U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

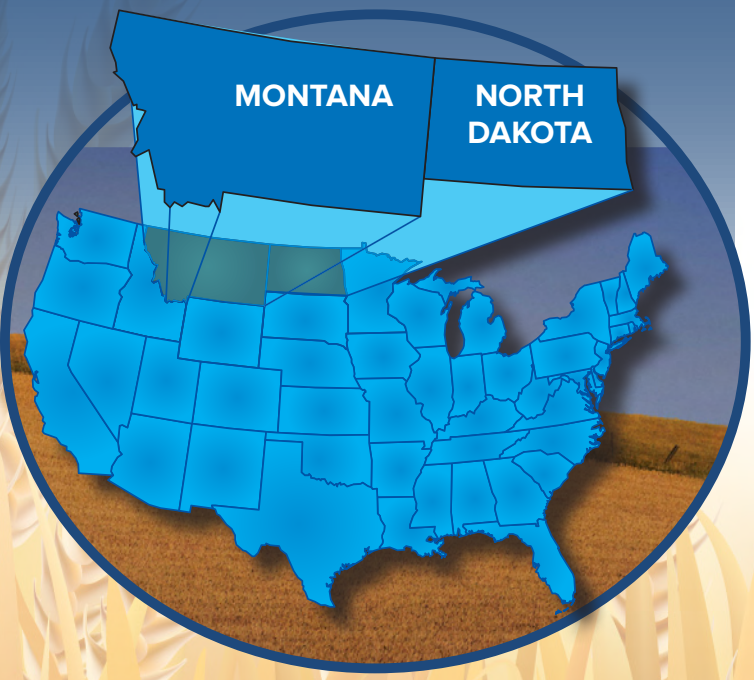
2010 REGIONAL QUALITY REPORT

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

2010 REGIONAL QUALITY REPORT

TABLE OF CONTENTS



MAKING PREMIUM PASTA

DURUM—is the hardest of all wheats. Its density, combined with its high protein content and gluten strength, make durum the wheat of choice for producing premium pasta products. Pasta made from durum is firm with consistent cooking quality. Durum kernels are amber-colored and larger than those of other wheat classes. Also unique to durum is its yellow endosperm, which gives pasta its golden hue.

When durum is milled, the endosperm is ground into a granular product called semolina. A mixture of water and semolina forms a stiff dough. Pasta dough is then forced through dies, or metal discs with holes, to create hundreds of different shapes.

Durum production is geographically concentrated to the Northern Plains because it demands a special agronomic environment. The states of North Dakota and Montana in most years jointly produce 80 percent of the U.S. durum crop. Farmers in California and Arizona grow the remainder.

2010 OVERVIEW

The 2010 northern U.S. durum crop is roughly 15 percent larger than last year due to higher planted area and an excellent growing season which led to record yields. The crop averages a #1 Hard Amber Durum, with nearly 70 percent of the crop at #2 HAD or better. Due to a prolonged, wet harvest, there is a wider distribution of quality with a greater than normal share of the crop showing some reduction in kernel quality traits and pasta processing performance. The last 20 percent of the Montana crop was not analyzed due to the extremely late harvest.

Average test weight on the crop is 60 pounds per bushel (78.1 kg/hl), down from last year but similar to the five-year average. Thousand kernel weights average 40 grams, down from 42 grams in 2009, but well above the five-year average of 36 grams. The 2010 crop has a similar protein level to last year, at 13.4 percent, but below average due to the strong yields. Still, more than 60 percent of the crop is above the typical minimum industry demand of 13 percent.

Average damage levels increased to 1.3 percent, about a point higher than the five-year average due to some disease pressures during the growing season and harvest time rains.

PRODUCTION DATA	2009	2010	2005-09 AVERAGE
MILLION BUSHELS			
Montana	16.6	18.6	12.4
North Dakota	61.2	70.3	49.3
Regional Total	77.8	88.9	61.7
U.S. Total	**109.0**	**111.4**	**82.4**
MILLION METRIC TON			
Montana	0.45	0.51	0.34
North Dakota	1.67	1.91	1.34
Regional Total	2.12	2.42	1.68
U.S. Total	**2.97**	**3.03**	**2.24**

Correspondingly, average falling number values fell to 335 seconds compared to 398 in 2009, but nearly 80 percent of the crop is still above 300 seconds.

Vitreous kernel distributions show that three-fourths of the crop is above the HAD minimum of 75 percent vitreous, similar to last year, but a lower percent is above the 90 percent level. The crop average is 82 percent vitreous, slightly below the five-year average of 88 percent, as lower than average protein levels and harvest rains both influenced this factor.

Milling performance on the crop, based on a Buhler laboratory mill, reveals increases in both semolina and total extraction. Average semolina extraction is 66.3 percent, a percent higher than last year and two percent higher than the five-year average. Total extraction is at 73.4 percent, up from 72.7 in 2009 and nearly 3 percent higher than the five-year average. Semolina ash values are higher than 2009, but lower than the five-year average.

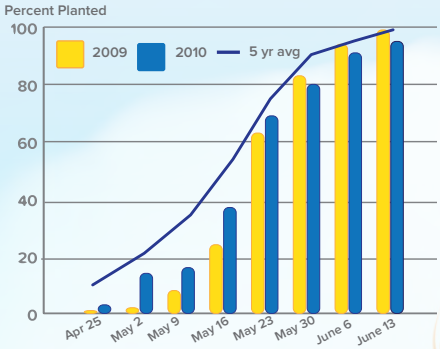
Semolina mixing values are similar to last year with a mixogram score of 5.4 (scale 1-8). The average gluten index value is 55 percent, above the five-year average, with a range of 48 to 79. Pasta quality factors are reflective of the weather impact on this year's crop with lower color scores and reduced cooked firmness values.

The 2010 crop can be considered to be of average to good quality, when the entire crop is considered. However, diligent buyers will find more than adequate quantities of the crop with high grades and sound, kernel quality parameters that will produce excellent pasta and couscous. Large carryover supplies from 2009 and the higher than average production in 2010 provide a good pool of high quality durum to select from to produce end products that score well above the crop average. Given the wider spread in quality parameters and market values with the 2010 crop, detailed communication between buyers and seller on contract specifications will take on added importance.

SEASONAL CONDITIONS

PLANTING began in late April, slightly behind average but ahead of the very slow 2009 pace. Cool, wet conditions prevailed throughout much of May tempering progress and delaying final plantings until the middle of June.

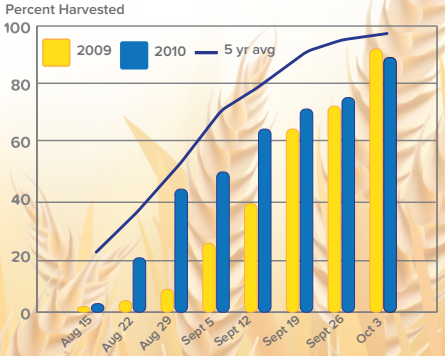
NORTH DAKOTA DURUM PLANTING PROGRESS



GROWING conditions were mostly favorable with cooler than normal temperatures and more than adequate soil moisture levels. These conditions promoted high yield potential throughout the growing season. Development of the crop remained behind the five-year average for most of the season with very little stress.

HARVEST began in earnest in mid-August, ahead of last year's abnormally slow pace, but behind average. In mid-September, persistent precipitation stalled harvest substantially especially areas in Montana and northwest North Dakota. Harvest pace fell well behind average for the last portion of the crop as producers were challenged by slow crop maturity and cool, humid conditions. Harvest was finished in the middle of October.

NORTH DAKOTA DURUM HARVEST PROGRESS



U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

WHEAT CHARACTERISTICS

WHEAT GRADES, as defined by the Federal Grain Inspection Service (FGIS) of the USDA Grain Inspection, Packers and Stockyards Administration (GIPSA), reflect the general quality and condition of a representative sample. U.S. grades are based on test weight and include limits on damaged kernels, foreign material, shrunken and broken kernels, and wheat of contrasting classes. Each determination is made on the basis of the grain when free from dockage and shrunken and broken kernels.

Subclasses

Subclass is a separate marketing factor based on the weight percentage of kernels with a complete, hard and vitreous endosperm, the portion that makes semolina. For durum wheat the subclasses are:

- Hard Amber Durum (HAD)—at least 75 percent or more hard, vitreous kernels;
- Amber Durum (AD)— between 60 and 74 percent hard, vitreous kernels;
- Durum (D)—less than 60 percent hard, vitreous kernels.

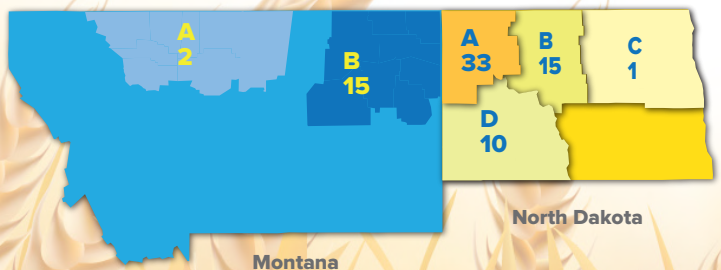
GRADING FACTORS	U.S. Grades 1	2	3	4	5
DURUM - MINIMUM TEST WEIGHTS					
Pounds per bushel	60.0	58.0	56.0	54.1	51.0
Kilograms per hectoliter	78.2	75.6	73.0	70.4	66.5
MAXIMUM PERCENT LIMITS OF:					
Damaged kernels					
Heat (part of total)	0.2	0.2	0.5	1.0	3.0
Total	2.0	4.0	7.0	10.0	15.0
Foreign material	0.4	0.7	1.3	3.0	5.0
Shrunken/broken kernels	3.0	5.0	8.0	12.0	20.0
Total [1]	3.0	5.0	8.0	12.0	20.0
Wheat of other classes [2]					
Contrasting classes	1.0	2.0	3.0	10.0	10.0
Total [3]	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
MAXIMUM COUNT LIMITS OF:					
Other material					
Animal filth	1	1	1	1	1
Castor beans	1	1	1	1	1
Crotalaria seeds	2	2	2	2	2
Glass	0	0	0	0	0
Stones	3	3	3	3	3
Unknown foreign material	3	3	3	3	3
Total [4]	4	4	4	4	4
Insect-damaged kernels in 100 grams	31	31	31	31	31

U.S. Sample grade is wheat that:

a. Does not meet the requirements for U.S. Nos. 1, 2, 3, 4, or 5; or
b. Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
c. is heating or of distinctly low quality.

1. Includes damaged kernels (total), foreign material, and shrunken and broken kernels.
2. Unclassed wheat of any grade may contain not more than 10.0 percent of wheat of other classes.
3. Includes contrasting classes.
4. Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, or unknown foreign substance.

Crop Reporting Areas & 2009 Durum Wheat Production in Million Bushels



(1 metric ton = 36.74 bushels)

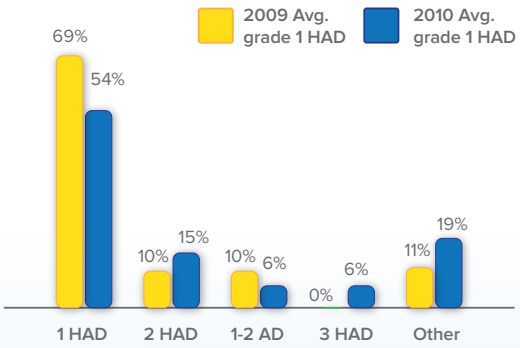
WHEAT GRADING DATA

OVERALL GRADE

The average grade for the region is 1 HAD. This grade represents average test weight of 60.0 pounds per bushel (78.1 kg/hl), total defects of 2.0 percent and vitreous kernel content of 82 percent.

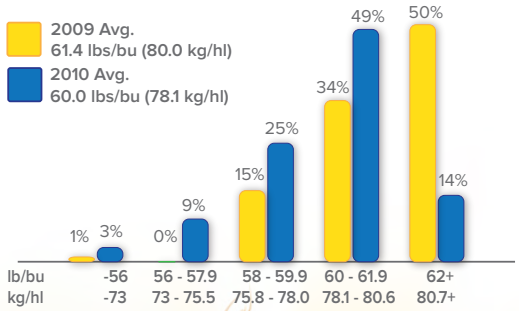
Sixty-nine percent of the 2010 samples grade 2 HAD or better.

REGIONAL GRADE DISTRIBUTION



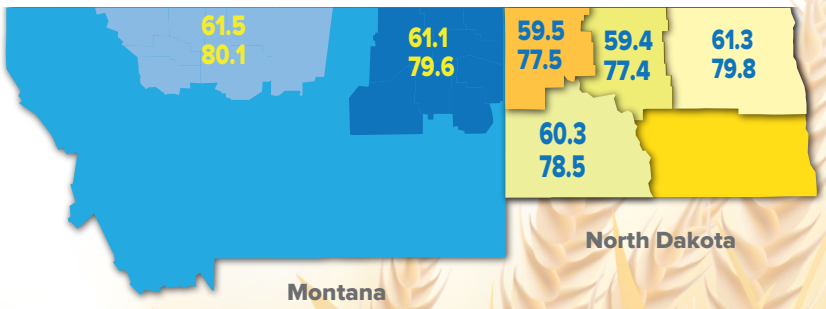
STATE AND CROP REPORTING AREA	Test Weight LBS/BU	Test Weight KG/HL	Damage %	Foreign Material %	Shrunken/ Broken Kernels %	Total Defects %	Contrasting Classes %	U.S. Grade	Vitreous Kernels %
MONTANA									
Area A	61.5	80.1	0.0	0.0	0.8	0.8	0.0	1 HAD	87
Area B	61.1	79.6	0.2	0.0	0.8	1.0	0.0	1 HAD	86
State Avg. 2010	61.2	79.6	0.2	0.0	0.8	1.0	0.0	1 HAD	86
State Avg. 2009	61.5	80.1	0.0	0.0	0.5	0.5	0.5	1 HAD	91
NORTH DAKOTA									
Area A	59.5	77.5	2.4	0.0	0.8	3.2	1.5	2 HAD	79
Area B	59.4	77.4	0.5	0.0	0.8	1.3	0.0	2 HAD	82
Area C	61.3	79.8	0.3	0.0	0.9	1.2	0.3	1 HAD	88
Area D	60.3	78.5	0.2	0.0	0.7	0.9	0.0	1 HAD	84
State Avg. 2010	59.7	77.8	1.5	0.0	0.8	2.3	0.9	2 HAD	81
State Avg. 2009	61.4	80.0	0.4	0.0	0.8	1.2	0.2	1 HAD	81
TWO-STATE REGION									
Avg. 2010	60.0	78.1	1.3	0.0	0.8	2.0	0.7	1 HAD	82
Avg. 2009	61.4	80.0	0.3	0.0	0.7	1.1	0.3	1 HAD	83
Five-Year Avg.	60.4	78.7	0.4	0.0	1.3	1.7	0.1	1 HAD	88

REGIONAL TEST WEIGHT DISTRIBUTION



Sixty-three percent of the 2010 samples have a test weight of 60 lb/bu (78.1 kg/hl) or greater.

TEST WEIGHT BY AREA

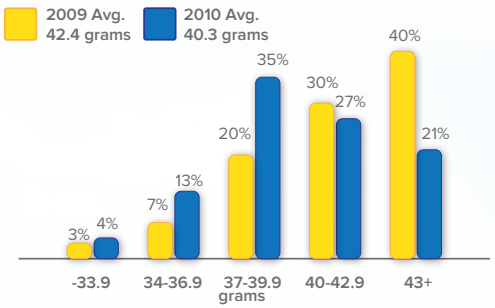


pounds per bushel - top
kilograms per hectoliter - bottom

U.S. DURUM WHEAT

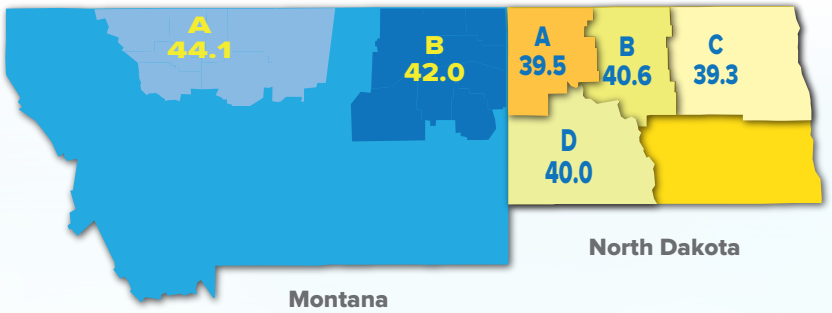
MONTANA | NORTH DAKOTA

REGIONAL 1000 KERNEL WEIGHT DISTRIBUTION

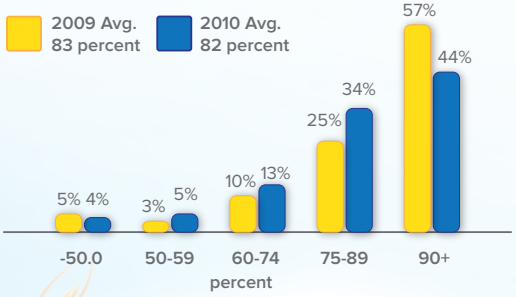


Eighty-three percent of the 2010 samples have a thousand kernel weight of 37 grams or more.

1000 KERNEL WEIGHT BY AREA (grams)

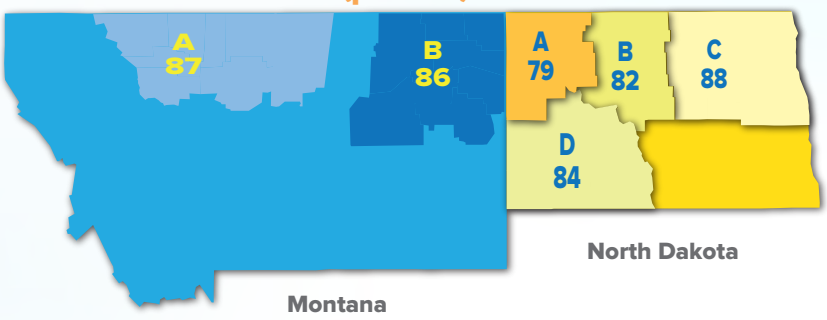


REGIONAL VITREOUS KERNEL DISTRIBUTION

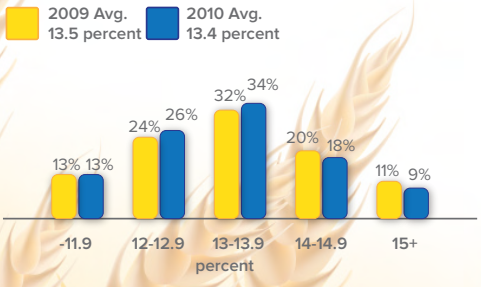


Seventy-eight percent of the 2010 samples have 75 percent or greater vitreous kernels.

AVERAGE VITREOUS KERNELS BY AREA (percent)

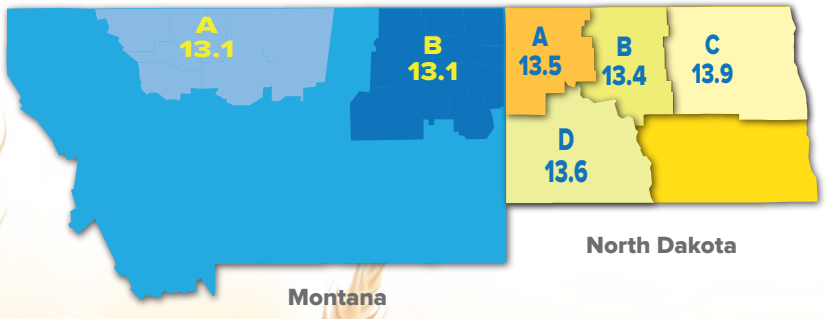


REGIONAL PROTEIN DISTRIBUTION



Sixty-one percent of the 2010 samples have a protein content of 13.0 percent or greater.

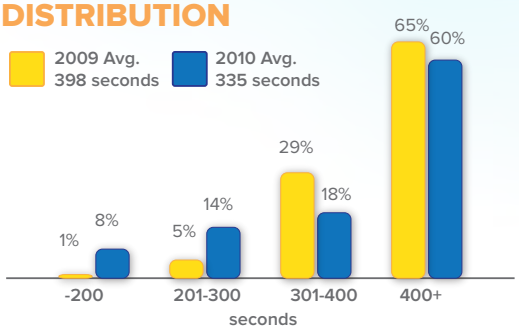
PROTEIN BY AREA - 12% moisture basis (percent)



OTHER KERNEL QUALITY DATA

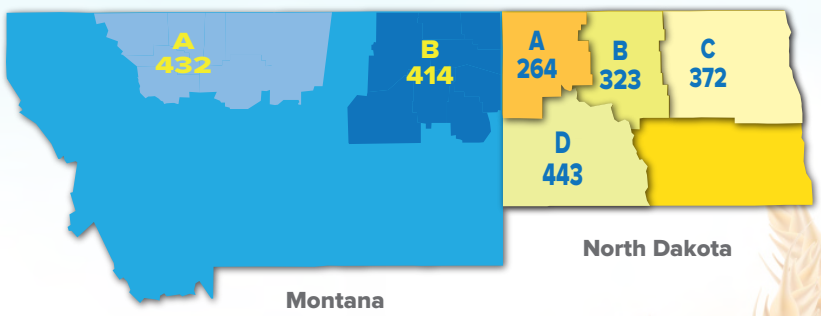
STATE AND CROP REPORTING AREA	DOCKAGE %	MOISTURE %	1000 KERNEL WEIGHT G	KERNEL DIST MEDIUM %	KERNEL DIST LARGE %	PROTEIN (DRY) MATTER %	PROTEIN (12% MOISTURE) %	WHEAT ASH %	FALLING NUMBER (SEC)	SEDIMEN-TATION (CC)
MONTANA										
Area A	0.6	11.6	44.1	52	46	14.9	13.1	1.46	432	55
Area B	0.6	11.3	42.0	58	39	14.9	13.1	1.39	414	38
State Avg. 2010	0.6	11.3	42.3	57	40	14.9	13.1	1.40	416	40
State Avg. 2009	0.9	11.1	42.2	42	55	16.0	14.1	1.32	432	55
NORTH DAKOTA										
Area A	0.9	11.6	39.5	53	43	15.3	13.5	1.60	264	44
Area B	0.8	11.5	40.6	53	44	15.2	13.4	1.60	323	43
Area C	0.8	12.3	39.3	52	45	15.8	13.9	1.68	372	40
Area D	1.1	11.3	40.0	53	44	15.5	13.6	1.63	443	44
State Avg. 2010	0.9	11.5	39.8	53	43	15.4	13.5	1.61	313	44
State Avg. 2009	1.5	12.0	42.4	42	55	15.2	13.4	1.45	388	49
TWO-STATE REGION										
Avg. 2010	0.9	11.5	40.3	54	43	15.3	13.4	1.56	335	43
Avg. 2009	1.4	11.8	42.4	42	55	15.4	13.5	1.42	398	50
Five-Year Avg.	1.6	11.8	36.0	54	39	16.3	14.4	1.56	370	50

REGIONAL FALLING NUMBER DISTRIBUTION

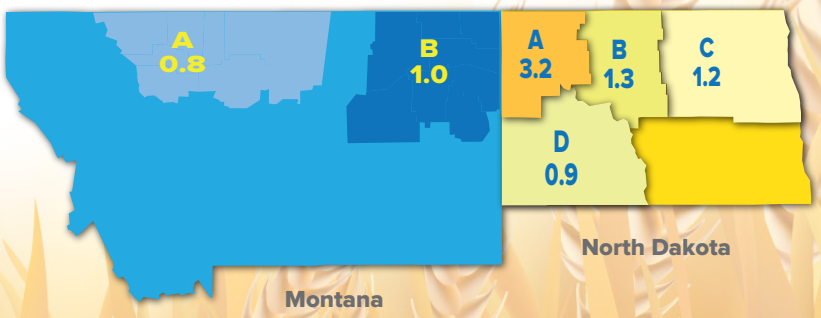


Seventy-eight percent of the 2010 samples have a falling number of 300 seconds or better.

FALLING NUMBER BY AREA (seconds)



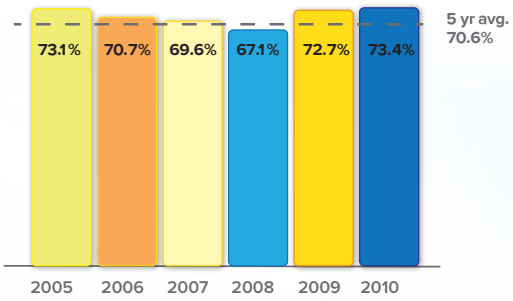
TOTAL DEFECTS BY AREA (percent)



U.S. DURUM WHEAT

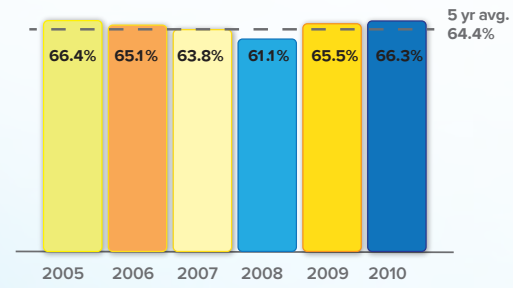
MONTANA | NORTH DAKOTA

REGIONAL AVERAGE TOTAL EXTRACTION



The regional average is 73.4 percent, higher than last year and the five-year average.

REGIONAL AVERAGE SEMOLINA EXTRACTION



The regional average is 66.3 percent, higher than last year and the five-year average.

MILLING CHARACTERISTICS

TOTAL EXTRACTION represents the portion of the kernel that can be milled into flour and semolina.

SEMOLINA extraction is the portion milled into semolina only.

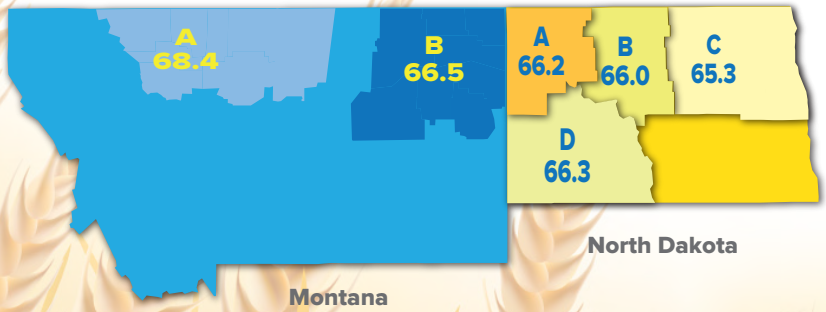
ASH CONTENT in the endosperm of durum is inherently higher than in the endosperm of other hard wheats, but can still be used as a relative measure of bran or mineral content in the flour and semolina.

SPECKS appear in semolina when small particles of bran or other material escape the cleaning and purifying process. Millers can control speck count by selecting durum that is free of disease and foreign material, thoroughly cleaning the durum, properly tempering and conditioning the wheat before milling, and by using purifiers to remove small bran particles from the semolina.

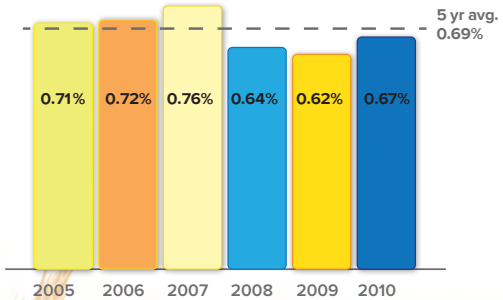
PROTEIN CONTENT in semolina has a high correlation with gluten content and, in turn, mechanical strength and cooking quality. Wet gluten is a quantitative measure of the gluten forming proteins in semolina that are primarily responsible for its mechanical strength and pasta quality.

MIXOGRAM curves reveal important information about the gluten quality of semolina and ultimately about the potential cooked firmness of pasta. Mixograms are rated on a scale of 1 to 8, with the higher values indicating stronger mixing characteristics.

SEMOLINA EXTRACTION BY AREA (percent)



REGIONAL AVERAGE ASH CONTENT

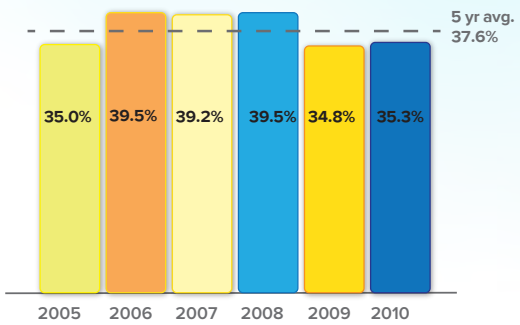


The 2010 crop produced semolina with an average ash content of 0.67 percent, lower than the five-year average.

SEMOLINA QUALITY DATA

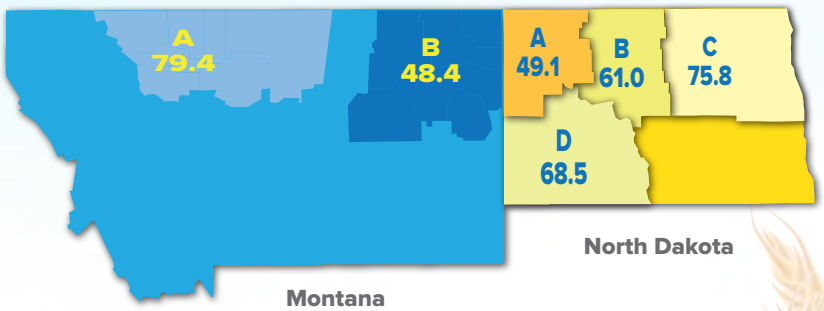
STATE AND CROP REPORTING AREA	TOTAL EXTRACTION %	SEMOLINA EXTRACTION %	ASH %	SPECKS NO/10 SQ IN %	PROTEIN %	WET GLUTEN %	GLUTEN INDEX %	MIXOGRAM CLASSIFICATION SCALE 1-8
MONTANA								
Area A	75.0	68.4	0.69	20	12.0	32.5	79.4	7
Area B	72.9	66.5	0.60	33	12.2	35.2	48.4	5
State Avg. 2010	73.2	66.7	0.61	31	12.2	34.9	52.3	5.3
State Avg. 2009	72.9	66.4	0.64	23	12.7	36.3	63.0	6
NORTH DAKOTA								
Area A	74.0	66.2	0.68	47	12.5	35.9	49.1	5
Area B	72.4	66.0	0.72	40	12.4	34.4	61.0	6
Area C	70.7	65.3	0.70	30	12.0	31.7	75.8	6
Area D	73.3	66.3	0.68	37	12.8	35.4	68.5	6
State Avg. 2010	73.5	66.2	0.69	43	12.5	35.4	56.0	5.4
State Avg. 2009	72.6	65.3	0.61	27	12.0	34.4	57.8	5.3
TWO-STATE REGION								
Avg. 2010	73.4	66.3	0.67	41	12.4	35.3	55.2	5.4
Avg. 2009	72.7	65.5	0.62	26	12.2	34.8	58.9	5.5
Five-Year Avg.	70.6	64.4	0.69	22	13.4	37.6	50.0	5.6

REGIONAL AVERAGE WET GLUTEN



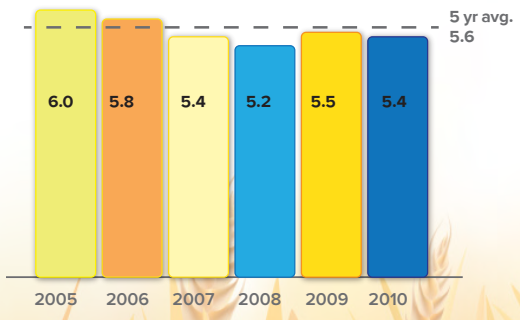
Average wet gluten content for the 2010 crop is 35.3 percent, higher than 2009.

GLUTEN INDEX BY AREA (percent)



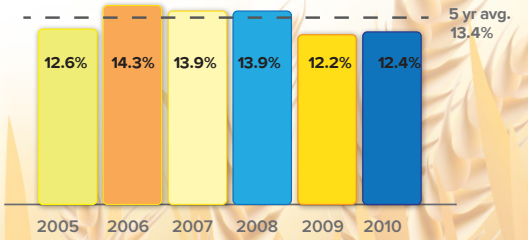
REGIONAL AVERAGE MIXOGRAM CLASSIFICATION

(scale of 1 to 8)



The average mixogram score is 5.4 (scale 1-8).

REGIONAL AVERAGE SEMOLINA PROTEIN CONTENT



The 2010 average semolina protein content is 12.4 percent, higher than last year.

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

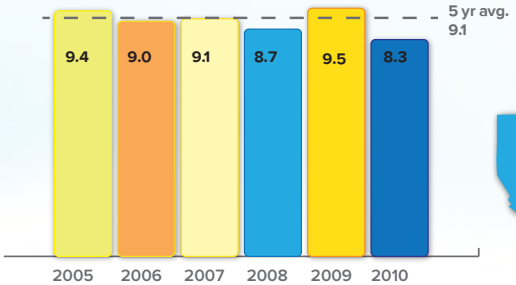
PASTA CHARACTERISTICS

DRY PASTA PROCESSORS want a finished product that is visually appealing, elastic and strong enough to resist breakage during cutting, packaging, handling and shipping, able to withstand the rigors of cooking, and satisfying to the consumer palate.

Yellow color in semolina and pasta is a traditional, rather than functional, mark of quality. In the early days of the pasta industry, before sophisticated testing evolved, consumers assumed that a yellow pasta was made from durum wheat, which is known to make pasta with superior cooking quality compared to that made from other hard wheats.

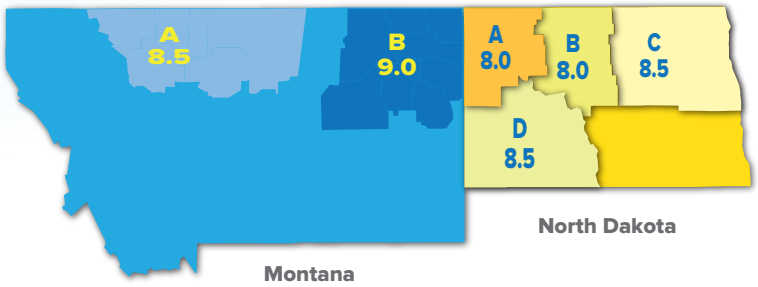
Most consumers prefer pasta that is "al dente," meaning it has some firmness to the bite. Good quality pasta that is cooked according to package directions should not be sticky or mushy when eaten.

REGIONAL AVERAGE COLOR SCORE (scale of 1-12)

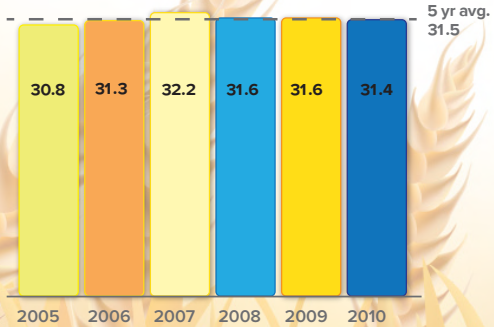


The 2010 average color score is 8.3. Pasta samples with scores of 8.0 or higher have good color.

COLOR SCORE BY AREA (scale of 1-12)

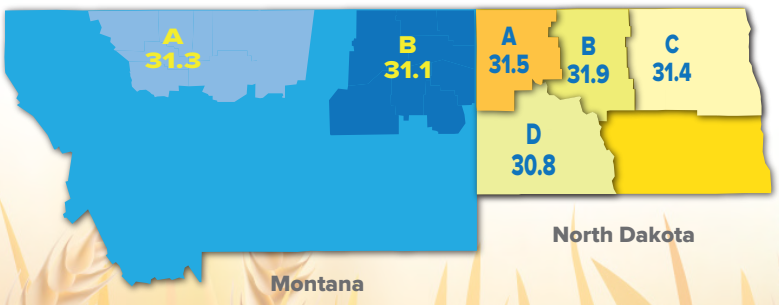


REGIONAL AVERAGE COOKED WEIGHT (grams)



The 2010 average cooked weight is 31.4 grams, similar to the five-year average.

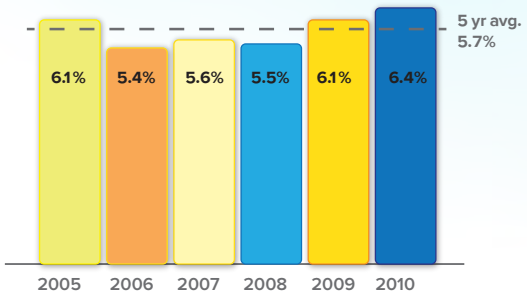
COOKED WEIGHT BY AREA (grams)



SPAGHETTI PROCESSING PROPERTIES

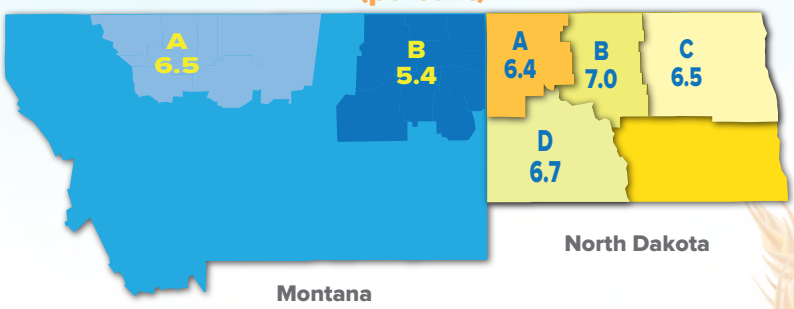
STATE AND CROP REPORTING AREA	COLOR SCORE %	COOKED WEIGHT G	COOKING LOSS %	COOKED FIRMNESS G CM
MONTANA				
Area A	8.5	31.3	6.5	4.2
Area B	9.0	31.1	5.4	4.8
State Avg. 2010	8.9	31.1	5.5	4.7
State Avg. 2009	9.5	31.6	6.1	5.0
NORTH DAKOTA				
Area A	8.0	31.5	6.4	4.4
Area B	8.0	31.9	7.0	4.2
Area C	8.5	31.4	6.5	4.4
Area D	8.5	30.8	6.7	4.8
State Avg. 2010	8.1	31.4	6.6	4.4
State Avg. 2009	9.5	31.6	6.0	5.0
TWO-STATE REGION				
Avg. 2010	8.3	31.4	6.4	4.5
Avg. 2009	9.5	31.6	6.1	5.0
Five-Year Avg.	9.1	31.5	5.7	5.6

REGIONAL AVERAGE COOKING LOSS

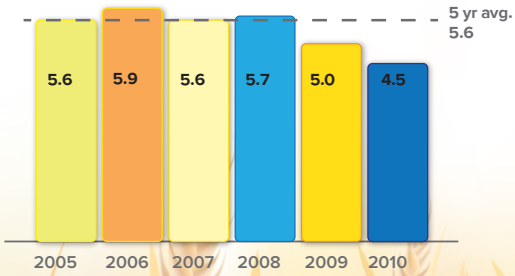


The 2010 average cooking loss is 6.4 percent, higher than last year and the five-year average.

COOKING LOSS BY AREA (percent)

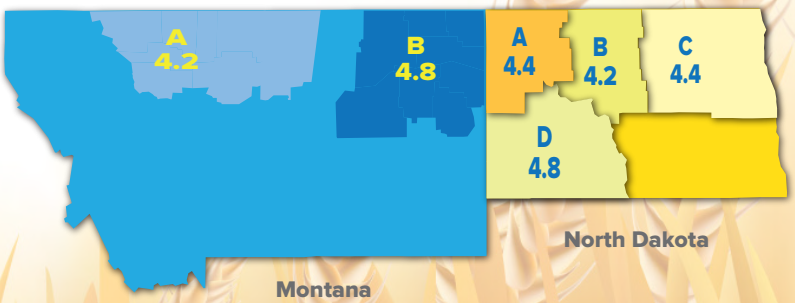


REGIONAL AVERAGE COOKED FIRMNESS (g cm)



The 2010 average cooked firmness is 4.5 grams, lower than last year and the five-year average.

COOKED FIRMNESS BY AREA (g cm)



SUMMARY INFORMATION

AVERAGE QUALITY FACTORS FOR THE REGIONAL DURUM WHEAT CROP

	2005	2006	2007	2008	2009	Five-Year Average	2010
GRADING AND WHEAT DATA							
Test Weight (lbs/bu)	60.8	59.9	59.9	60.2	61.4	60.4	60.0
Test Weight (kg/hl)	79.2	78.0	78.0	78.4	80.0	78.7	78.1
Total Defects (%)	2.2	2.0	1.8	1.6	11	1.7	2.0
Vitreous Kernels (%)	91	90	95	83	83	88	82
Grade	1 HAD	2 HAD	2 HAD	1 HAD	1 HAD	1 HAD	1 HAD
OTHER WHEAT DATA							
Dockage (%)	1.5	2.3	1.6	1.1	1.4	1.6	0.9
Protein: 12% moisture	13.4	15.1	15.1	14.8	13.5	14.4	13.4
1000 Kernel Weight (gm)	35.5	33.2	33.8	35.0	42.4	36.0	40.3
Moisture (%)	12.5	11.3	11.8	11.7	11.8	11.8	11.5
Ash (%)	1.67	1.53	1.67	1.50	1.42	1.56	1.56
Falling Number (sec)	378	385	367	322	398	370	335
Sedimentation (mm)	45	55	52	49	50	50	43
SEMOLINA DATA							
Total Extraction (%)	73.1	70.7	69.6	67.1	72.7	70.6	73.4
Semolina Extraction (%)	66.4	65.1	63.8	61.1	65.5	64.4	66.3
Ash (%)	0.71	0.72	0.76	0.64	0.62	0.69	0.67
Wet Gluten (%)	35.0	39.5	39.2	39.5	34.8	37.6	35.3
Specks (no/10 sq in)	19	21	23	22	25	22	41
Protein (%)	12.6	14.3	13.9	13.9	12.2	13.4	12.4
Gluten Index (%)	45.4	56.7	48.0	41.4	58.9	50.0	55.2
Mixograph Classification	6.0	5.8	5.4	5.2	5.5	5.6	5.4
SPAGHETTI PROCESSING DATA							
Color Score (scale of 1-12)	9.4	9.0	9.1	8.7	9.5	9.1	8.3
Cooked Weight (gm)	30.8	31.3	32.2	31.6	31.6	31.5	31.4
Cooking Loss (%)	6.1	5.4	5.6	5.5	6.1	5.7	6.4
Cooked Firmness (g cm)	5.6	5.9	5.6	5.7	5.0	5.6	4.5

EXPORT CARGO SAMPLING

	2008 (17)	2009 (29)
GRADING AND WHEAT DATA		
Test Weight (lbs/bu)	61.0	62.0
Test Weight (kg/hl)	79.4	80.8
Damaged Kernels (%)	1.6	1.1
Foreign Material (%)	0.2	0.2
Shrunken & Broken (%)	1.6	1.0
Total Defects (%)	3.3	2.2
Vitreous Kernels (%)	80	82
Grade	2 HAD	1 HAD
OTHER WHEAT DATA		
Dockage (%)	0.6	0.5
Moisture (%)	11.2	11.5
Protein: 12% moisture (%)	15.0	13.3
Protein: Dry (%)	17.0	15.2
Ash: 14% moisture (%)	1.57	1.49
Ash: Dry (%)	1.82	1.73
1000 Kernel Weight (gm)	34.7	41.4
Kernel Size (%) lg/md/sm	40/53/6	52/44/3
Falling Number (sec)	322	380
SEMOLINA DATA		
Total Extraction (%)	71.6	73.4
Semolina Extraction (%)	65.1	66.6
Ash: 14% moisture (%)	0.64	0.62
Ash: Dry (%)	0.74	0.73
Gluten Index	51	61
Specks (no/10 sq in)	28.2	28.6
Protein: 14% moisture (%)	13.4	11.9
Protein: Dry (%)	15.6	13.9
Mixograph Classification (scale of 1-8)	5.4	5.4
Color: L (black-white)	85.2	85.5
a (red-green)	-2.7	-2.9
b (yellow-blue)	26.4	26.8
SPAGHETTI PROCESSING DATA		
Color Score (scale of 1-12)	8.8	9.1
Cooked Weight (gm)	32.0	32.3
Cooking Loss (%)	5.4	6.0
Cooked Firmness (g cm)	5.1	4.7

Data contained in previous sections of this report are derived from the testing of samples gathered during harvest from origination points throughout the northern U.S. durum growing region. The results provide and assessment of the overall quality of the crop produced in a given year.

U.S. Wheat Associates, the export market development arm for American wheat growers, furthers this information by commissioning an export cargo sampling program. The program provides an accurate representation of the supplies moving through the grain marketing and transportation system and actually reaching export points. Results show the quality levels at which U.S. wheat is realistically traded and are useful to customers in developing reasonable purchase specifications.

The Federal grain Inspection service oversees the program whereby all export inspection agencies at all ports collect every tenth sub lot sample from every vessel of U.S. wheat shipped during three two-month time periods annually.

The durum wheat samples are sent for analysis to the Durum Wheat Quality and Pasta Processing Laboratory in the North Dakota State University Plant Science Department.

LABORATORY ANALYSIS

All quality data contained in this report is the result of testing and analysis conducted by or under the supervision of Dr. Frank Manthey, professor and Nancy Hillen, Jason Axtman and Reena Dash, food technologists of the Durum Wheat Quality and Pasta Processing Laboratory in the Department of Plant Science at North Dakota State University, Fargo, North Dakota, USA.

COLLECTION · The North Dakota and Montana state offices of the National Agricultural Statistics Service obtained durum wheat samples during harvest directly from growers, farm bins and local elevators. These samples reflect the condition of the grain at the point of origin. Collection began in mid August when approximately 5 percent of North Dakota's durum crop had been harvested and continued until the beginning of October. A total of 204 samples were collected during harvest from Montana (44) and North Dakota (160). In 2010, the last 20 percent of the Montana crop was not analyzed due to a delayed harvest.

ANALYSIS · Half of the total wheat samples collected were analyzed for grade and other physical kernel characteristics. The data obtained from the analyses were used to generate frequency distributions as a percentage of the harvested crop. Distribution results may differ from data presented in the various tables, because the latter are derived from production adjusted averages, rather than simple averages.

All samples received in the laboratory were sub-sampled to obtain one composite sample for each of the four areas in North Dakota and one composite each of two areas for Montana. These were analyzed for grade and physical characteristics as well as milling performance and spaghetti processing qualities. Again, all state and regional averages have been adjusted to reflect production as opposed to simple averaging.

METHODS, TERMS, SYMBOLS

WHEAT

SAMPLE COLLECTION · Each sample contained approximately 2 to 3 pounds of wheat, stored in securely closed, moisture proof plastic bags.

MOISTURE · Official USDA procedure using Motomco Moisture Meter.

GRADE · Official United States Standards for Grain, as determined by a licensed grain inspector. North Dakota Grain Inspection Service, Fargo, ND, provided grades for composite wheat samples representing each crop reporting area.

VITREOUS KERNELS · Approximate percentage of kernels having vitreous endosperm, based on weights.

DOCKAGE · Official USDA procedure. All matter other than wheat which can be removed readily from a test portion of the original sample by use of an approved device (Carter Dockage Tester). Dockage may also include underdeveloped, shriveled and small pieces of wheat kernels removed in properly separating the material other than wheat and which cannot be recovered by properly rescreening or recleaning.

TEST WEIGHT · American Association of Cereal Chemists Method 55-10 approved April 1961, revised October 1999. Measured as pounds per bushel (lb/bu), kilograms per hectoliter (kg/hl) = (lbs/bu X 1.292) + 0.630. Approved Methods of the American Association of Cereal Chemists, Cereal Laboratory Methods (10th Edition), St. Paul, MN (2000).

THOUSAND KERNEL WEIGHT · Based on 10 gram sample of cleaned wheat (free of foreign material and broken kernels) counted by electronic seed counter.

KERNEL SIZE DISTRIBUTION · Determinations made according to the procedure described in Cereal Science Today 5:(3), 71 (1960). Kernels remaining over a Tyler No. 7 (2.92 mm opening) are classified as “large;” kernels passing through the top sieve but remaining on a Tyler No. 9 (2.24 mm opening) are classified as “medium” size kernels. Kernels passing through the second sieve are classed as “small.” Size is reported as percentage of large, medium, and small kernels.

PROTEIN · American Association of Cereal Chemists (AAC) Method: 46-30 (Combustion Method), expressed on dry basis and 12 percent moisture basis.

ASH · American Association of Cereal Chemists Method 08-01, approved April 1961, revised October 1999; expressed on a 14 percent moisture basis.

FALLING NUMBER · American Association of Cereal Chemists Method 56-81B, approved November 1972, revised September 1999; units of seconds (14 percent moisture basis).

MICRO SEDIMENTATION · Determined as described by Dick, J.W. and Quick, J.S. Cereal Chem. 60(4):315-318, 1983.

WET GLUTEN · American Association of Cereal Chemists Method 38-12, approved October 1999; expressed on a 14 percent moisture basis determined with the glutomatic instrument.

GLUTEN INDEX · American Association of Cereal Chemists Method 38-12, approved October 1999; determined with the glutomatic instrument as an indication of gluten strength.

SEMOLINA

EXTRACTION • AACC Method 26-41 (modified for the Buhler Mill). Expressed on a total product basis.

ASH • AACC Method 08-01, approved April 1961, revised October 1999; expressed on a 14 percent moisture basis.

PROTEIN • AACC Method 46-30 (combustion method), approved September 1995, revised October 1999, N x 5.7, expressed on a 14 percent moisture basis.

SPECKS • The number of specks in semolina was determined on a flat surface under a constant light source, and counting the visible specks (brown and black particles) in three different one-inch square areas. The average of the three readings was converted to the number of specks per 10 square inches.

MIXOGRAPH • Mixograph evaluation of semolina was performed according to the AACC Method 54-40A with some modifications: Ten grams of semolina (weighed on 14 percent moisture basis) were mixed for 8 min at constant water absorption of 5.8 ml, using a spring setting of 8. The mixograms were scored by comparing them to reference mixograms. A scale of 1 to 8 is employed, higher values indicate strong mixing characteristics (see reference mixogram chart).

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

SPAGHETTI

PROCESSING · Pasta was made using the laboratory procedure described by Walsh, Ebeling, and Dick, Cereal Sci. Today: 16(11) 385, 1971. A 1-Kg semolina was mixed with the appropriate amount of water that gave a dough consistency of 32 percent total water absorption. The other processing conditions used were: Water temperature, 40 C, extruder shaft speed, 25 rpm and vacuum, 18 in. Hg; the dough was pressed through an 84-strand teflon-coated spaghetti die with 0.157 cm openings. The extruded spaghetti samples were dried at high temperature for 12 hrs, using maximum temperature and relative humidity of 73 C and 83 percent respectively.

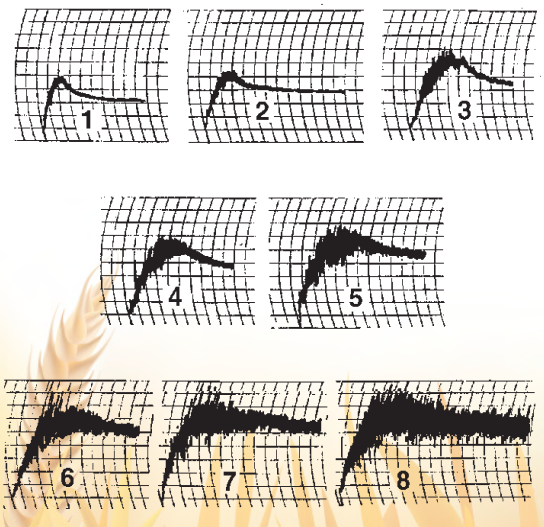
COLOR · Color scores were determined by light reflectance (AACC Method 14-22, 1983), using a Minolta Color Difference Meter (Model CR 310, Minolta Camera Co., Japan). The scores were generated according to the new color map designed by Debbouz (Pasta J. vol 6, No 6, 1994). A spaghetti sample with a score of 8.0 or higher is considered to have good color.

COOKED WEIGHT · AACC Method 66-50 with some modifications: 10 g of dry spaghetti were placed in 300 ml boiling distilled water and cooked for 12 min. The cooked and drained spaghetti sample was weighed and the results were reported in grams.

COOKING LOSS · AACC Method 66-50. Solids lost to the cooking water. After drying the residue was weighed and reported as percentage of the original dry sample.

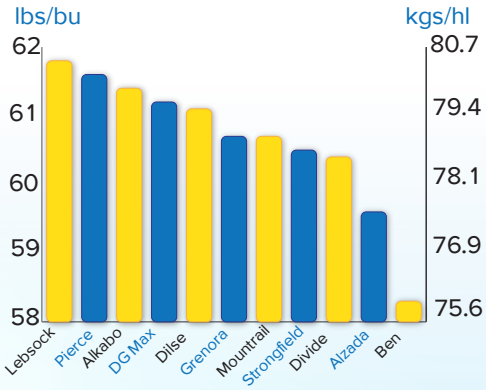
FIRMNESS · AACC Method 66-50 with a plexiglass tooth attached to a Texture Analyzer (Model TA-XT2, Texture Technology Corp., Scarsdale, New York).

REFERENCE MIXOGRAMS FOR DURUM WHEAT

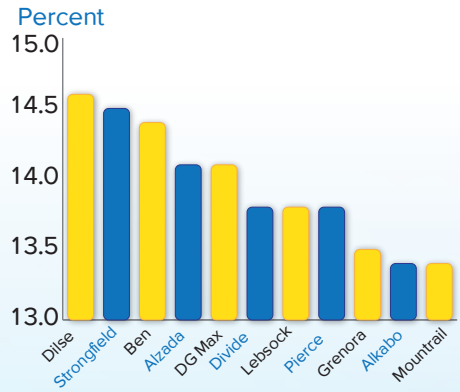


VARIETAL INFORMATION

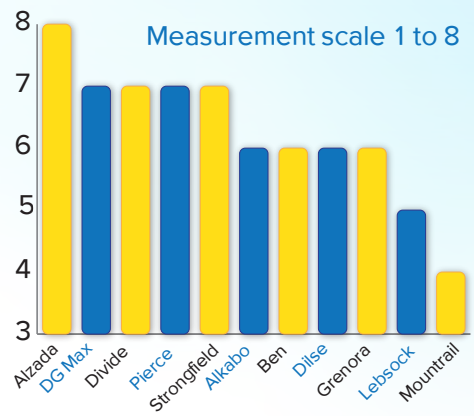
TEST WEIGHT



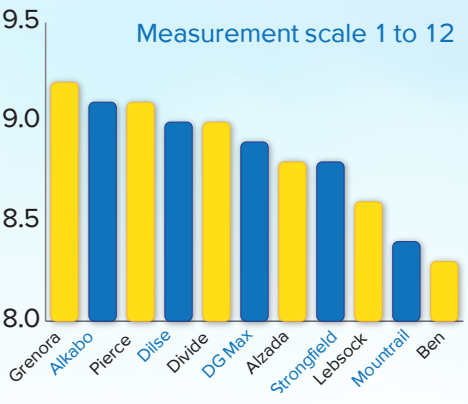
KERNEL PROTEIN



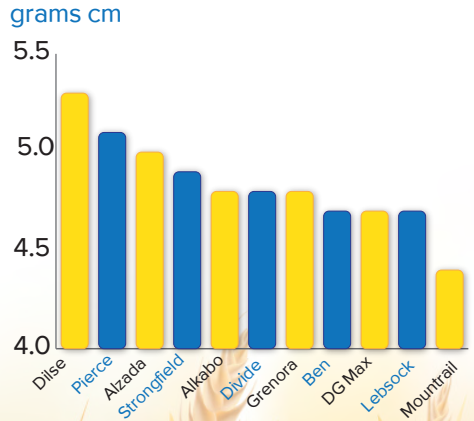
MIXOGRAPH



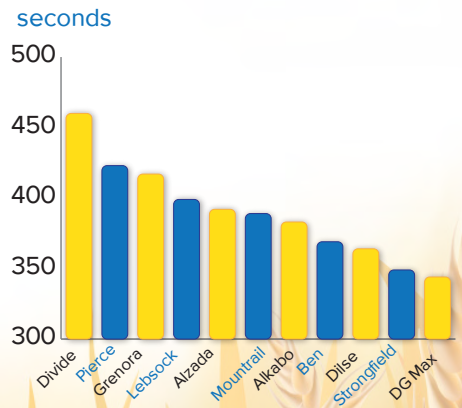
PASTA COLOR



COOKED FIRMNESS



WHEAT FALLING NUMBER



Quality products begin with quality ingredients. In the case of wheat, quality begins with the varieties planted. Within the durum class of wheat, there are different varieties available—all with relatively uniform characteristics. A public plant breeder at North Dakota State University in Fargo develops and releases most of the durum varieties grown in the northern region, although some private firms also have durum breeding programs. Before any durum variety is released to the public, it must meet or exceed current standards for the class. Prospective releases are evaluated for milling and pasta characteristics as well as for yield, protein content, test weight, resistance to diseases and insects, and straw strength.

Environment influences the quality of varieties across growing areas and planting years. For this reason, wheat breeders us “check” or reference varieties to evaluate quality in experimental varieties. They test and analyze quality data from multiple years and growing locations before a variety is released.

Footnote: This is from 2009 crop year across multiple North Dakota locations.

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

VARIETAL INFORMATION

GROWN & TESTED IN NORTH DAKOTA • AGRONOMIC FACTORS

			AGRONOMIC DESCRIPTION		REACTION TO DISEASE[2]			AVERAGE YIELD Eastern[3] North Dakota		AVERAGE YIELD Western[4] North Dakota	
Variety	AGENT[1] OR ORIGIN	YEAR RELEASED	STRAW STRENGTH	MATURITY	LEAF RUST	FOLIAR DISEASE	HEAD SCAB	BU/ ACRE	MT/HA	BU/ ACRE	MT/HA
Alkabo	ND	2005	v.strong	medium	R	M	MS	77.5	5.21	62.0	4.17
Alzada	WB	2004	strong	early	R	S	VS	51.4	3.46	55.3	3.72
Ben	ND	1996	strong	medium	R	MR	S*	74.6	5.02	57.3	3.85
DG Max	DGP	2008	strong	medium	MR	MR	MS	71.8	4.83	63.8	4.29
Dilse	ND	2002	strong	late	R	M	MS	74.7	5.02	64.5	4.34
Divide	ND	2005	strong	medium	R	M	MR	n/a	n/a	65.2	4.38
Grenora	ND	2005	strong	medium	R	M	MS	76.8	5.16	61.8	4.15
Lebsock	ND	1999	strong	medium	R	M	MS	79.6	5.35	58.3	3.92
Mountrail	ND	1998	strong	late	R	M	S*	78.7	5.29	68.0	4.57
Pierce	ND	2001	m.strong	medium	R	MS	S	69.3	4.66	63.9	4.30
Strongfield	CAN	2004	medium	medium	R	MS	n/a	69.1	4.65	59.6	4.01

Source: 2010 North Dakota Durum Wheat Variety Performance Descriptions

1. ND–North Dakota State University, WB–Westbred, CAN-Canada, DGP-Dakota Growers Pasta Co.
2. Reaction to Disease: resistant (R), moderately resistant (MR), intermediate (M), moderately susceptible (MS), susceptible (S), very susceptible (VS). *Indicates yield and/or quality have often been higher than would be expected based on visual head blight symptoms alone.
3. 2009 data from Carrington and Langdon locations in North Dakota.
4. 2009 data from Dickinson, Hettinger, Minot and Williston, North Dakota.
5. Based on NDSU Durum Quality Lab testing of samples grown at multiple North Dakota locations during 2009.
6. Based on kernel attributes, milling and semolina processing, pasta color, and spaghetti cooking performance.

GROWN & TESTED ACROSS NORTH DAKOTA • QUALITY & END-USE FACTORS

QUALITY FACTORS[5]

VARIETY	TEST WEIGHT LB/BU	TEST WEIGHT KG/HL	WHEAT PROTEIN %	WHEAT FALLING # SECONDS	MIXOGRAM SCORE (SCALE 1-8)	PASTA COLOR (SCALE 1-12)	GLUTEN INDEX %	COOKED FIRMNESS G CM	OVERALL PASTA QUALITY RATING [6]
Alkabo	61.4	80.0	13.4	383	6	9.1	63.1	4.8	good
Alzada	59.6	77.6	14.1	392	8	8.8	94.9	5.0	good
Ben	58.3	76.0	14.4	369	6	8.3	63.1	4.7	average
DG Max	61.2	79.7	14.1	344	7	8.9	73.7	4.7	good
Dilse	61.1	79.6	14.6	364	6	9.0	61.5	5.3	excellent
Divide	60.4	78.7	13.8	460	7	9.0	84.3	4.8	good
Grenora	60.7	79.1	13.5	417	6	9.2	74.3	4.8	good
Lebsock	61.8	80.5	13.8	399	5	8.6	53.0	4.7	average
Mountrail	60.7	79.1	13.4	389	4	8.4	35.3	4.4	average
Pierce	61.6	80.2	13.8	423	7	9.1	75.1	5.1	excellent
Strongfield	60.5	78.8	14.5	349	7	8.8	72.9	4.9	good

Environment influences the quality of varieties across growing areas and planting years. For this reason, wheat breeders use “check” or reference varieties to evaluate quality in experimental varieties. They usually test and analyze quality data from multiple years and growing locations before a variety is released.

Breeders are working towards future varieties that have enhanced color and gluten strength, all important quality factors for end-users.

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

NORTH DAKOTA

The North Dakota Agricultural Statistics Service reports that the top five varieties in 2010 are Divide, Mountrail, Lebsock, Alkabo and Pierce, unchanged from 2009. These varieties account for 70 percent of the estimated 1.8 million acres (729,000 hectares) planted to durum, similar to the 73 percent share held last year.

DIVIDE is the dominant variety in North Dakota in 2010 with nearly 27 percent of the acres, up from 21 percent last year and only 7.5 percent two years ago. It also gained acres in Montana, moving up to third position with 10 percent of the acres, nearly double the 2009 levels. Divide is making gains because of its combination of high yield potential and improved end-use quality traits. It has the highest rated resistance to Fusarium headblight of the available durum varieties. Divide also possesses many other agronomically important traits for producers and shows notable gains in gluten strength characteristics important to end-users.

LEBSOCK remained the third place variety in North Dakota and a top ten variety in Montana with 13 and 6 percent of the acres, respectively. Lebsock is known for its stable agronomics, strong yields and exceptional test weight but it is being slowly replaced by newer varieties with enhanced yield potential and disease resistance, and improved end-use quality.

ALKABO is the fourth most popular variety in North Dakota with nearly 10 percent of the acres, and it accounts for roughly 5 percent of the acres in Montana. It is a 2005 release from which is finding favor with producers for its very high yields and very strong straw. Alkabo scores very high for pasta color.

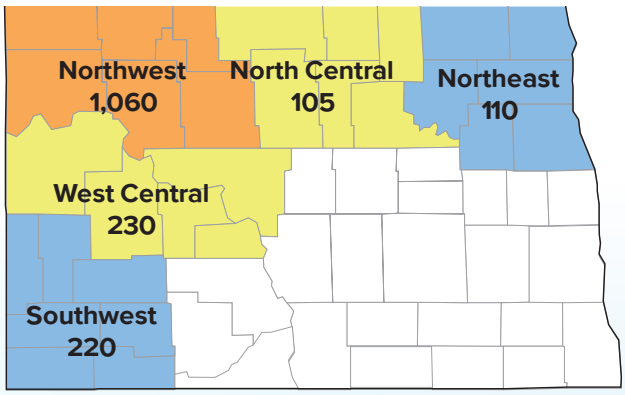
PIERCE remained a top five variety in North Dakota with 8 percent of the acres, down slightly from last year's 9.4 percent. Released in 2001 from NDSU, it is a variety which touts some of the best overall end-use quality for pasta color and gluten strength, but it is less competitive with other varieties for agronomic traits such as straw strength and disease resistance.

Durum Wheat Varieties planted acres in North Dakota

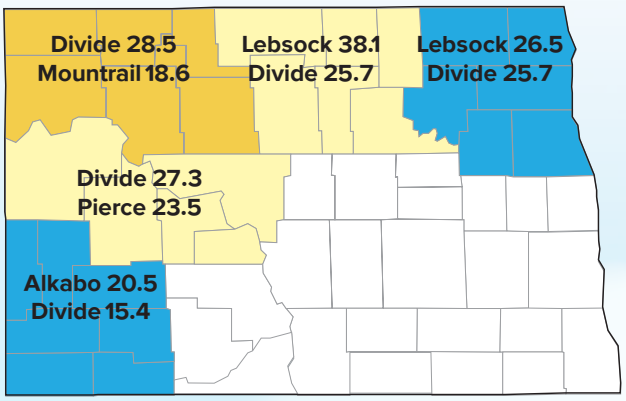
Variety	2009%	2010%[1]	2010 Acres (1,000)
Divide	20.6	26.6	478.6
Mountrail	16.9	12.9	231.8
Lebsock	16.9	12.7	228.3
Alkabo	8.9	9.5	171.0
Pierce	9.4	7.9	141.7
Grenora	4.6	7.0	125.3
Ben	6.3	4.6	82.9
Dilse	2.1	2.8	51.2
DG Max	0.4	2.0	35.2
Kyle	0.3	1.7	31.2
Other[2]	13.6	12.4	222.8
All Varieties	100.0	100.0	1,800[3]

1. Percentages may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage in 2010 and unknown varieties.
3. September 30, 2010 small grains estimate was 1.80 million acres.

North Dakota Agricultural Statistics Districts 2010 Planted Area (1,000 Acres)



North Dakota Agricultural Statistics Districts 2010 Top Two Varieties (% of Acres)



Durum Wheat Varieties in North Dakota Share of 2010 Seeded Acres by Crop District

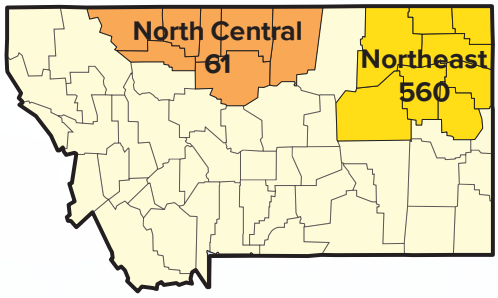
Variety	North West	North Central	North East	West Central	South West	Total State
			percentage (%)[1]			
Divide	28.5	25.7	25.7	27.3	15.4	26.6
Mountrail	18.6	0.0	0.0	12.9	2.3	12.9
Lebsock	12.3	38.1	26.5	6.2	5.3	12.7
Alkabo	9.1	0.0	3.6	9.5	20.5	9.5
Pierce	7.5	0.0	1.2	23.5	0.0	7.9
Grenora	6.2	7.9	15.0	1.4	14.5	7.0
Ben	2.2	2.7	0.4	5.7	15.4	4.6
Dilse	3.0	0.0	0.0	0.7	7.8	2.8
DG Max	0.0	11.2	17.4	0.0	0.0	2.0
Kyle	2.9	0.0	0.0	0.0	0.0	1.7
Other[2]	9.6	14.3	10.3	12.8	18.8	12.4
			1,000 acres			
All Varieties	1,060	105	110	230	220	1,800[3]

1. Percentages may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage in 2010 and unknown varieties.
3. September 30, 2010 small grain estimate was 1.80 million acres.

U.S. DURUM WHEAT

MONTANA | NORTH DAKOTA

Montana Agricultural Statistics Districts 2010 Planted Area (1,000 acres)



Durum Wheat Varieties in Montana Share of 2010 Seeded Acres by Crop District

Variety	North Central	North East	Total State
	percentage (%)[1]		
Mountrail	0.0	29.9	26.1
Strongfield	14.5	12.6	12.4
Divide	0.0	11.8	10.3
Kyle	5.1	9.3	8.6
Alzada	64.5	1.7	7.9
Grenora	0.6	6.9	6.1
Lebsock	0.0	6.7	5.9
Alkabo	0.0	6.0	5.3
Dilse	2.4	3.2	3.0
AC Avonlea	1.6	1.7	1.6
Other[2]	11.3	10.2	12.8
	1,000 acres		
All Varieties	61	560	640[3]

1. Percentages may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage in 2010 and unknown varieties.
3. September 30, 2010 small grain estimate was 540 thousand acres.

MONTANA

Montana Agricultural Statistics Service reports the five most popular varieties of durum wheat planted in the state in 2010 are Mountrail, Strongfield, Divide, Kyle and Alzada. Collectively, they account for 65 percent of the acres.

MOUNTRAIL remains the top variety in the state for the seventh straight year with 26 percent of the acres in 2010, and it is second most popular variety in North Dakota with 13 percent of the acres. Mountrail continues to be a reliable, elite yielding variety for producers in northeast Montana and northwestern North Dakota with good straw strength. Released in 1998 from NDSU, it continues to slowly decline from its peak acreage in both states, as newer varieties with equal to greater yield potential, and improved quality are chosen by producers.

STRONGFIELD advanced to the second most popular variety in 2010, accounting for 12 percent of the acres, up from 7 percent. It is a 2004 release from Ag Canada that has low grain cadmium, good end-use quality and good disease tolerance, but is rated medium for straw strength. Its acreage is most concentrated in northeast Montana.

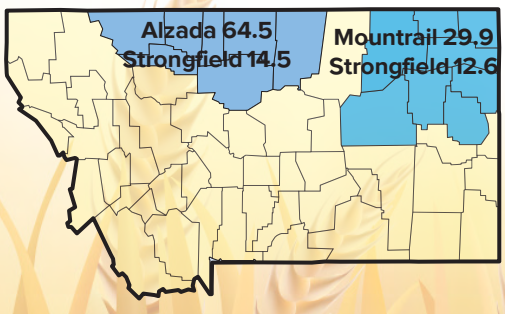
ALZADA remained the fifth most popular variety in Montana with 8 percent of the acres, up from 7 percent. Its production is most concentrated in north central parts of the state due to lower levels of disease tolerance. Alzada has excellent end-use quality traits, especially semolina color.

Durum Wheat Varieties planted acres in Montana

Variety	2009%[1]	2010%[1]	2010 Acres (1,000)
Mountrail	34.6	26.1	167.4
Strongfield	7.4	12.4	79.4
Divide	5.5	10.3	66.1
Kyle	8.7	8.6	55.2
Alzada	7.3	7.9	50.4
Grenora	6.5	6.1	39.0
Lebsock	7.7	5.9	37.5
Alkabo	4.6	5.3	33.6
Dilse	0.6	0.3	19.4
AC Avonlea	3.1	1.6	10.5
Other[2]	14.0	12.8	81.5
All Varieties	100.0	100.0	640[3]

1. Percentages may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage in 2010 and unknown varieties.
3. September 30, 2010 small grain estimate was 540 thousand acres.

Montana Agricultural Statistics Districts 2010 Top Two Varieties (% of Acres)



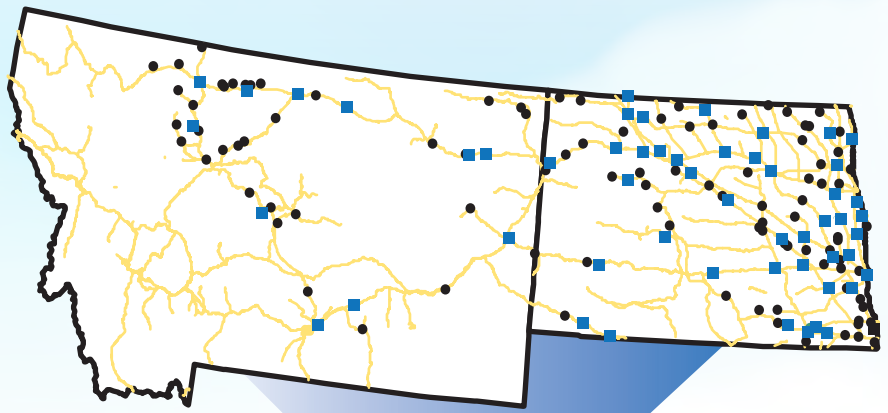
HANDLING & TRANSPORTATION

The durum wheat growing region in the Northern Plains has a vast network of country elevators to facilitate efficient and precise movement to domestic and export markets. On average, nearly 80 percent of the region's wheat moves to markets by rail. Duluth is the only export market easily serviced by trucks. Shipments to the Pacific Northwest and Gulf export markets are almost entirely by rail, with some barge movement to the Gulf. The dominant railroad is the Burlington Northern Santa Fe, followed by the Canadian Pacific.

A growing number of elevators in the region are investing to ship 100 car units. Each rail car holds approximately 3,500 bushels (95 metric tons) of wheat. Some of the 100-car shippers have invested in "shuttle" capabilities. Shuttle-equipped facilities receive the lowest rates, sharing volume and transaction efficiencies with the railroad.

The diverse rail shipping capacities and widespread network of elevators are strengths buyers can capitalize on, especially as their demand heightens for more precise quality specifications and consistency between shipments. Buyers are increasingly exploring origin-specific shipments. Many international buyers now find it possible to request wheat from certain locations to optimize the quality and value of wheat they purchase.

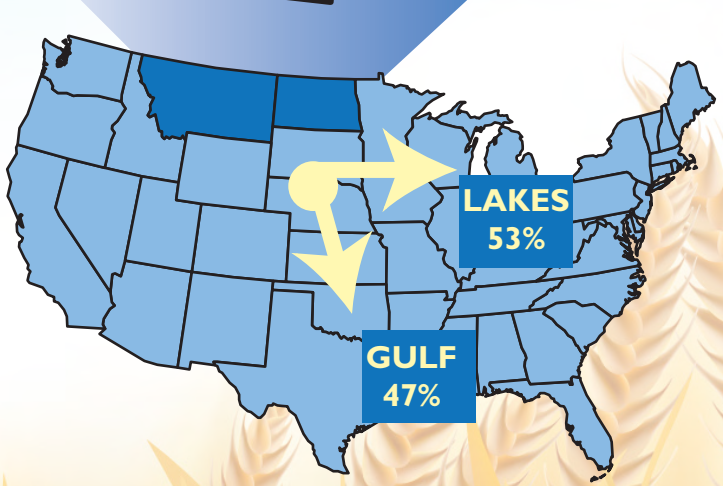
The rail and elevator network in the U.S. northern grown durum region is well suited for meeting the increasing quality demands of both domestic and international customers.



● Track for 50 to 99 rail cars
■ Track for 100 or more cars

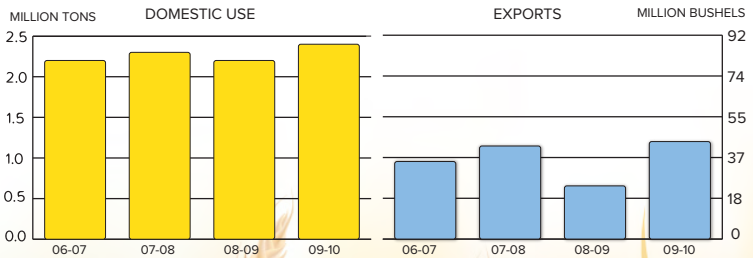
Source: Upper Great Plains Transportation Institute

Grain Handling and Transportation Facilities in the Four-State Region



Average share of U.S. Durum exports by port (2006-2009)

2006-09 U.S. Durum Domestic Use & Exports



Marketing Years (June-May)

FUNDING & SUPPORT PROVIDED BY

U.S. WHEAT ASSOCIATES

NORTH DAKOTA WHEAT COMMISSION

MONTANA WHEAT AND BARLEY COMMITTEE

NORTH DAKOTA STATE UNIVERSITY
PLANT SCIENCES DEPARTMENT