Ag Econ Misc Report No. 163-S

July 1992

Pricing and Marketing Practices for North Dakota Durum and HRS Wheat: 1991 Crop Year

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Buyers of grain use premiums and discounts to convey to suppliers the value of quality characteristics. Premium and discount schedules are determined among individual market participants, according to buyer's quality needs and the distribution of quality characteristics available to the market. Thus, premiums and discounts frequently change as needs of buyers and the availability of grain that possess those characteristics change. Premiums and discounts also change with time, location, and expectation of future market conditions. Individuals in the grain market system must be aware of the price of grain and the value of premiums and discounts when making business decisions.

Since premiums and discounts are important to individual market participants and since premium and discount schedules are rarely published, the Department of Agricultural Economics began to survey North Dakota country elevators in 1984 about pricing and marketing practices for hard red spring (HRS) and durum wheat. This report contains partial results of the 1991 surveys. The full 1991 report and previous reports, listed in the reference, can be obtained from the Department of Agricultural Economics, North Dakota State University (NDSU).

General Characteristics of Participating Elevators

Questionnaires were sent to 509 elevators in North Dakota, and 100 usable surveys were returned, giving a respondent rate of 20 percent. Of the responding elevators, two-thirds were classified as co-op elevators (Harvest States line elevators are included in this category) and one-third as investor-orientated firms (IOF). Single-facility (location) elevators comprised 68 percent of the responding elevators. Multi-facility (location) elevators represent 28 percent of the responding elevators, and 4 percent of the returned surveys did not indicate either category.

Load-out capacity indicates the size of the elevator; smaller elevators were more responsive to the 1991 survey than in previous years. Elevators with a load-out capacity of 6 cars per day or less represent 26 percent of the elevators. A majority of the responding elevators had a load-out capacity of 7 to 26 cars per day, representing 53 percent of the elevators.

Elevators with competition within 5 miles and competition from 6 to 10 miles represented 33 percent and 42 percent of responding elevators, respectively. Elevators with nearest competitor more than 10 miles away represented 25 percent of the elevators.

Storage capacity of responding elevators is less than in previous years. Responding elevators are evenly distributed across the storage capacity range, except for the 400,000 to 999,000 bushel range, representing 34 percent of the responding elevators.

Harvest States continued to be the largest purchaser of durum and HRS wheat with market shares at 40 percent and 34 percent, respectively. Benson-Quinn lost market shares in both durum and HRS wheat while Cargill hrs

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progained in both commodities from the previous year (Table 1).

The market share held by IOF and co-ops varied greatly across crop reporting districts (CRD - Figure 1). However, Harvest States generally held the largest market share across CRDs for both classes of wheat (Table 2).

Atwood-Larson and Benson-Quinn lost market shares in both durum and HRS from IOF, while Kellogg and Cargill increased market shares from the previous year. Harvest States continued to dominate purchases from co-op elevators for both durum and HRS wheat (Table 3).

Market share varied according to elevator storage; Harvest States generally was the largest purchaser. One of the commission firms (Atwood-Larson, Benson-Quinn, or Kellogg) or Peavey generally held the second largest market share (Table 4).

Harvest States' market share increased substantially for both durum and HRS wheat for elevators with a load-out capacity of 6 or less cars per day and elevators that could load out more than 54 cars per day (Table 5).

Premiums and Discounts

Premiums and discounts, relative to the base price of the commodity, are an important component of the grain's total price. Elevators located in eastern North Dakota (CRD #3, #6, and #9 - Figure 1) tended to have higher prices for US #1 hard amber durum and US #1 DNS 14% protein (Table 6).

Results from the 1991 durum and HRS wheat crop quality survey are shown in Table 7. Test weight decreased and the percent of shrunken and broken kernels increased from 1990 for both classes of wheat. The average protein level of HRS wheat increased to levels similar to 1988 and 1989 crops. Figure 2 shows that the protein level of hard red winter (HRW) wheat grown in Kansas also increased from 1990 levels. Associated with the increased protein level in both HRS and HRW wheat was a decrease in the protein premium for both classes of wheat (Figure 3).

Figures 4 to 6 show average price adjustments for selected grade factors over the years for both classes of wheat. Average premiums and discounts since 1984 are given in Table 8. All discounts for durum in 1991 were equal to or less than discounts since 1987, except for the discount for 14.5% moisture, which increased slightly. The premium for 16 percent protein HRS decreased substantially from 1990 as had the discount for 12 percent protein HRS. The premium for 16 percent protein HRS and the discount for 12 percent protein HRS were similar to 1989 levels, which were low compared to other years.

The premium for 16 percent protein HRS wheat was larger in CRD #1, #4, and #7; also, the discount for 12 percent protein HRS wheat was larger in these three CRDs compared to the other CRDs. This is just the opposite from 1990 (Table 9).

The difference in the premium and discount schedule, based on the ownership of the elevator (co-op and IOF), load-out capacity, miles to nearest competition, and storage capacity did not appear to differ greatly. The only noticeable difference is that co-op elevators generally discounted HRS less than did IOF (Table 10).

Economics of Dockage Removal

NDSU, in cooperation with the Economic Research Service (ERS), completed a major study titled "Economics of Alternative Regulations on Wheat Cleaning in Hard Red Spring, Durum, and White Wheat." Four reports pertaining to different aspects of the cleaning decision were produced under this study and are listed in the References. Copies can be obtained from the Department of Agricultural Economics, North Dakota State University.

The first publication, "Wheat Cleaning Costs and Grain Merchandising," reports on why

and where wheat is cleaned, the cost of cleaning at various locations, and merchandising practices. The second publication, "Wheat Cleaning Decisions at Country Elevators," is an analysis of blending and cleaning at country elevators. The third publication, "Measuring the Impact of Dockage on Foreign Demand for U.S. Wheat," illustrates an integrated export-import model, which can be used to evaluate the impact of dockage on import demand and U.S. export revenue. The fourth publication, "Impacts of Alternative Policies Regulating Dockage," summarizes the three previous reports and analyzes different ways to regulate dockage and the economic impact of those regulations.

Elevators which responded to the 1991 pricing and marketing survey cleaned about 68 percent of the wheat that they handled in 1991, with an average cleaning capacity of 1,987 bushels of wheat per hour. Cleaning capacities ranged from 200 to 24,000 bushels per hour. Wheat delivered during harvest had to have a higher percentage of dockage before managers would clean; and, when it was cleaned, it was not cleaned as intensively as wheat delivered post-harvest. On average, a dockage level of 1.96 percent or less at harvest and 1.59 percent or less post-harvest was considered clean, and managers did not clean this wheat. When wheat was cleaned, it was cleaned to 0.99 percent and 0.84 percent dockage levels during harvest and post-harvest, respectively.

Wheat is cleaned because of economic incentives. Two incentives that are significant and easy to measure are revenue from the sale of screenings and reduced transport costs. These two incentives combined with the cleaning cost yield a "cleaning margin." The average cost of cleaning was 3.79 cents per bushel, and the average price received for screenings was $24.90 per ton in 1991.

Figure 7 illustrates how the cleaning margin changes with screening values and beginning dockage levels. The cleaning margin is directly related to screening values, incoming dockage levels, and transport costs.

Summary and Conclusions

Premiums and discounts, like the price of wheat, change with respect to time, location, and current and perceived market conditions. Buyers use premiums to reflect the value of desired characteristics, and discounts to reflect the value of undesirable characteristics. The 1991 durum and HRS wheat crops compares favorably with previous years with one notable exception: the level of shrunken and broken kernels was greater in durum than in any of the previous years. All discounts for durum in 1991 were equal to or less than discounts since 1987, except for the discount for 14.5% moisture, which increased slightly.

The 1991 HRS and HRW wheat protein levels increased from 1990. The premium for 16 percent protein HRS decreased substantially from 1990; also, the discount for 12 percent protein HRS decreased. The premium for 16 percent protein HRS and the discount for 12 percent protein HRS are similar to 1989 levels, which are low compared to other years.

TABLE 1. MARKET SHARES OF COMMISSION COMPANIES AND TRACK BUYERS BY RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT, 1991

Company	Durum	HRS Wheat
	------percent-------	
Harvest States	40	34
Atwood-Larson	13	11
Benson-Quinn	12	8
Kellogg	9	8
Cargill	6	10
Peavey	10	14
Continental	1	2
International Multifoods	0	3
North Dakota State Mill	4	1
Others	5	9

SOURCE: Question 7, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

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

TABLE 2. MARKET SHARES OF COMMISSION COMPANIES AND TRACK BUYERS BY REGION FROM RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT, 1991

Commodity (Base Grade)	Company	Region 1	2	3	4	5	6	7	8	9
		percent								
Durum	Harvest States	48	64	28	57	32	8	74	80	51
	Atwood-Larson	8	0	12	37	7	16	23	10	18
	Benson-Quinn	8	25	16	0	18	23	0	0	3
	Kellogg	0	0	15	0	25	2	0	10	10
	Cargill	5	1	6	2	5	25	0	0	0
	Peavey	7	0	17	0	14	0	33	0	19
	Continental	1	0	0	2	0	3	3	0	0
	IMF	0	0	0	0	0	0	0	0	0
	ND State Mill	9	9	5	3	0	2	1	0	0
	Other	5	0	1	0	0	21	3	0	0
HRS	Harvest States	65	57	18	53	15	14	40	20	57
	Atwood-Larson	4	0	15	37	0	2	7	28	22
	Benson-Quinn	0	20	16	0	13	8	0	0	1
	Kellogg	0	0	13	0	16	1	0	29	1
	Cargill	8	20	5	2	14	31	14	0	0
	Peavey	1	0	20	5	30	22	8	3	9
	Continental	0	0	1	2	0	9	4	0	0
	IMF	0	0	10	0	0	4	0	0	0
	Others	10	2	2	0	11	9	24	18	6

SOURCE: Questions 2 and 7, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 3. MARKET SHARES OF COMMISSION COMPANIES AND TRACK BUYERS BY ORGANIZATION FROM RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT, 1991

Commodity (Base Grade)	Company	Investor-Owned Firm	Cooperative
		percent	
Durum	Harvest States	7	53
	Atwood-Larson	10	13
	Benson-Quinn	7	16
	Kellogg	19	6
	Cargill	17	2
	Peavey	29	3
	Continental	1	0
	IMF	0	0
	ND State Mill	2	4
	Others	8	8
		100	100
HRS	Harvest States	5	46
	Atwood-Larson	5	13
	Benson-Quinn	5	9
	Kellogg	21	2
	Cargill	24	5
	Peavey	26	9
	Continental	3	1
	IMF	2	3
	Others	9	12
		100	100

SOURCE: Questions 3 and 7, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 4. MARKET SHARES OF COMMISSION COMPANIES AND TRACK BUYERS BY SIZE OF ELEVATORS FOR DURUM AND HRS WHEAT, 1991

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 999,000	Over 1,000,000
		percent					
Durum	Harvest States	90	21	40	53	45	23
	Atwood-Larson	0	13	19	11	13	8
	Benson-Quinn	0	13	9	20	15	10
	Kellogg	0	25	10	5	4	14
	Cargill	0	0	0	1	5	21
	Peavey	0	22	11	6	7	13
	Continental	0	1	0	0	0	1
	IMF	0	0	0	0	0	0
	ND State Mill	0	0	10	2	4	3
	Other	10	5	1	2	7	7
HRS	Harvest States	44	28	48	40	31	27
	Atwood-Larson	4	0	21	17	13	1
	Benson-Quinn	0	11	0	14	9	5
	Kellogg	36	17	11	7	1	7
	Cargill	0	9	0	1	13	26
	Peavey	4	17	13	8	14	19
	Continental	0	2	0	0	1	5
	IMF	0	0	0	4	5	0
	Others	12	16	7	9	13	10

SOURCE: Questions 6 and 7, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 5. MARKET SHARES COMMISSION COMPANIES AND TRACK BUYERS BY LOAD-OUT CAPACITY FROM RESPONDING ELEVATORS FOR DURUM AND HRS WHEAT, 1991

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	67	34	20	71
	Atwood-Larson	1	16	18	0
	Benson-Quinn	0	16	20	0
	Kellogg	15	12	1	0
	Cargill	1	2	12	23
	Peavey	6	12	15	0
	Continental	1	1	1	0
	IMF	0	0	0	0
	ND State Mill	8	3	5	0
	Other	1	4	8	6
HRS	Harvest States	50	29	16	64
	Atwood-Larson	1	15	17	0
	Benson-Quinn	6	9	12	0
	Kellogg	20	6	1	0
	Cargill	5	8	26	11
	Peavey	3	17	16	12
	Continental	1	1	5	2
	IMF	0	5	0	0
	Others	14	10	7	11

*Totals may not add to 100 due to rounding.

SOURCE: Questions 5 and 7, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

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, JANUARY 16, 1992

Region	Average Durum Price	Average HRS Wheat Price
1. Northwest	298	334
2. North Central	301	347
3. Northeast	309	365
4. West Central	300	342
5. Central	308	363
6. East Central	304	370
7. Southwest	297	341
8. South Central	284	345
9. Southeast	317	371
State Average	302	353

SOURCE: Questions 15 and 17, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 7. QUALITY OF 1986, 1987, 1988, 1989, 1990, AND 1991 DURUM AND HRS WHEAT CROPS

Commodity (Base Grade)	Factor	Average Values: 1986	1987	1988	1989	1990	1991
Durum	Test weight (lbs)	59.3	58.5	60.4	60.7	61.0	60.1
	Moisture %	12.4	12.2	10.9	11.2	11.6	10.9
	Grade	2 HAD	2 HAD	2 HAD	1 HAD	1 HAD	1 HAD
	Shrunken & broken kernels %	1.2	0.9	0.9	1.6	1.1	1.9
	Foreign material %	0.1	0.2	0.3	0.1	0.1	0.1
	Damaged kernels %	0.8	1.5	0.3	0.1	0.1	0.5
	Contrasting classes %	0.4	0.6	0.7	0.5	0.7	0.4
HRS	Test weight (lbs)	58.7	58.9	60.2	60.2	61.3	60.1
	Moisture %	12.4	12.2	10.6	11.1	11.7	11.7
	Protein %	14.6	14.9	16.6	16.0	14.4	16.6
	Shrunken & broken kernels %	1.6	1.3	1.9	1.9	1.2	1.6
	Foreign material %	0.0	0.2	0.1	0.0	0.1	0.1
	Damaged kernels %	0.6	0.6	0.1	0.1	0.4	0.3
	Contrasting classes %	0.0	.0	0.2	0.0	0.1	0.1

SOURCE: 1986, 1987, 1988, 1989, 1990, and 1991 durum wheat and HRS wheat regional quality reports, Department of Cereal Science and Food Technology, North Dakota State University, Fargo.

TABLE 8. AVERAGE PRICE ADJUSTMENTS FOR EACH FACTOR AMONG RESPONDING NORTH DAKOTA COUNTRY ELEVATORS

Commodity (Base Grade)	Factor	1984	1985	1986	1987	1988	1989	1990	1991
		¢/bu							
Durum #1 HAD	58 lbs test weight	-2.2	-2.2	-2.7	-7.0	-10.7	-6.4	-4.5	-3.6
	14.5% moisture	-6.0	-7.6	-7.2	-7.3	-7.8	-7.1	-5.2	-5.4
	Amber durum	-5.7	-16.7	-21.0	-22.6	-26.8	-15.3	-10.2	-9.7
	4% damaged kernels	-6.0	-6.9	-8.4	-8.9	-12.8	-10.7	-8.4	-7.1
	1% foreign material	-2.8	-1.9	-1.9	-2.4	-2.9	-3.2	-2.0	-2.0
	5% shrunken & broken kernels	-6.6	-3.9	-5.0	-4.8	-5.9	-5.6	-3.9	-3.8
	2% contrasting classes	-2.0	-4.4	-4.8	-5.0	-6.6	-5.5	-4.9	-4.5
	5% wheat of other classes	--	-9.9	-11.7	-11.8	-16.2	-12.4	-9.4	-8.9
HRS #1 DNS 14% Protein	57 lbs test weight	-1.9	-1.8	-2.9	-3.2	-3.6	-2.5	-2.2	-2.0
	14.5% moisture	-5.9	-6.8	-6.5	-7.5	-5.7	-5.9	-5.0	-4.5
	16% protein	41.0	63.4	62.6	86.8	9.7	0.7	34.6	2.3
	12% protein	-38.0	-67.4	-43.9	-38.5	-12.6	-1.5	-10.0	-2.3
	4% damaged kernels	-2.0	-6.6	-8.9	-8.4	-10.5	-9.5	-9.4	-6.3
	1% foreign material	-1.4	-1.3	-1.7	-2.0	-1.8	-2.0	-1.6	-1.3
	5% shrunken & broken kernels	-2.2	-3.0	-4.2	-4.1	-4.7	-4.1	-3.0	-2.4
	2% contrasting classes	-1.6	-3.2	-3.5	-3.7	-4.6	-3.6	-2.8	-2.6
	5% wheat of other classes	--	-7.0	-8.6	-9.1	-9.6	-8.1	-6.3	-5.8

SOURCE: Questions 16 and 18, Grain Marketing Questionnaire, Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 9. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG ELEVATORS OF SPECIFIED REGIONS IN NORTH DAKOTA (FALL 1991)

Commodity (Base Grade)	Company	Region 1	2	3	4	5	6	7	8	9
		¢/bu								
Durum	58 lbs test weight	-3	-3	-4	-4	-4	-5	-5	-3	-4
#1 HAD	14.5% moisture	-5	-4	-6	-3	-5	-6	-12	-2	-6
	Amber durum	-9	-8	-8	-8	-11	-10	-12	-15	-9
	4% damaged kernels	-8	-7	-7	-6	-7	-7	-10	-8	-6
	1% foreign material	-2	-3	-2	-2	-3	-3	-1	-2	-2
	5% shrunken & broken kernels	-5	-5	-3	-2	-4	-2	-2	-7	-3
	2% contrasting classes	-5	-5	-3	-5	-6	-3	-7	-9	-3
	5% wheat of other classes	-10	-8	-7	-10	-8	-8	-18	-15	-6
HRS	57 lbs test weight	-2	-2	-2	-2	-2	-2	-2	-2	-2
#1 DNS	14.5% moisture	-6	-4	-6	0	-3	-4	-1	-3	-6
14% Protein	16% protein	5	0	2	5	2	1	6	2	1
	12% protein	-10	0	0	-13	0	0	-8	0	0
	4% damaged kernels	-8	-6	-7	-4	-7	-5	-5	-6	-6
	1% foreign material	-2	-2	-1	-1	-3	-2	-1	-1	-1
	5% shrunken & broken kernels	-4	-4	-2	-1	-3	-2	-2	-3	-2
	2% contrasting classes	-4	-3	-2	-7	-3	-2	-2	-3	-1
	5% wheat of other classes	-10	-5	-6	-4	-7	-5	-4	-8	-2

SOURCE: Questions 2, 16, and 18, Grain Marketing, Questionnaire Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

TABLE 10. PRICE ADJUSTMENT AVERAGES FOR DURUM AND HRS WHEAT AMONG SELECTED TYPES OF ELEVATOR STRUCTURE ORGANIZATIONS (1991)

Commodity (Base Grade)	Factor	Co-op	Investor-Oriented Firms
		¢/bu.	
Durum	58 lbs. test weight	-3	-4
#1 HAD	14.5% moisture	-5	-5
	Amber durum	-9	-11
	4% damaged kernels	-7	-7
	1% foreign material	-2	-2
	5% shrunken and broken kernels	-4	-4
	2% contrasting classes	-4	-5
	5% wheat of other classes	-9	-6
HRS	57 lbs. test weight	-2	-2
#1 DNS	14.5% moisture	-4	-5
14% Protein	16% protein	2	3
	12% protein	-2	-3
	4% damaged kernels	-5	-7
	1% foreign material	-1	-1
	5% shrunken and broken kernels	-2	-3
	2% contrasting classes	-2	-3
	5% wheat of other classes	-5	-6

SOURCE: Questions 2, 16, and 18, Grain Marketing, Questionnaire Fall 1991, Fargo, NDSU, Department of Agricultural Economics.

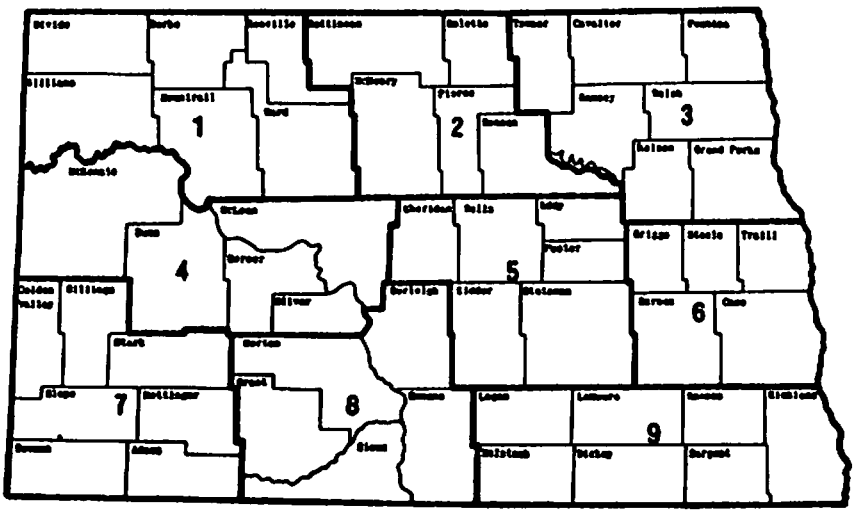

Figure 1. Nine Regions Used to Divide Responding Elevators by Location in the State

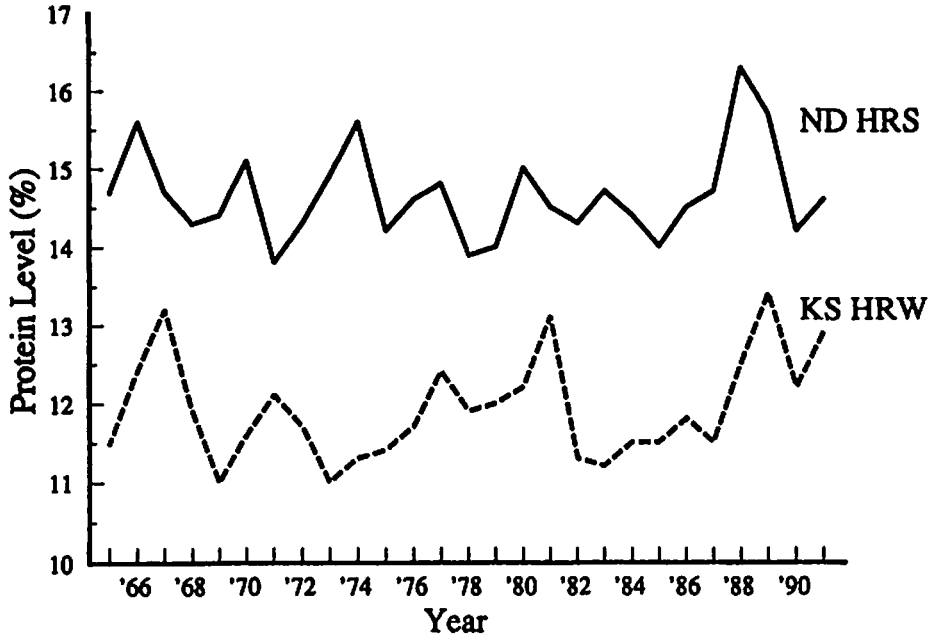

Figure 2. HRS and HRW Average Protein Level, on a 12% Moisture Basis, North Dakota and Kansas, Respectively

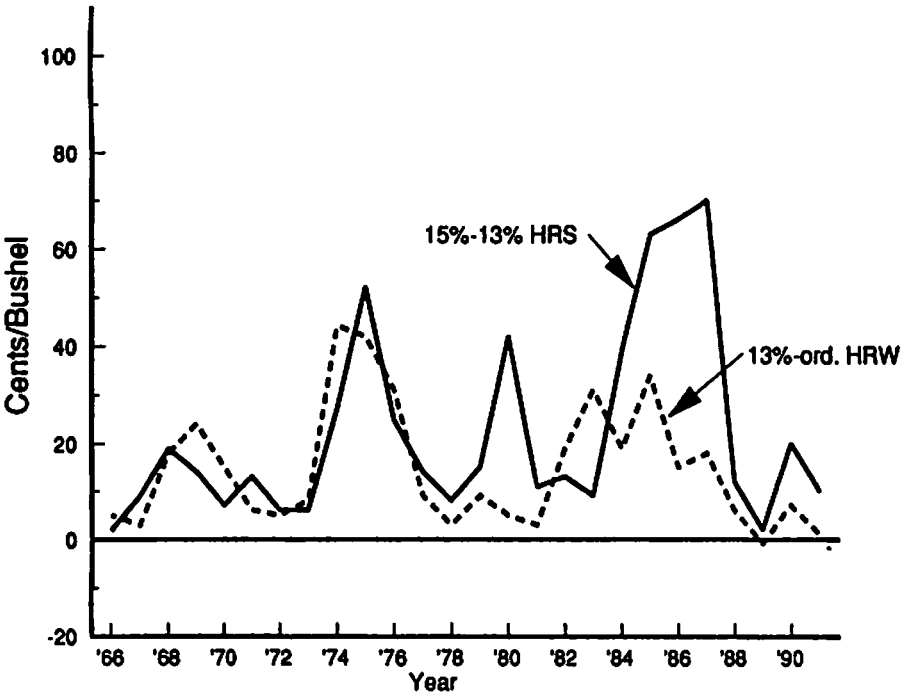

Figure 3. HRS and HRW Market Protein Premium

SOURCE: USDA/ERS

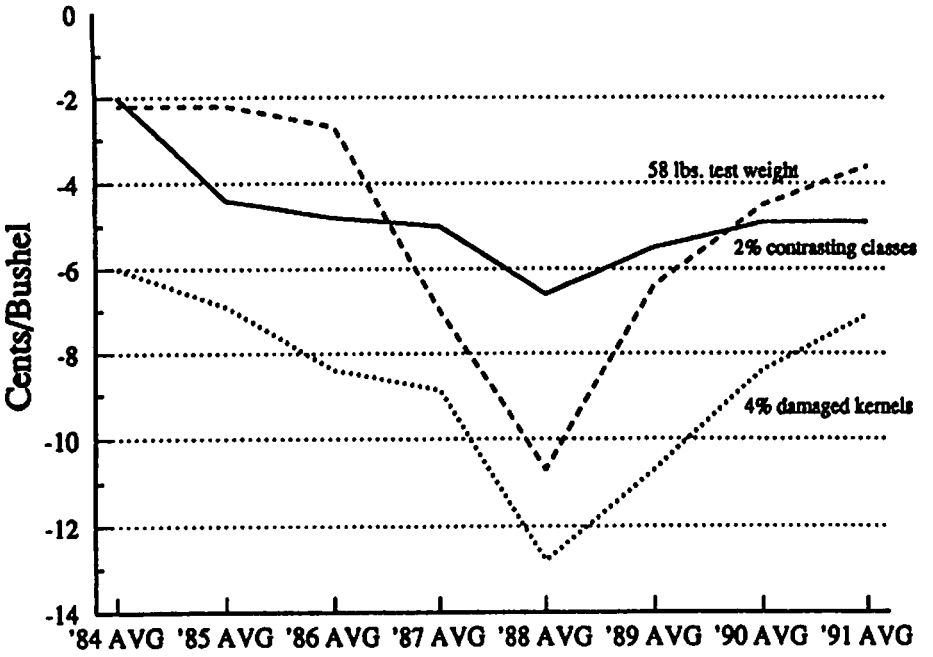

Figure 4. Average Price Adjustments Among North Dakota Country Elevators, Durum (#1 HAD)

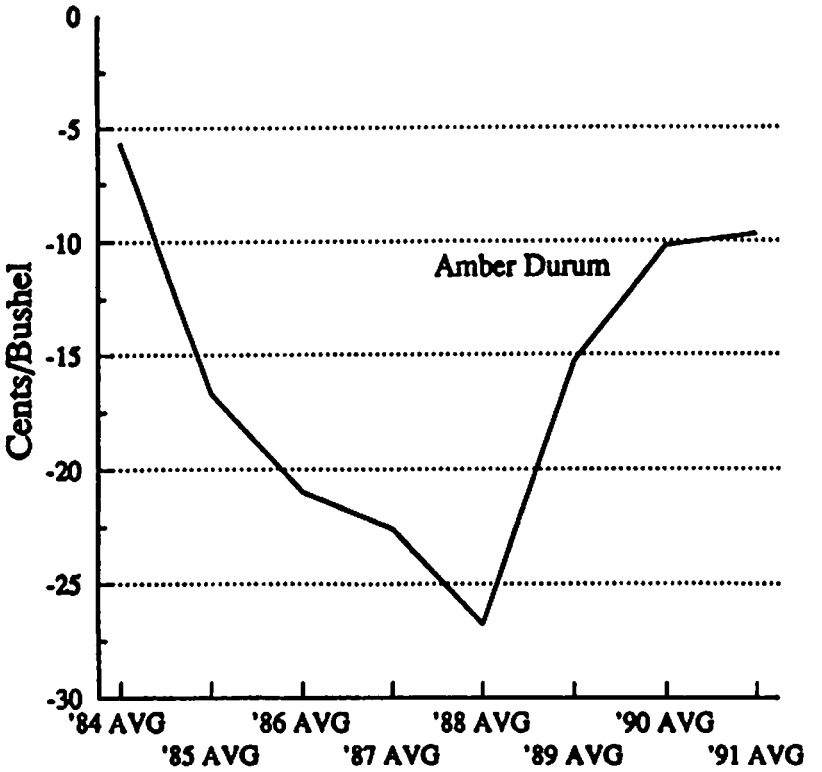

Figure 5. Average Price Adjustment Among North Dakota Country Elevators, Durum (#1 HAD)

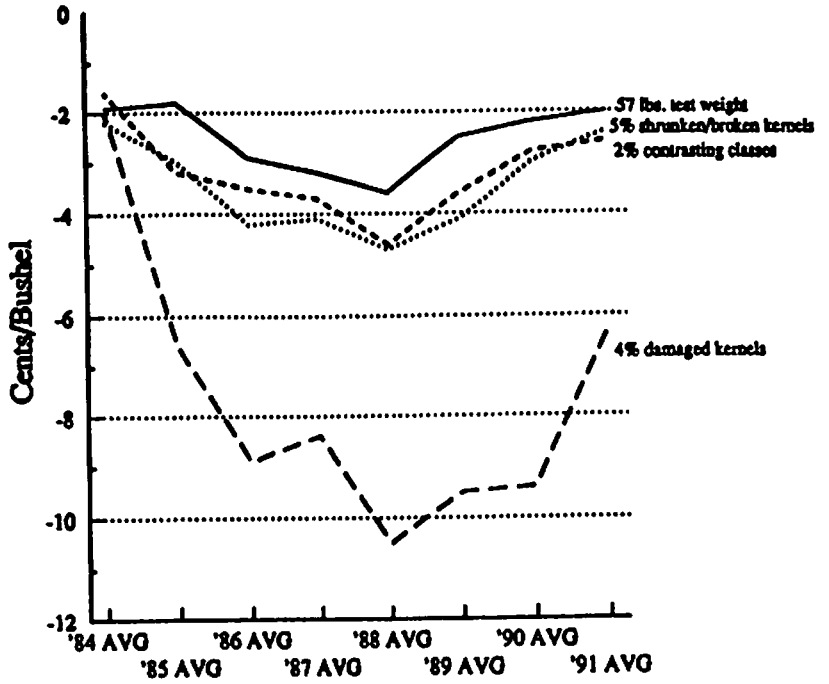

Figure 6. Average Price Adjustments Among North Dakota Country Elevators, HRS (#1 DNS) 14% Protein

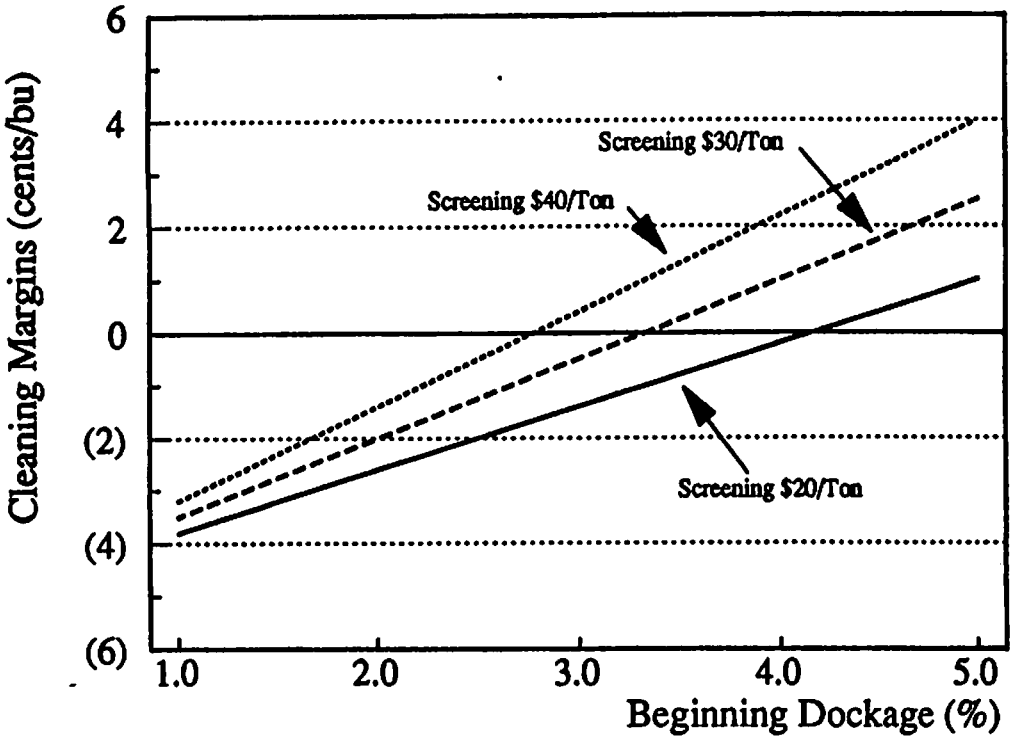

Figure 7. Cleaning Margins With Specified Screening Values, Beginning Dockage Levels and Ending Dockage Level of 0% and a Cleaning and Transport Cost of $.05/Bu and $.60/Bu, Respectively

SOURCE: Scherping et al. (1992c).

References

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