.5% moisture	-7.2	-7.5	-7.0
	Amber durum	-19.1	-21.8	-22.6
	4% damaged kernels	-8.4	-8.2	-8.8
	1% foreign material	-1.9	-1.8	-1.8
	5% shrunken and broken kernels	-4.2	-5.3	-5.3
	2% contrasting classes	-4.8	-4.8	-4.8
	5% wheat of other classes	-11.7	-11.9	-11.2
HRS	57 lbs. test weight	-2.9	-3.2	-2.6
#1 DNS	14.5% moisture	-6.2	-6.7	-6.4
14% Protein	16% protein	64.4	59.5	64.9
	12% protein	-43.0	-42.8	-47.4
	4% damaged kernels	-8.6	-9.3	-8.6
	1% foreign material	-1.8	-1.8	-1.2
	5% shrunken and broken kernels	-3.4	-5.1	-3.9
	2% contrasting classes	-3.1	-3.8	-3.5
	5% wheat of other classes	-8.3	-8.7	-8.7

SOURCE: Questions 5, 16, and 18.

TABLE 18. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG ELEVATORS WITH SELECTED STORAGE CAPACITIES (FALL 1986)

Commodity (Base Grade)	Factor	Bushels: Less Than 0 To 100,000	100,000 To 199,000	200,000 To 299,000	300,000 To 399,000	400,000 To 1,000,000	Over 1,000,000
		¢/bu.					
Durum #1 HAD	58 lbs. test weight	-2.1	-2.3	-3.3	-2.2	-2.5	-3.9
	14.5% moisture	-8.1	-8.1	7.3	-9.3	-6.2	-7.1
	Amber durum	-19.3	-18.6	-21.1	-23.1	-22.0	-20.7
	4% damaged kernels	-8.9	-9.1	-7.4	-8.3	-8.6	-9.4
	1% foreign material	-1.1	-1.6	-1.2	-1.9	-2.2	-2.7
	5% shrunken and broken kernels	-4.3	-3.3	-5.6	-6.7	-4.8	-5.4
	2% contrasting classes	-4.4	-4.6	-5.3	-6.0	-4.7	-4.1
	5% wheat of other classes	-10.8	-11.8	-11.7	-10.9	-11.9	-11.9
HRS #1 DNS 14% Protein	57 lbs. test weight	-3.3	-3.2	-2.8	-3.1	-2.9	-3.5
	14.5% moisture	-6.5	-6.9	-6.8	-6.9	-5.7	-6.5
	16% protein	48.9	62.2	66.0	62.6	62.1	65.9
	12% protein	-35.8	-47.3	-47.5	-40.8	-43.6	-43.1
	4% damaged kernels	-7.0	-10.2	-8.7	-7.6	-8.3	-11.6
	1% foreign material	-1.1	-1.2	-1.8	-2.0	-1.7	-1.7
	5% shrunken and broken kernels	-5.9	-3.3	-5.7	-3.7	-3.9	-4.6
	2% contrasting classes	-5.4	-2.9	-3.6	-4.6	-3.1	-3.2
	5% wheat of other classes	-11.4	-8.3	-10.3	-10.6	-7.6	-7.1

SOURCE: Questions 6, 16, and 18.

TABLE 19. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG EASTERN AND WESTERN NORTH DAKOTA ELEVATORS WITH HIGH AND LOW BOARD PRICES (FALL 1986)

Commodity	Location	Factor	Low Price	High Price
			¢/bu.	
Durum	East	58 lbs. test weight	0.0	10.0
		14.5% moisture	0.0	25.0
		Amber durum	0.0	30.0
		4% damaged kernels	0.0	20.0
		1% foreign material	0.0	6.0
		5% shrunken and broken kernels	0.0	25.0
		2% contrasting classes	0.0	30.0
		5% wheat of other classes	2.0	25.0
	West	58 lbs. test weight	0.0	30.0
		14.5% moisture	0.0	16.0
		Amber durum	2.0	41.0
		4% damaged kernels	3.0	20.0
		1% foreign material	0.0	6.0
		5% shrunken and broken kernels	0.0	15.0
		2% contrasting classes	0.0	20.0
		5% wheat of other classes	4.0	50.0
HRS	East	57 lbs. test weight	1.0	6.0
		14.5% moisture	0.0	14.0
		16% protein	12.0	80.0
		12% protein	0.0	88.0
		4% damaged kernels	0.0	40.0
		1% foreign material	0.0	5.0
		5% shrunken and broken kernels	0.0	25.0
		2% contrasting classes	0.0	10.0
		5% wheat of other classes	0.0	20.0
	West	57 lbs. test weight	0.0	6.0
		14.5% moisture	0.0	14.0
		16% protein	0.0	80.0
		12% protein	0.0	88.0
		4% damaged kernels	0.0	40.0
		1% foreign material	0.0	5.0
		5% shrunken and broken kernels	0.0	25.0
		2% contrasting classes	0.0	10.0
		5% wheat of other classes	0.0	20.0

TABLE 20. AVERAGE, HIGH, AND LOW CLEANING COSTS AND WHEAT SCREENING PRICES FOR 1985 AND 1986

Item	1985			1986		
	Average	High	Low	Average	High	Low
	¢/bu.					
Cleaning Costs	4.2	22.00	0.0	4.0	25.00	0.0
	$/ton					
Prices received	33.19	55.00	0.0	16.08	45.00	0.0

SOURCE: Questions 12 and 14.

TABLE 21. ECONOMICS OF CLEANING WHEAT WITH VARIOUS SPECIFIED CLEANING COSTS, SCREENING PRICES, AND INCOMING DOCKAGE LEVELS AT A TRANSPORTATION COST OF $.60/BU.

Incoming Dockage Levels	Net Profit on 50,000 lb.					
	Price Received With Cleaning Cost of 3¢/Bu.			Price Received With Cleaning Cost of 4¢/Bu.		
	screening costs per lb.					
	.015	.01	.005	.015	.01	.005
5	37.50	25.00	12.50	29.17	16.67	4.17
4	25.00	15.00	5.00	16.67	6.67	(3.33)
3	12.50	5.00	(2.50)	4.17	(3.33)	(10.83)
2	0.0	(5.00)	(10.00)	(8.33)	(13.33)	(18.33)
1	(12.50)	(15.00)	(17.50)	(20.83)	(23.33)	(25.83)

$(W)(D)(S + T) - (CW)$ = net profit from cleaning

where

W = amount of wheat in lbs.

D = % of dockage in the wheat

S = price received for wheat screening per lb.

T = cost of transportation from the elevator to the destination market, and

C = cost of cleaning wheat per lb.

Appendix B

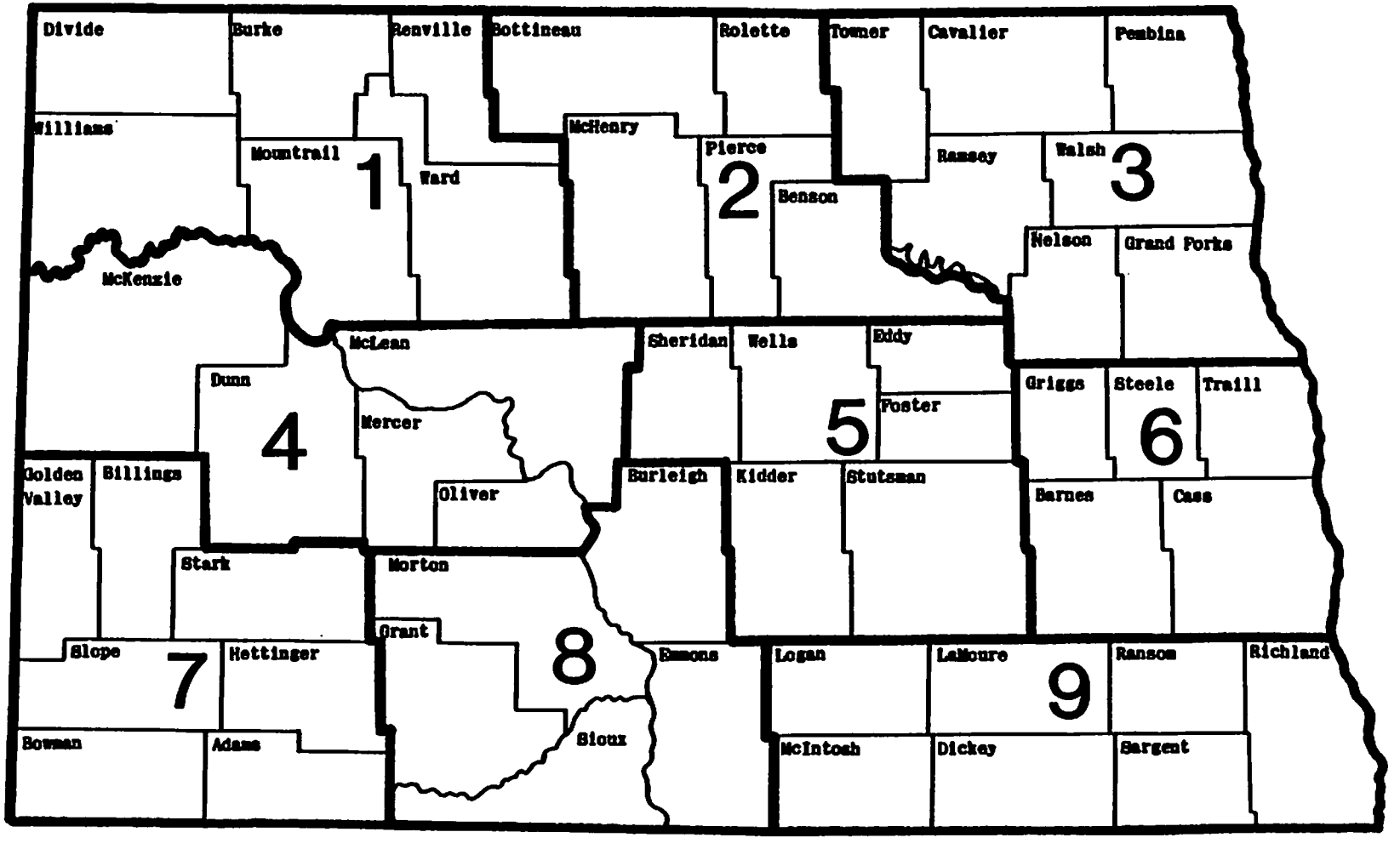


Figure 1. Nine Regions Used to Divide Responding Elevators by Location in the State

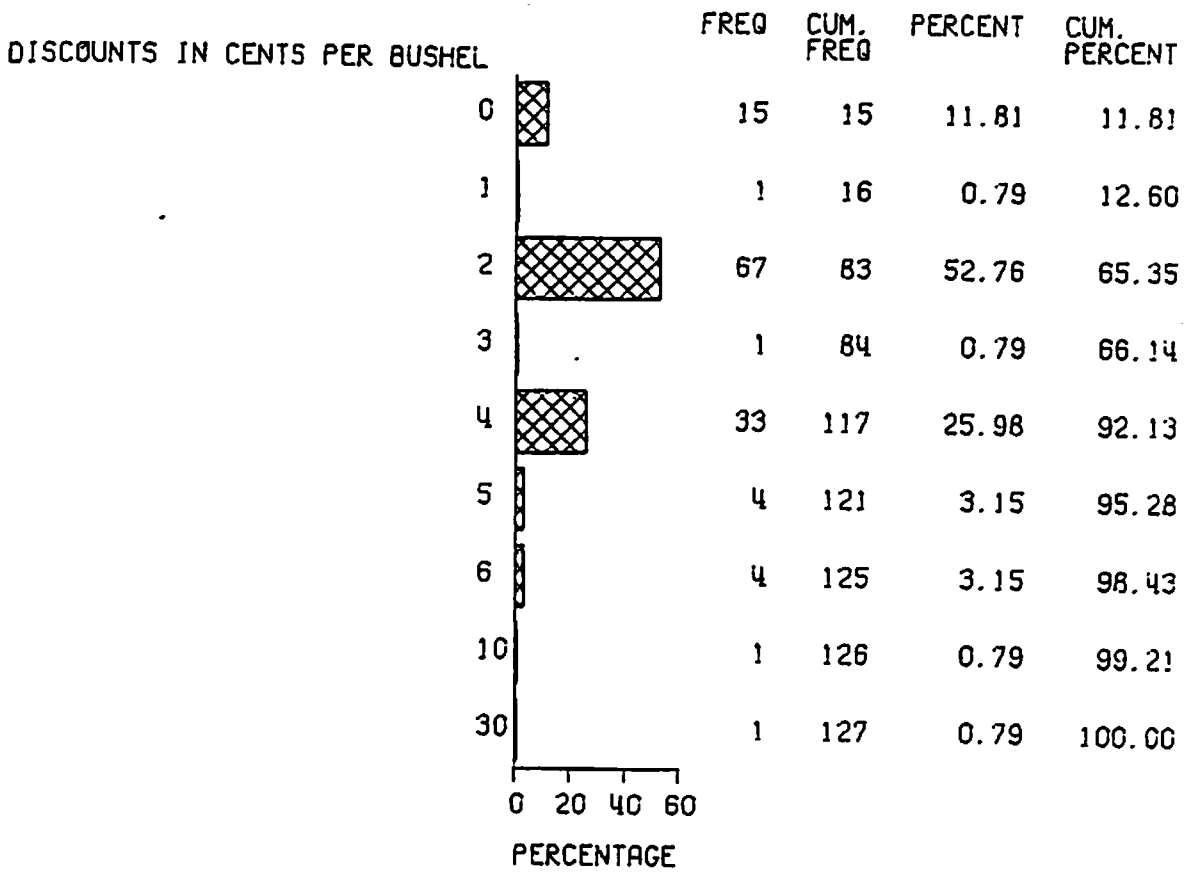
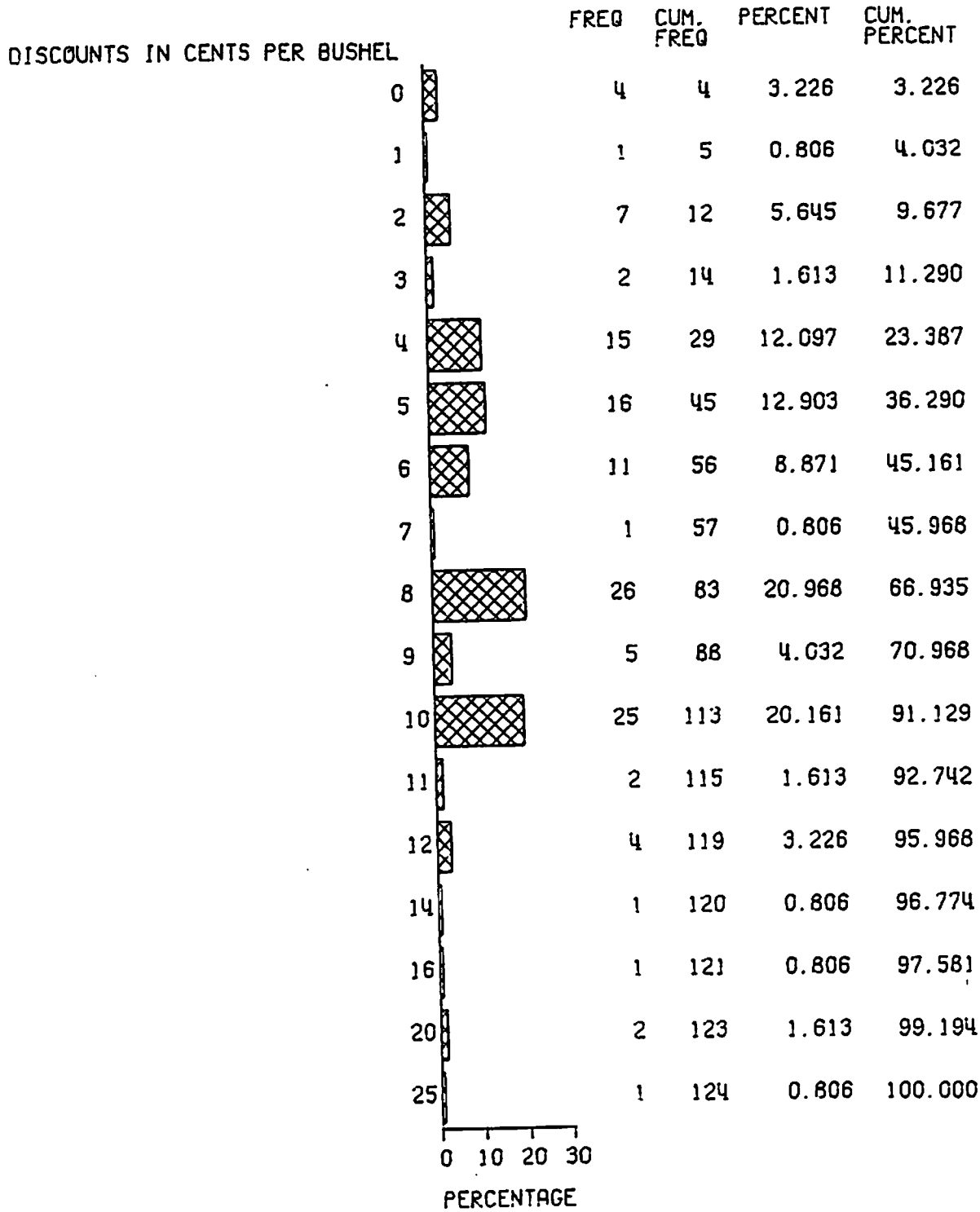


Figure 2. Frequency of Test Weight Discounts for 58-lb. Durum Among Selected Country Elevators in North Dakota



DISCOUNTS IN CENTS PER BUSHEL	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
0	4	4	3.226	3.226
1	1	5	0.806	4.032
2	7	12	5.645	9.677
3	2	14	1.613	11.290
4	15	29	12.097	23.387
5	16	45	12.903	36.290
6	11	56	8.871	45.161
7	1	57	0.806	45.968
8	26	83	20.968	66.935
9	5	88	4.032	70.968
10	25	113	20.161	91.129
11	2	115	1.613	92.742
12	4	119	3.226	95.968
14	1	120	0.806	96.774
16	1	121	0.806	97.581
20	2	123	1.613	99.194
25	1	124	0.806	100.000

Figure 3. Frequency of Moisture Discounts for 14.5 Percent Moisture Durum Among Selected Country Elevators in North Dakota

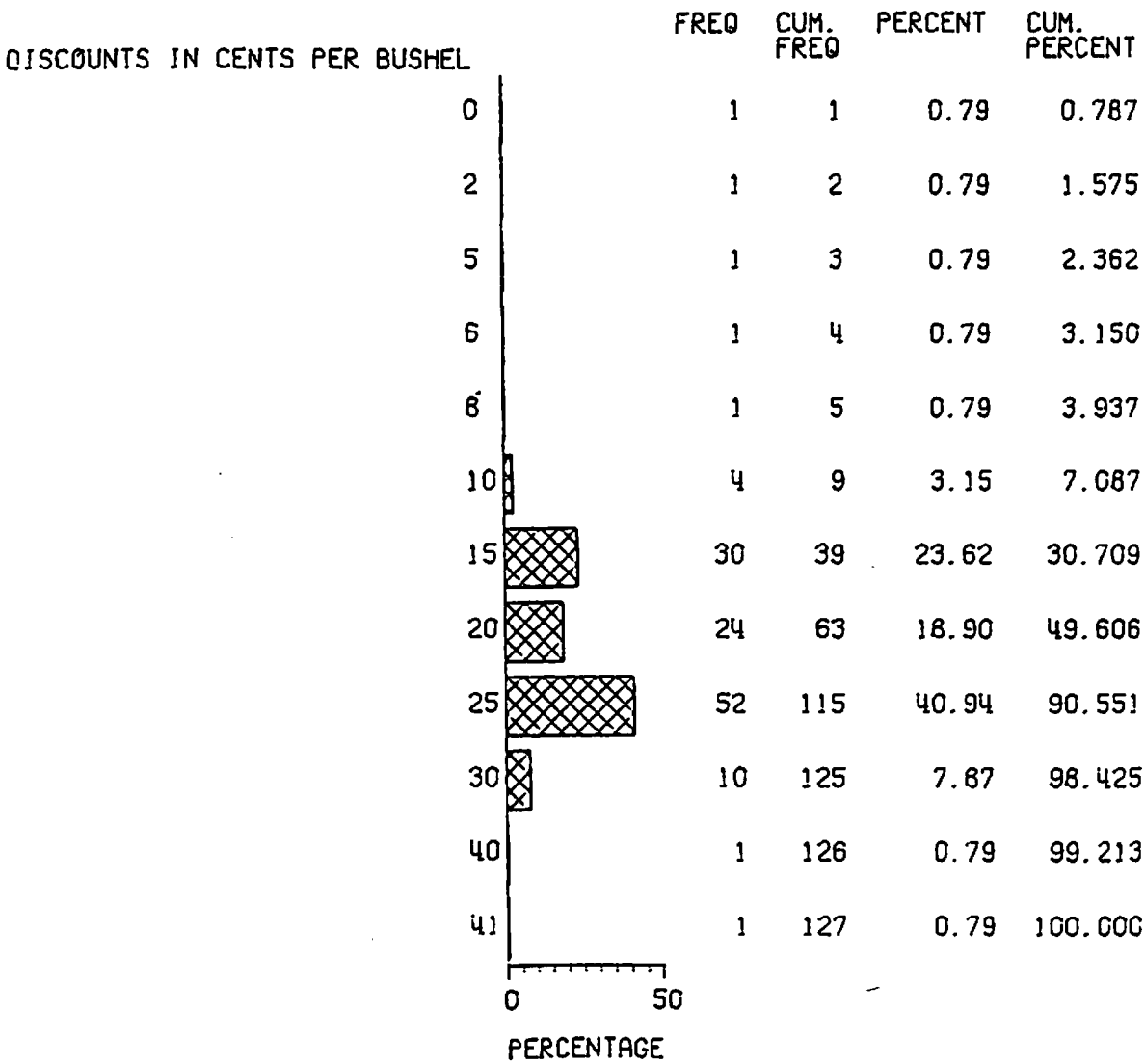


Figure 4. Frequency of Color Discounts for Durum (Amber Durum) Among Selected Country Elevators in North Dakota

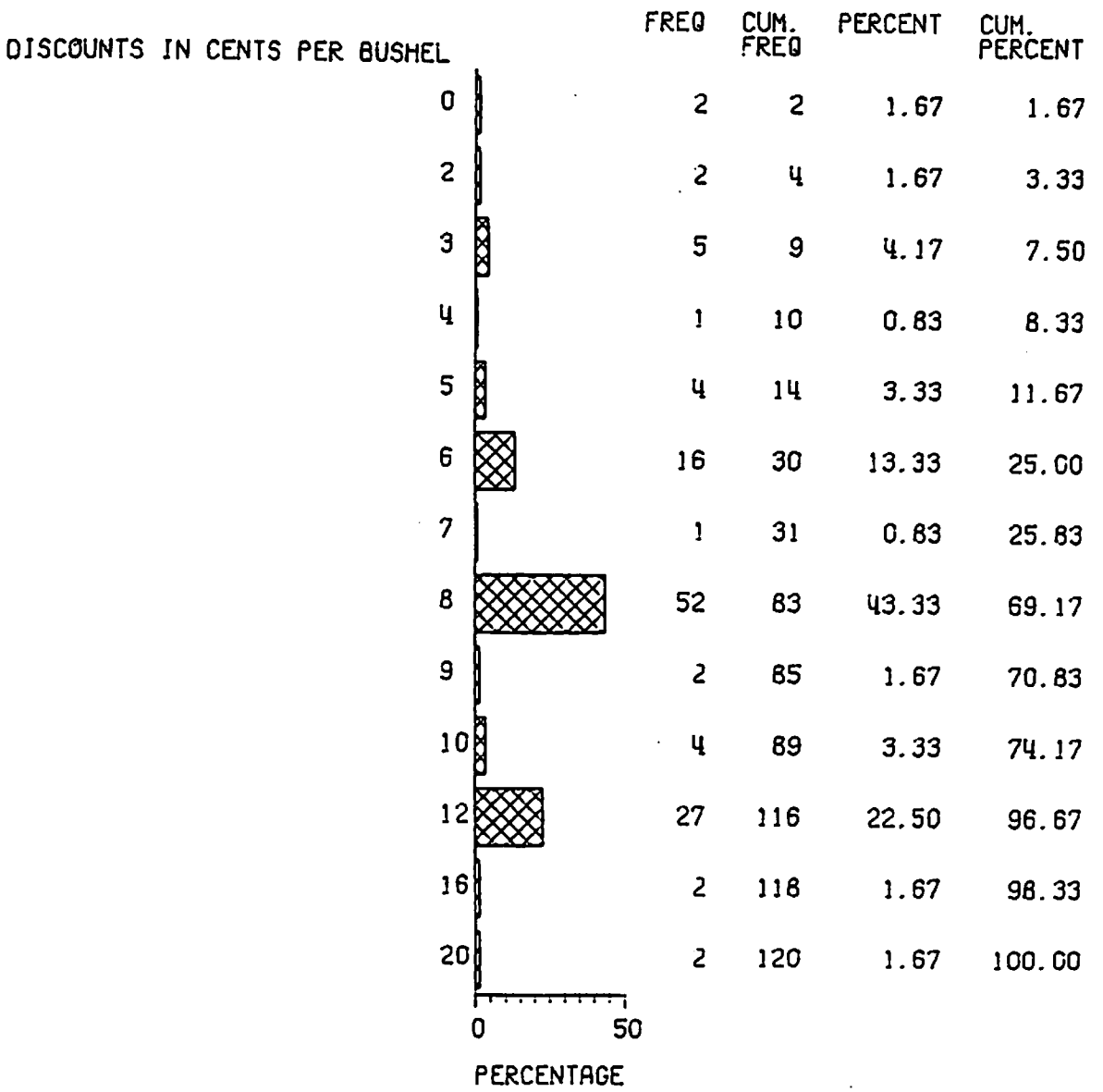


Figure 5. Frequency of Damage Discounts for 4 Percent Total Damage Durum Among Selected Country Elevators in North Dakota

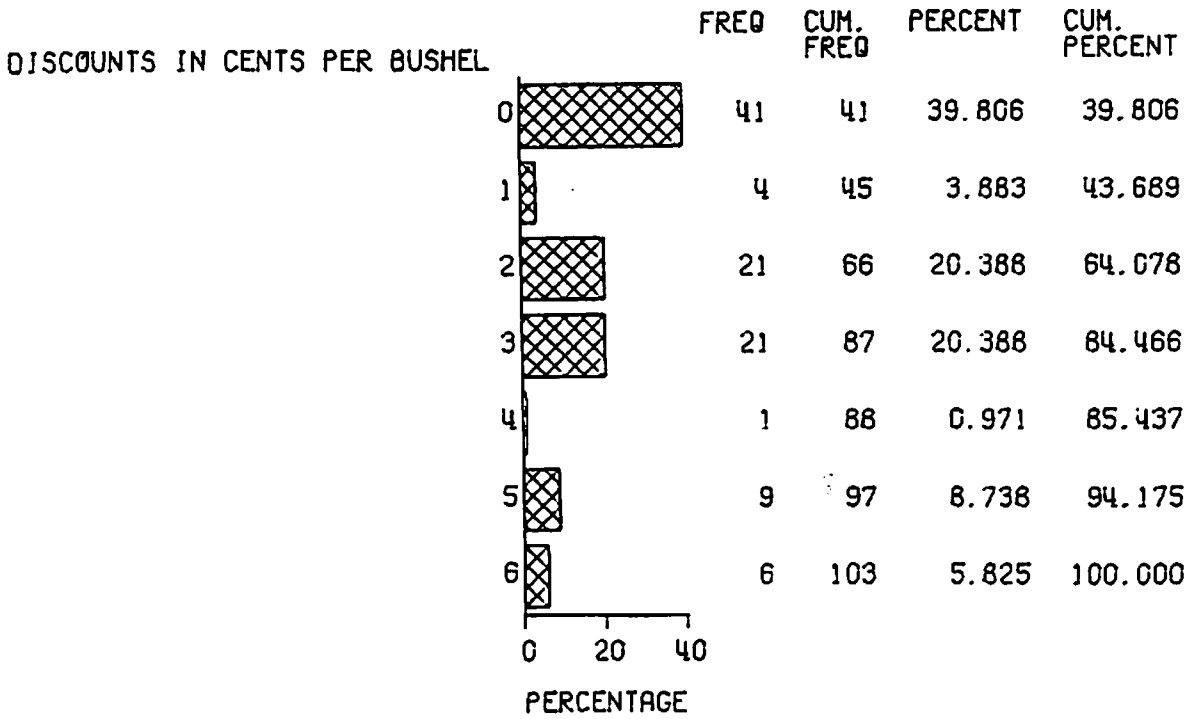


Figure 6. Frequency of Discounts for 1 Percent Foreign Material Durum Among Selected Country Elevators in North Dakota

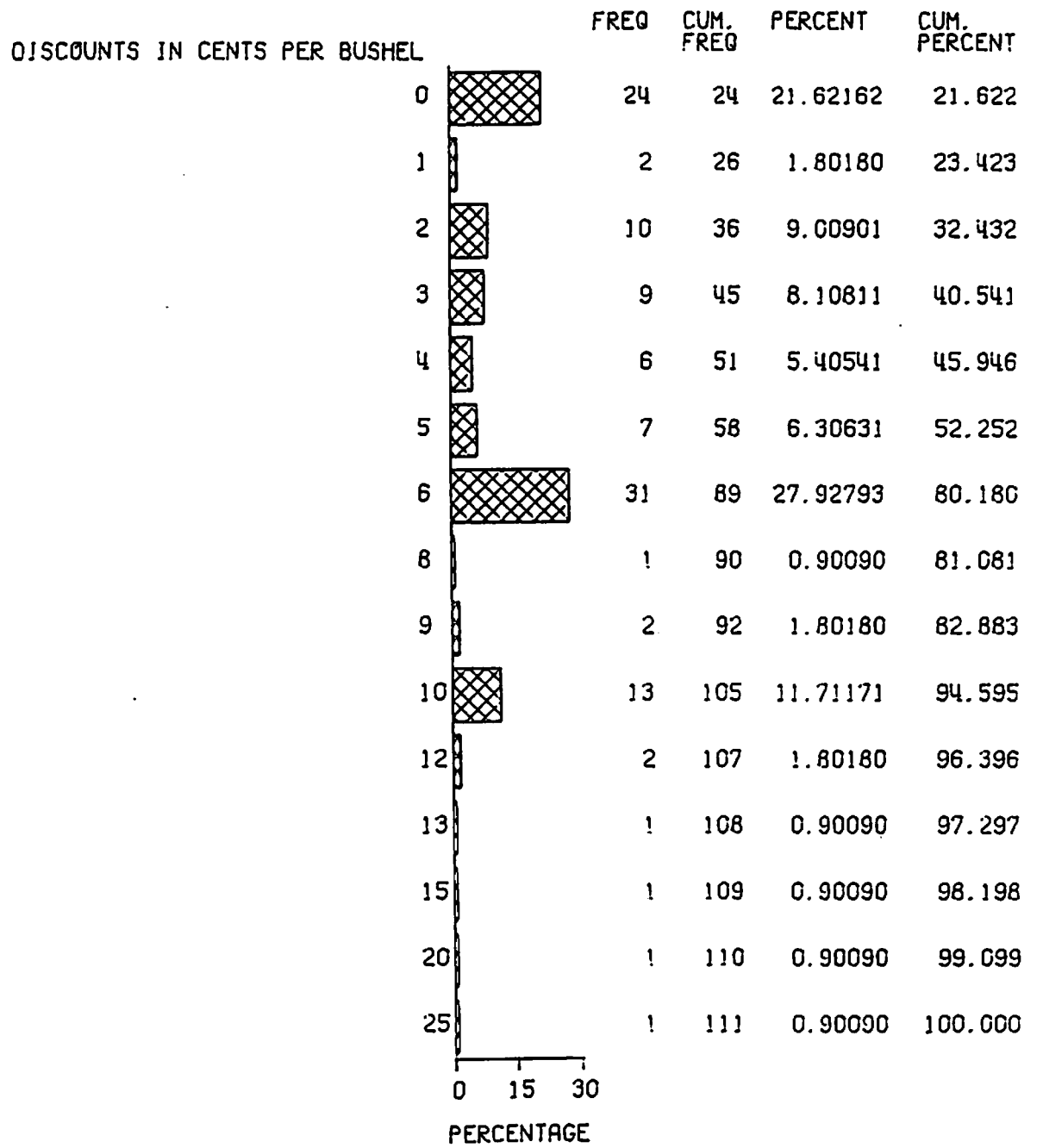


Figure 7. Frequency of Discounts for 5 Percent Shrunken and Broken Durum Among Selected Country Elevators in North Dakota

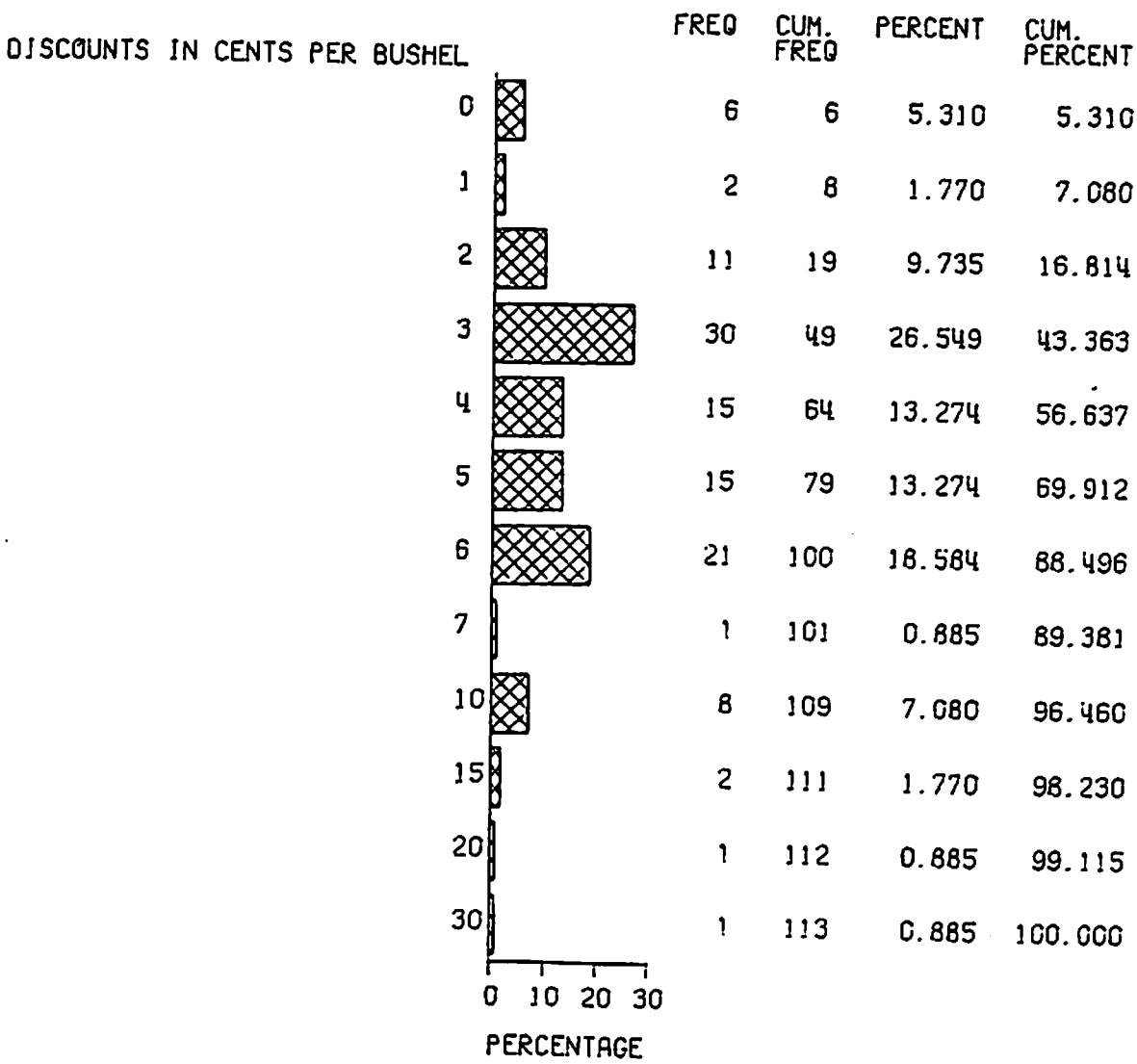


Figure 8. Frequency of Discounts for 2 Percent Contrasting Classes Durum Among Selected Country Elevators in North Dakota

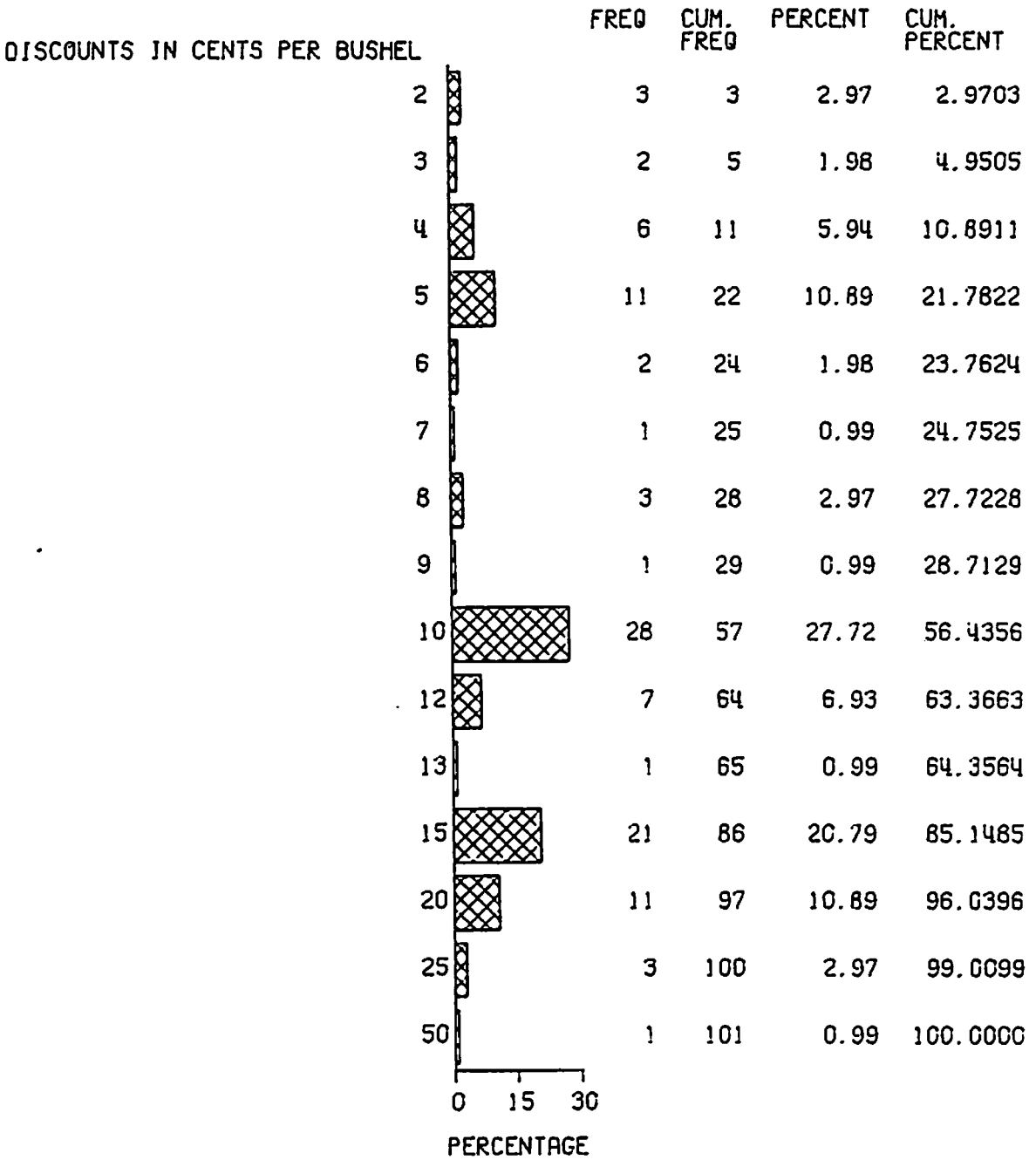


Figure 9. Frequency of Discounts for 5 Percent Wheat of Other Classes Durum Among Selected Country Elevators in North Dakota

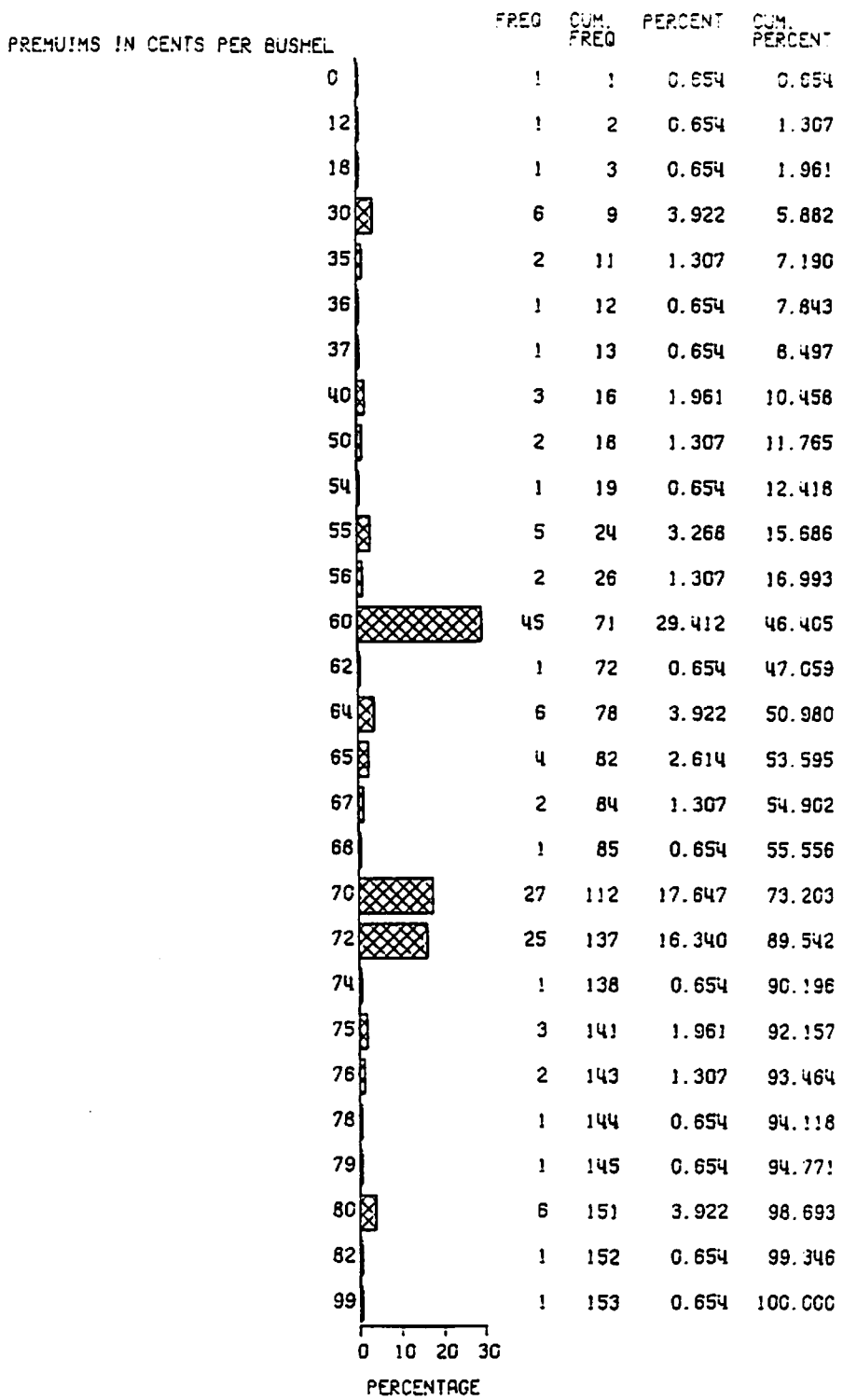
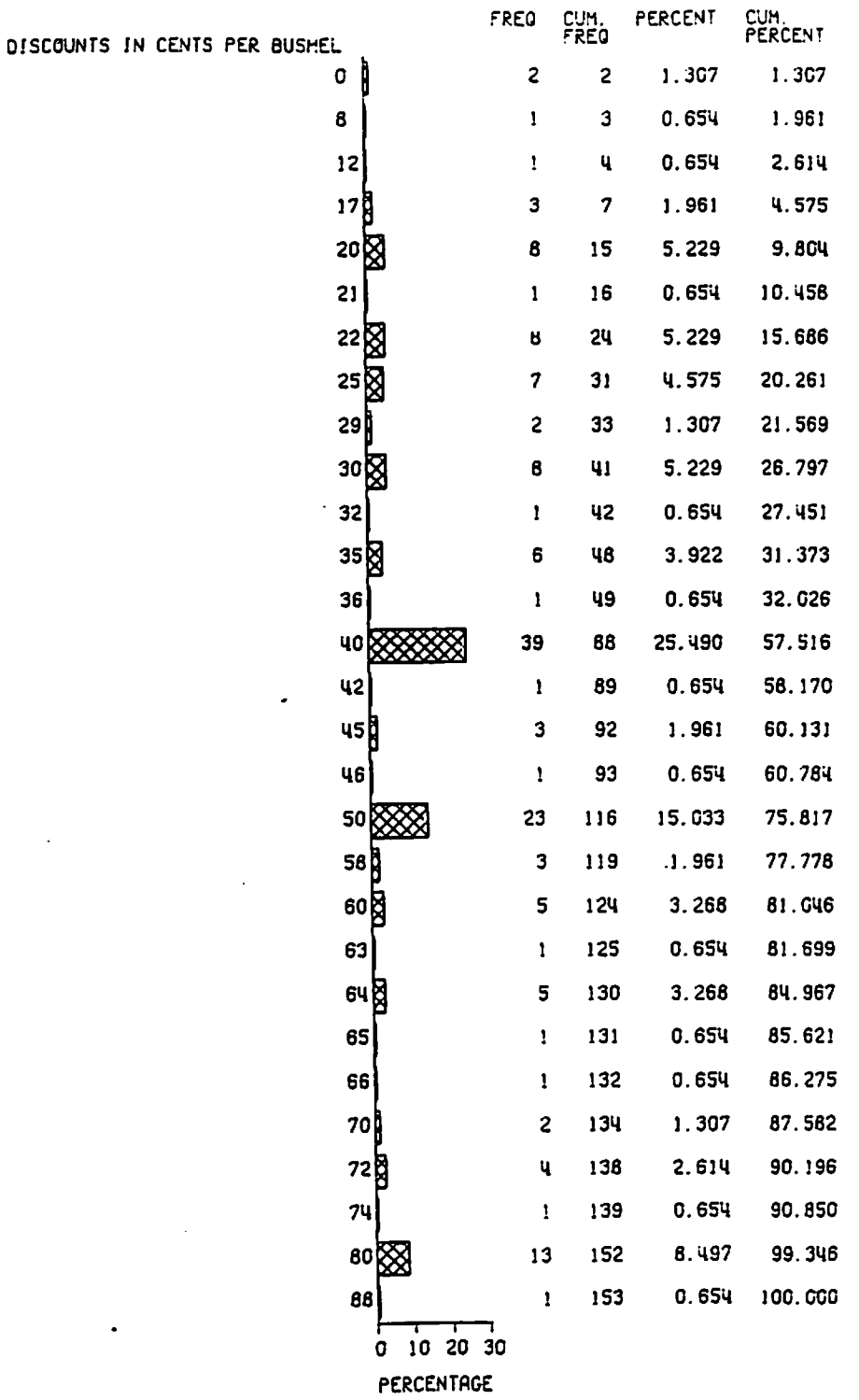


Figure 10. Frequency of Protein Premiums for 16 Percent Protein HRS Wheat Among Selected Country Elevators in North Dakota



DISCOUNTS IN CENTS PER BUSHEL	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
0	2	2	1.307	1.307
8	1	3	0.654	1.961
12	1	4	0.654	2.614
17	3	7	1.961	4.575
20	8	15	5.229	9.804
21	1	16	0.654	10.458
22	8	24	5.229	15.686
25	7	31	4.575	20.261
29	2	33	1.307	21.569
30	8	41	5.229	26.797
32	1	42	0.654	27.451
35	6	48	3.922	31.373
36	1	49	0.654	32.026
40	39	88	25.490	57.516
42	1	89	0.654	58.170
45	3	92	1.961	60.131
46	1	93	0.654	60.784
50	23	116	15.033	75.817
58	3	119	1.961	77.778
60	5	124	3.268	81.046
63	1	125	0.654	81.699
64	5	130	3.268	84.967
65	1	131	0.654	85.621
66	1	132	0.654	86.275
70	2	134	1.307	87.582
72	4	138	2.614	90.196
74	1	139	0.654	90.850
80	13	152	8.497	99.346
88	1	153	0.654	100.000

Figure 11. Frequency of Protein Discounts for 12 Percent HRS Wheat Among Selected Country Elevators in North Dakota

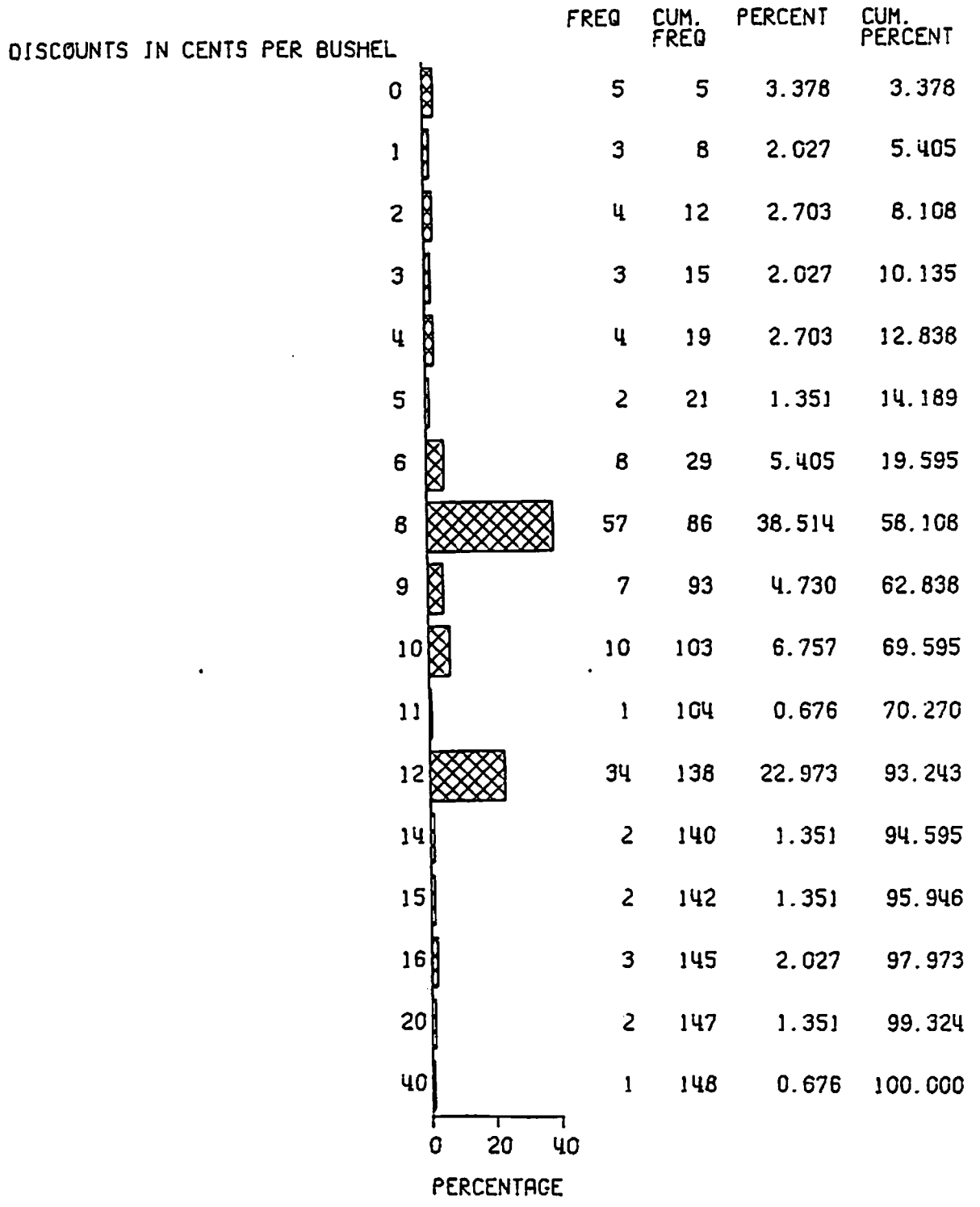


Figure 12. Frequency of Damage Discounts for 4 Percent Total Damage HRS Wheat Among Selected Country Elevators in North Dakota

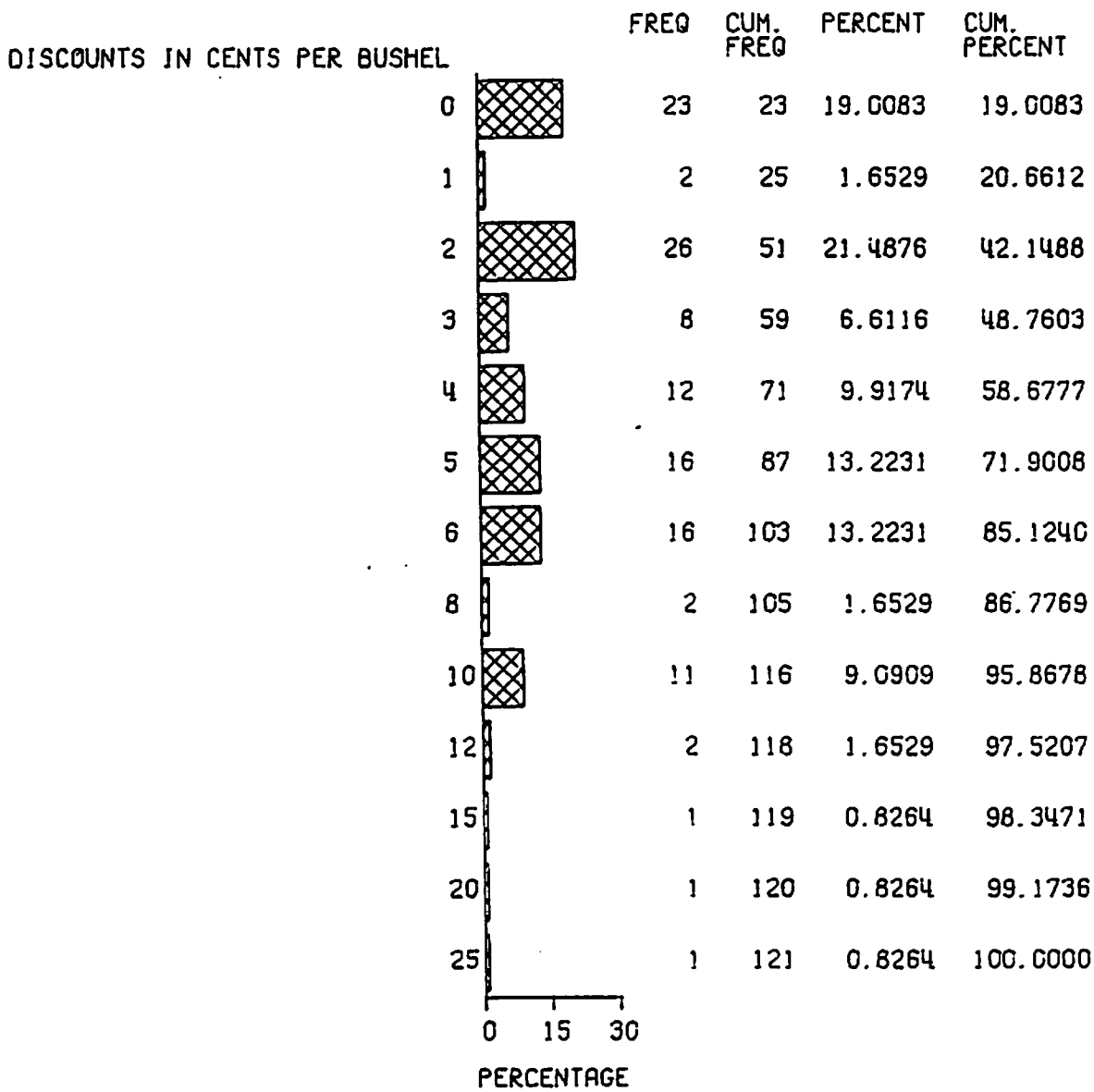


Figure 13. Frequency of Discounts for 5 Percent Shrunken and Broken HRS Wheat Among Selected Country Elevators in North Dakota

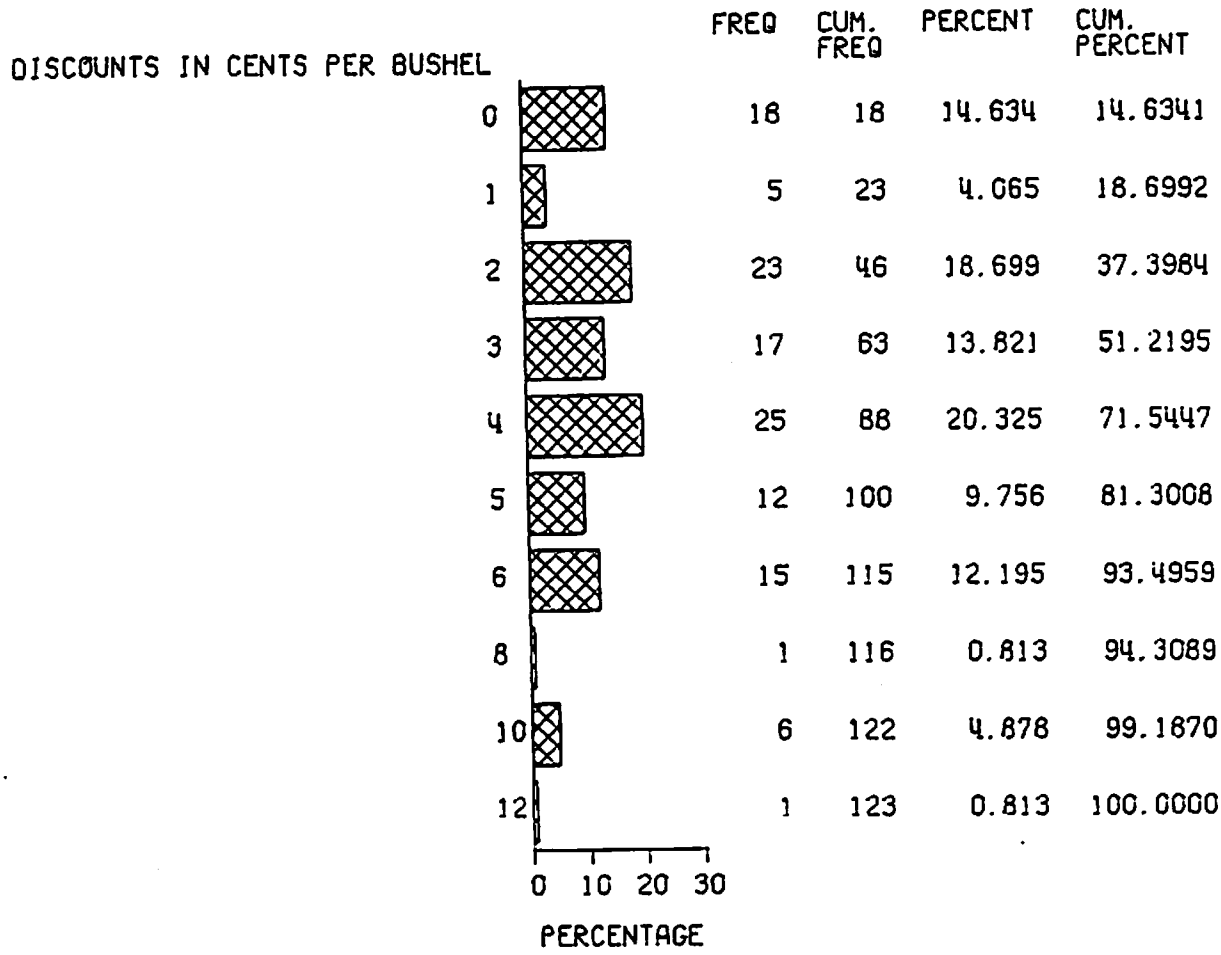
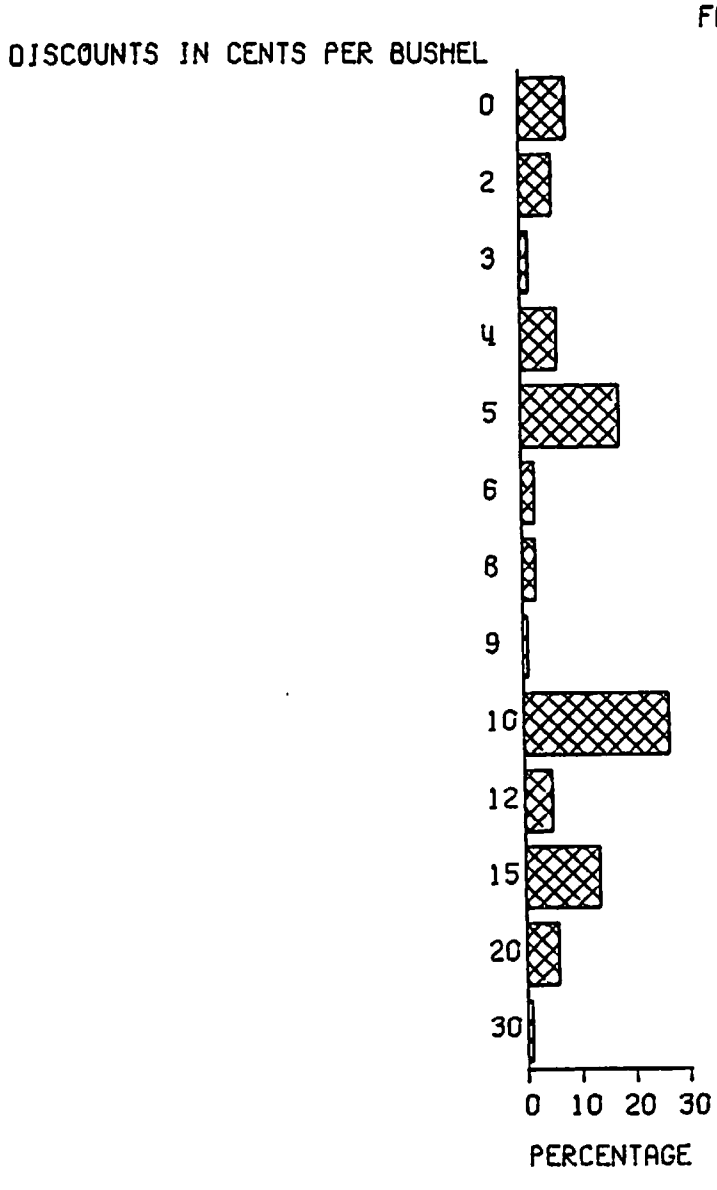


Figure 14. Frequency of Discounts for 2 Percent Contrasting Classes HRS Wheat Among Selected Country Elevators in North Dakota



DISCOUNTS IN CENTS PER BUSHEL	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
0	10	10	8.621	8.621
2	7	17	6.034	14.655
3	2	19	1.724	16.379
4	8	27	6.897	23.276
5	21	48	18.103	41.379
6	3	51	2.586	43.966
8	3	54	2.586	46.552
9	1	55	0.862	47.414
10	31	86	26.724	74.138
12	6	92	5.172	79.310
15	16	108	13.793	93.103
20	7	115	6.034	99.138
30	1	116	0.862	100.000

Figure 15. Frequency of Discounts for 5 Percent Wheat of Other Classes HRS Wheat Among Selected Country Elevators in North Dakota

Appendix C

GRAIN MARKETING QUESTIONNAIRE
(Fall 1986)

1. Name of firm _____

2. Location of firm _____

3. This elevator is a:
   _____ (a) Locally owned cooperative elevator
   _____ (b) Harvest States line elevator
   _____ (c) Locally owned private elevator
   _____ (d) Line elevator of a large private company
   _____ (e) Other _____

4. What is the largest number of rail cars that your elevator can load in one day?
   _____ (a) Less than 6 cars
   _____ (b) Between 7 and 26 cars
   _____ (c) Between 27 and 54 cars
   _____ (d) More than 54 cars

5. How far away is your nearest competition?
   _____ (a) Less than 5 miles
   _____ (b) 6 to 10 miles
   _____ (c) More than 10 miles

6. What is the total plant storage capacity at this facility? _____ bushels

7. What were the major commission companies or track buyers you sell your Durum and HRS Wheat through and the approximate percentage of sales to each?

Name	Approximate Percent of Sales	
	Durum	HRS Wheat
a. Harvest States		
b. Peavey		
c. Cargill		
d. Atwood-Larson		
e. Benson-Quinn		
f. Kellogg		
g. Continental		
h. IMF		
i. _____		
j. _____		

8. What percentage of your wheat is cleaned before shipment? _____%

9. At what dockage percentage do you not clean wheat?
   Harvest_____ Post Harvest_____

10. How many bushels can you clean per hour? _____

11. To what dockage percentage do you clean your wheat down?
   Harvest_____ Post Harvest_____

12. What would you estimate your cleaning costs to be in cents per bushel? _____

13. To whom do you sell your screenings? _____

14. What price do you receive for wheat screenings? _____

15. What was your board price for #1 Hard Amber Durum on October 31, 1986? _____

16. What are your discounts for Durum which grade the following values? (Base grade = #1 HAD)

a.	58 lb. Test Weight	_____¢/Bu.
b.	14.5% Moisture	_____¢/Bu.
c.	Amber Durum (Color)	_____¢/Bu.
d.	4% Total Damaged Kernels	_____¢/Bu.
e.	1% Foreign Material	_____¢/Bu.
f.	5% Shrunken & Broken Kernels	_____¢/Bu.
g.	2% Contrasting Classes	_____¢/Bu.
h.	5% Wheat of Other Classes	_____¢/Bu.
i.	Variety: Premium (+) - Discount (-)	_____¢/Bu.
	Vic	_____¢/Bu.
	Ward	_____¢/Bu.
	Lloyd	_____¢/Bu.
	Other varieties	_____¢/Bu.
j.	Other_____	_____¢/Bu.

17. What was your board price for #1 DNS 14% protein on October 30, 1986? _____

18. What are your discounts and premiums for HRS wheat which grade the following values? (Base grade = #1 DNS 14% protein)

a.	57 lb. Test Weight	_____¢/Bu.	
b.	14.5% Moisture	_____¢/Bu.	
c.	16% Protein	_____¢/Bu.	(tested "as is" moisture)
d.	12% Protein	_____¢/Bu.	(tested "as is" moisture)
e.	4% Total Damaged Kernels	_____¢/Bu.	
f.	1% Foreign Materials	_____¢/Bu.	
g.	5% Shrunken & Broken Kernels	_____¢/Bu.	
h.	2% Contrasting Classes	_____¢/Bu.	
i.	5% Wheat of Other Classes	_____¢/Bu.	
j.	Other_____	_____¢/Bu.	

19. Would you like a copy of the completed report? _____Yes _____No

MLA:W1
SDS