



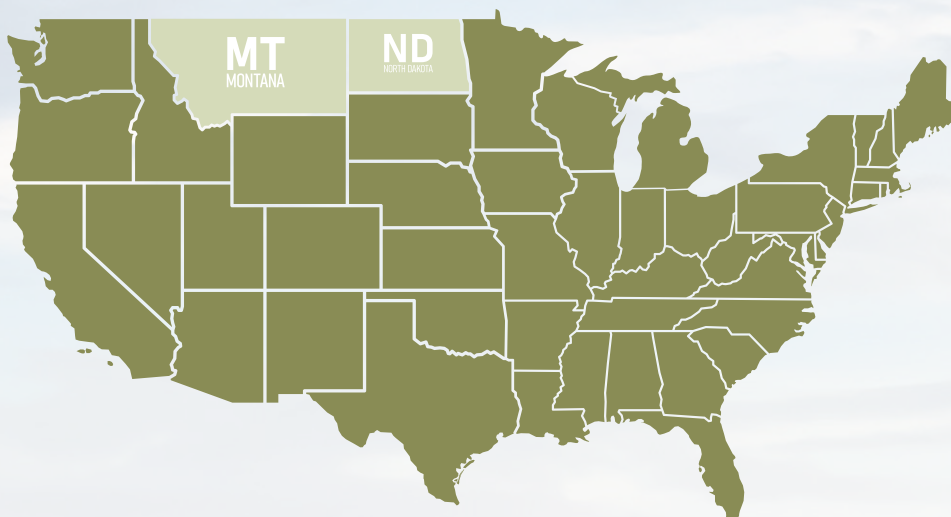
2026

U.S. DURUM
WHEAT

REGIONAL QUALITY REPORT

U.S. Durum Wheat

MONTANA
NORTH DAKOTA



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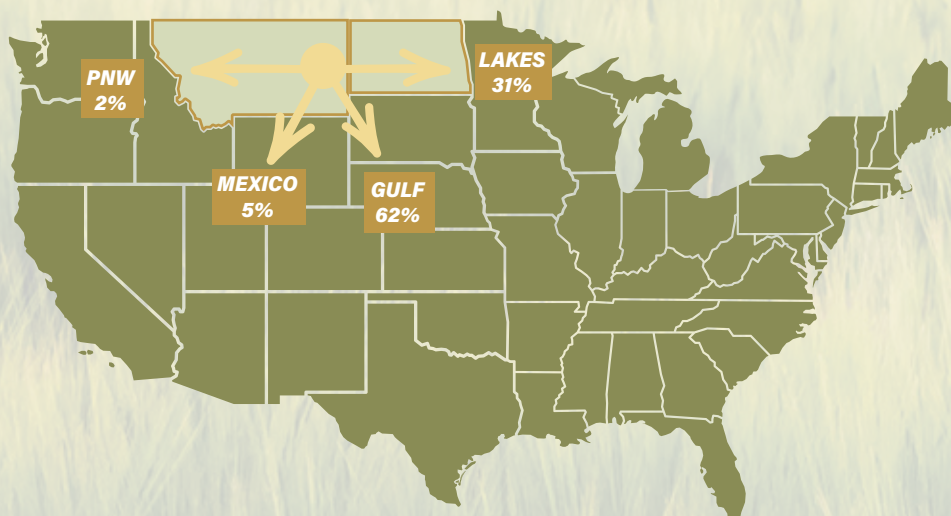
MAKING PREMIUM PASTA

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 and couscous 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 and the best color for couscous.

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. In most years, the states of North Dakota and Montana produce 80 percent of the U.S. durum crop.

AVERAGE SHARE OF U.S. DURUM EXPORTS BY PORT (2022-2025)



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OVERVIEW

Production of the 2026 Northern Durum crop is down 26% this year, driven by a 22% decline in planted acreage and slightly lower overall yields. Yields were higher in Montana but similarly lower in North Dakota. Dry conditions at planting gave way to early-season precipitation that helped sustain the crop. Some eastern areas experienced isolated disease pressure. Hot and dry conditions during mid-season affected yields in some areas and contributed to variability across the region. Overall, production was better than expected. Rainfall interrupted harvest in some areas and affected certain quality factors, contributing to greater variability in the crop.

The crop grades a No. 1 Hard Amber Durum (HAD), with just under 40% of the samples in that top grade. Distribution data shows slightly more of the crop graded in the lower grades and subclasses, a result of the variable weather across the region. Due to stress during the growing season, the average test weight is lower this year at 60.5 lbs./bu. (78.8 kg/hl), compared to 61.9 lbs./bu. last year. Test weight was the primary factor that pushed some of the crop into the lower grade categories. Vitreous kernel levels are lower this year with the average at 77%. About 70 percent of the crop has vitreous levels of 75% or higher, similar to last year, however, a larger portion falls in the Amber Durum subclass compared to 2025. Damage is relatively low at only 0.5%, and shrunken and broken kernels slightly higher.

Protein averages 14.5% (12% moisture basis), higher than last year and the five-year average. Over 60 percent of the crop has protein of at least 14% with a higher than normal percentage in the 15-16 percent protein range. As a result of the drought conditions, thousand kernel weight is substantially lower with an average of 33.4 grams. Moisture is slightly elevated over the five-year average at 11.7%. Despite some elevated disease pressure in areas, DON is relatively low at 0.2 ppm. Falling number values are strong with the crop average just under 400 seconds.

Milling of the survey samples was performed on a Quadrumat Junior mill, similar to the past six years, and is not indicative of commercial milling performance. Semolina extraction at 54% is lower than last year and the five-year average, likely due to the smaller kernel size of this year's crop. The semolina b-value shows improvement over last year at 30.5 and the L value is also higher, indicating a brighter, more yellow semolina color. Ash is higher than last year at 0.70%, and speck count is lower.

Dough strength parameters indicate a slightly stronger crop compared to last year. Dry spaghetti evaluations show lower cooked weight, lower cooking loss and higher cooked firmness. Spaghetti color scores show improvement compared to last year's crop.

The 2026 crop has many positive attributes, including a high grade profile, strong protein levels, low damage, strong falling number values, and improved pasta characteristics. As has been the case in recent years, variability exists across many grading and quality factors especially test weight, vitreous kernel content and thousand kernel weights. Buyers should be aware of the variability and adjust contract specifications as needed. Overall, the 2026 crops exhibits attributes that should meet end-users' needs.

2026 PRODUCTION DATA			
	2026	2025	2021-25 AVERAGE
MILLION BUSHELS			
Montana	24.5	25.1	19.0
North Dakota	33.7	53.2	37.5
U.S. Total	64.8	85.8	65.1
MILLION METRIC TON			
Montana	1.15	0.69	0.52
North Dakota	0.59	1.45	1.02
U.S. Total	1.74	2.34	1.77

Source: USDA 2026 Small Grains Summary

U.S. Durum Wheat

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SEASONAL CONDITIONS

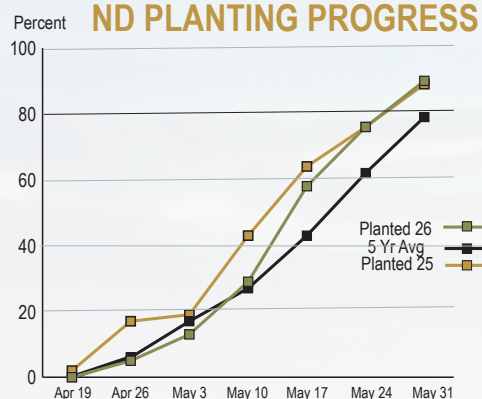
PLANTING of the Northern durum crop began at the end of April with progress starting out a bit behind average. Most of the durum region had very dry soil conditions at planting and there were some delays in progress due to extremely high winds. Precipitation also caused some planting delays, but the precipitation was extremely beneficial and was key to providing enough moisture to start the crop. Planting was mostly complete by the end of May, slightly ahead of average.

EMERGENCE and crop development were quite uneven due to variable rainfall across the region and stressful weather conditions. Rains received during planting and shortly after sustained the crop through much of the growing season as conditions became hot and dry mid-July and after. The hot, dry conditions stressed the crop and pushed crop development ahead of average in much of the region. There was some elevated disease pressure in areas, primarily in the eastern growing region, due to wet conditions in early July.

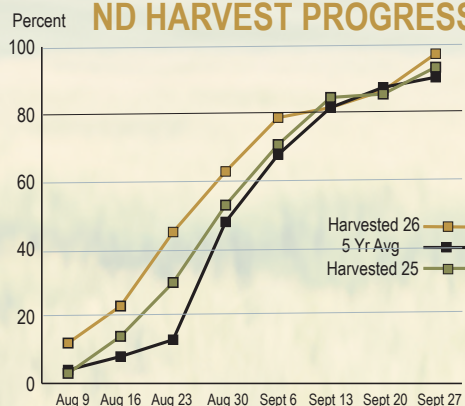
HARVEST began in early August, ahead of average as crop maturity was expedited by the hot, dry weather. The first portion of harvest occurred under dry conditions. In early September, rainfall delayed harvest and did impact quality factors in some of the crop. While the majority of harvest was completed by mid-September, the last portion of the harvest extended into early October.

PRODUCTION of this year's Northern Durum crop is 26% lower than last year at 58.2 million bushels, due to a reduction in planted area and slightly lower yields. Despite the challenging weather conditions, many producers reported better than expected yields. However, some fields were used for livestock feed due to very low yield potential. The average estimated yield in Montana is higher than last year, while the overall North Dakota yield is lower than last year's strong yield.

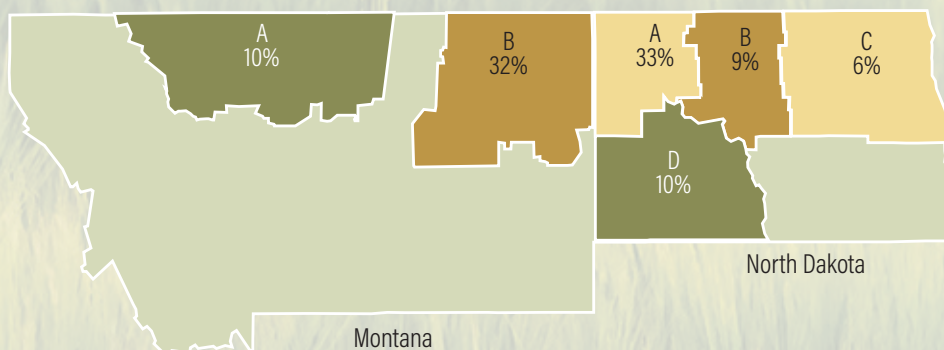
ND PLANTING PROGRESS



ND HARVEST PROGRESS



APPROXIMATE SHARE OF REGIONAL PRODUCTION



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.

SUBCLASS is as separate marketing factor based on the number of kernels that are dark, hard and vitreous. 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.

DURUM GRADING DATA					
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	0.0	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	3.0	5.0	8.0	12.0	20.0
Wheat of other class 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	31	31	31	31	31

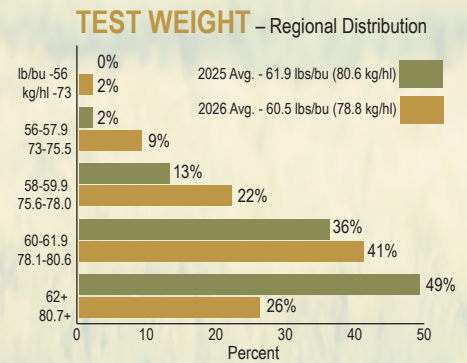
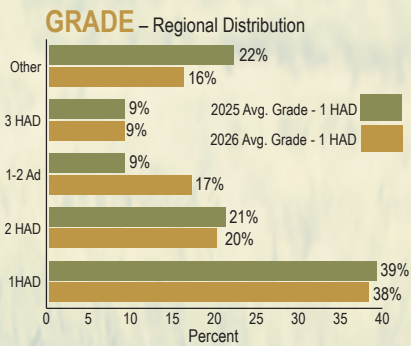
U.S. sample grade is wheat that:

- Does not meet the requirements for U.S. Nos. 1, 2, 3, 4 or 5; or
- Has a musty, sour or commercially objectionable foreign odor (except smut or garlic odor); or
- Is heating or of distinctly low quality.
 - Includes damaged kernels (total), foreign material and shrunken and broken kernels.
 - Unclassed wheat of any grade may contain not more than 10.0 percent of wheat of other classes.
 - Includes contrasting classes.
 - Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones or unknown foreign substance.

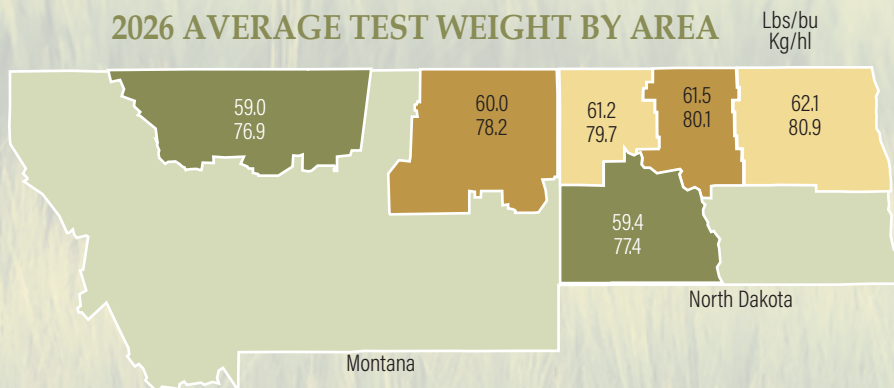
U.S. Durum Wheat

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2026 WHEAT GRADING DATA								
	TEST WEIGHT							
STATE AND CROP REPORTING AREA	LBS/BU	KG/HL	DAMAGE %	SHRUNKEN/BROKEN KERNELS %	TOTAL DEFECTS %	CONTRASTING CLASSES %	U.S. GRADE SUBCLASS	VITREOUS KERNELS %
MONTANA								
Area A	59.0	76.9	0.5	1.4	1.9	0.4	2 HAD	84
Area B	60.0	78.2	0.0	1.1	1.1	0.0	1 HAD	89
State Avg. 2026	59.8	77.9	0.1	1.2	1.3	0.1	2 HAD	88
State Avg. 2025	61.7	80.3	1.3	0.5	1.8	0.5	1 HAD	91
NORTH DAKOTA								
Area A	61.2	79.7	1.0	0.6	1.6	0.0	1 AD	62
Area B	61.5	80.1	0.2	0.7	0.9	0.0	1 HAD	80
Area C	62.1	80.9	1.4	0.5	1.9	0.8	1 AD	69
Area D	59.4	77.4	0.0	1.4	2.3	1.1	2 HAD	89
State Avg. 2026	61.0	79.5	0.8	0.7	1.6	0.3	1 AD	70
State Avg. 2025	62.0	80.7	2.1	0.5	2.6	0.0	2 HAD	80
TWO-STATE AVERAGE								
Avg. 2026	60.5	78.8	0.5	0.9	1.5	0.2	1 HAD	77
Avg. 2025	61.9	80.6	1.8	0.5	2.3	0.2	1 HAD	84
Five-Year Avg	61.3	79.8	0.6	0.8	1.4	0.3	1 HAD	85



2026 AVERAGE TEST WEIGHT BY AREA

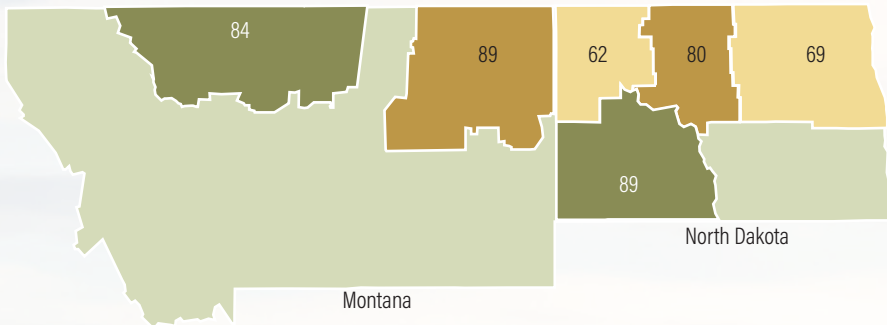


U.S. Durum Wheat

MONTANA
NORTH DAKOTA

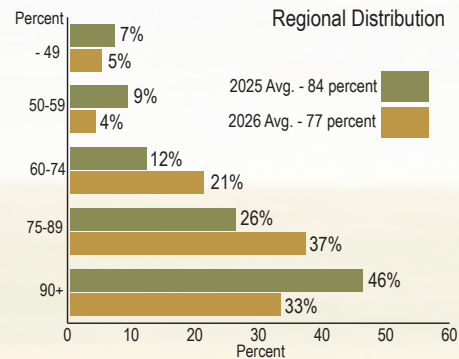
2026 AVERAGE VITREOUS KERNEL BY AREA

Percent



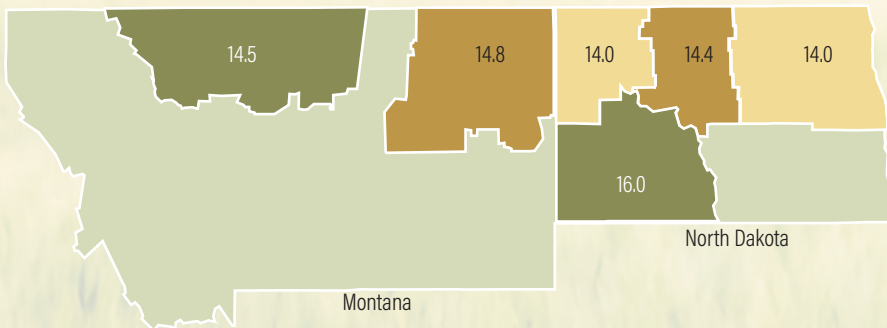
VITREOUS KERNEL

Regional Distribution



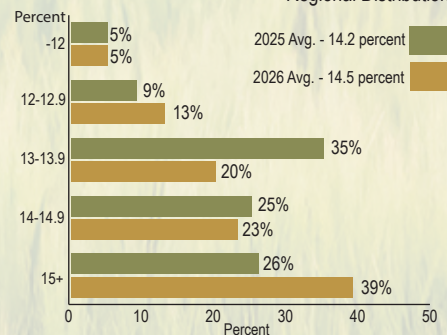
2026 AVERAGE PROTEIN BY AREA

12% Moisture Basis - Percent



PROTEIN - 12% MOISTURE

Regional Distribution

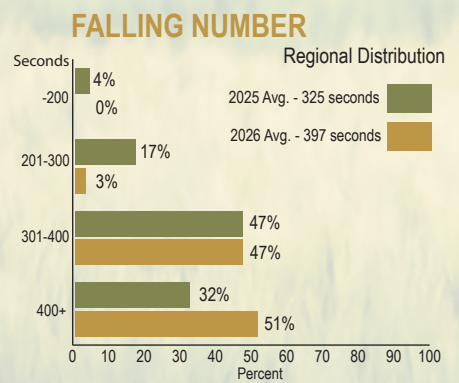
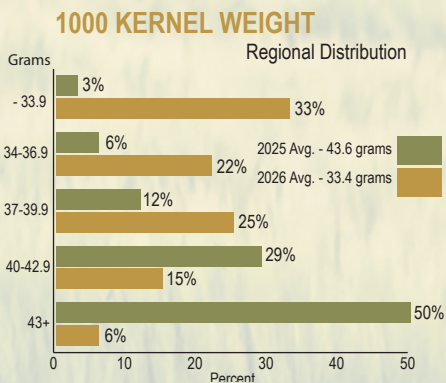


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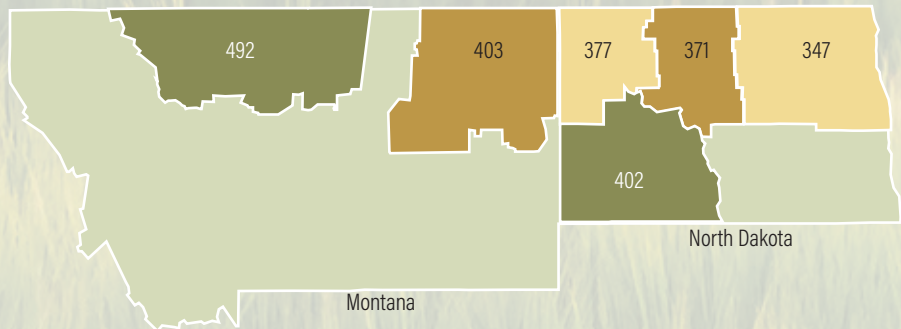
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2026 OTHER KERNEL QUALITY DATA									
STATE AND CROP REPORTING AREA	DOCKAGE %	MOISTURE %	1000 KERNEL WEIGHT G	KERNEL DIST. MED/LGE %	PROTEIN 12%/0% MOISTURE BASIS %	DON (PPM)	WHEAT ASH%	FALLING NUMBER (SEC)	MICRO SED (CC)
MONTANA									
Area A	0.9	10.2	32.3	47/45	14.5/16.5	0.00	1.60	492	99
Area B	2.2	11.7	32.0	64/27	14.8/16.8	0.19	1.58	403	88
State Avg. 2026	1.9	11.3	32.1	60/31	14.7/16.7	0.14	1.58	424	91
State Avg. 2025	0.9	10.9	42.7	37/61	15.1/17.2	0.08	1.51	329	87
NORTH DAKOTA									
Area A	1.3	11.9	34.3	52/42	14.0/15.9	0.27	1.57	377	81
Area B	0.8	12.7	371	49/47	14.4/16.4	0.24	1.56	371	89
Area C	0.5	12.3	36.8	49/47	14.0/15.9	0.24	1.64	347	85
Area D	2.1	11.1	30.8	68/22	16.0/18.2	0.23	1.75	402	82
State Avg. 2026	1.3	11.9	34.4	54/40	14.4/16.4	0.26	1.61	377	83
State Avg. 2025	0.4	11.9	44.0	33/65	13.8/15.7	0.78	1.57	324	76
REGION AVERAGE									
Avg. 2026	1.5	11.7	33.4	57/36	14.5/16.5	0.21	1.60	397	86
Avg. 2025	0.6	11.6	43.6	34/64	14.2/16.2	0.56	1.55	325	79
Five-Year Avg	0.8	11.4	40.3	48/48	14.4/16.4	0.18	1.58	409	76



2026 AVERAGE FALLING NUMBER BY AREA (Seconds)



MILLING CHARACTERISTICS

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 spec 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.

2026 SEMOLINA QUALITY DATA

							GLUTOPEAK	
STATE AND CROP REPORTING AREA	SEMOLINA' EXTRACTION %	ASH %	SPECKS NO/10 SQ IN %	PROTEIN (14% MOISTURE) %	WET GLUTEN %	GLUTEN INDEX	PEAK TIME SEC	MAX TORQUE BE
MONTANA								
Area A	53.7	0.76	19	12.8	31.4	98	218	44
Area B	52.2	0.71	25	12.7	31.9	94	192	38
State Avg. 2026	52.6	0.72	24	12.7	31.8	95	198	39
State Avg. 2025	57.5	0.62	33	13.1	37.1	81	142	53
NORTH DAKOTA								
Area A	54.9	0.68	27	11.8	29.0	92	166	41
Area B	57.3	0.68	27	12.2	28.8	93	196	38
Area C	56.6	0.66	30	12.0	30.3	91	175	37
Area D	52.2	0.75	22	13.7	36.2	83	152	44
State Avg. 2026	55.0	0.69	26	12.2	30.3	90	169	41
State Avg. 2025	59.4	0.60	34	11.9	33.3	82	164	43
REGION AVERAGE								
Avg. 2026	54.0	0.70	25	12.4	30.9	92	181	40
Avg. 2025	58.8	0.61	33	12.3	34.5	82	157	46
Five-Year Avg	56.0	0.64	27	12.6	33.8	83	167	45

1. Samples were milled on a Quadromat Junion mill; not indicative of commercial milling performance.

U.S. Durum Wheat

MONTANA
NORTH DAKOTA

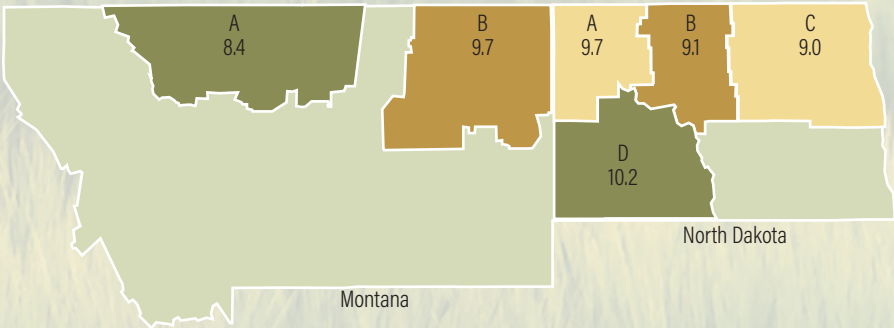
DRY PASTA PROCESSORS want a finished product that is visually appealing, elastic and strong enough to resist breakage during cutting, packaging, handling and shipping, able to withstand the rigors of cooking, and satisfying to the consumer palate.

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.

2026 SEMOLINA & SPAGHETTI DATA									
STATE AND CROP REPORTING AREA	SEMOLINA COLOR L (BLACK-WHITE)	SEMOLINA COLOR A (GREEN-RED)	SEMOLINA COLOR B (BLUE-YELLOW)	SPAGHETTI COLOR L (BLACK-WHITE)	SPAGHETTI COLOR A (GREEN-RED)	SPAGHETTI COLOR B (BLUE-YELLOW)	SPAGHETTI COOKED WEIGHT G	SPAGHETTI COOKING LOSS %	SPAGHETTI COOKED FIRMNESS G CM
MONTANA									
Area A	81.2	-3.1	32.4	51.8	3.8	25.0	30.2	6.5	8.4
Area B	81.2	-3.4	31.3	51.1	4.0	25.4	30.1	6.1	9.7
State Avg. 2026	81.2	-3.3	31.6	51.3	4.0	25.3	30.1	6.1	9.4
State Avg. 2025	80.3	-2.7	29.2	50.2	3.8	23.2	32.0	6.6	8.6
NORTH DAKOTA									
Area A	81.9	-3.5	29.8	51.4	3.4	25.7	29.6	5.9	9.7
Area B	81.6	-3.5	29.6	52.9	3.3	25.4	29.1	6.6	9.1
Area C	80.6	-3.4	28.9	52.4	3.3	24.9	30.2	6.6	9.0
Area D	81.5	-3.1	29.8	51.7	3.8	25.4	29.0	6.1	10.2
State Avg. 2026	81.7	-3.4	29.7	51.8	3.5	25.5	29.4	6.1	9.6
State Avg. 2025	81.2	-3.1	28.5	50.9	3.9	23.1	32.1	7.1	8.2
REGION AVERAGE									
Avg. 2026	81.5	-3.4	30.5	51.6	3.7	25.4	29.7	6.1	9.5
Avg. 2025	80.9	-3.0	28.7	50.7	3.9	23.1	32.1	6.9	8.4
Five-Year Avg	82.4	-2.7	30.0	52.6	3.2	24.7	31.2	7.2	5.7

2026 AVERAGE COOKED FIRMNESS BY AREA (G CM)



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2026 RECENT QUALITY TRENDS						
CROP YEAR	2026	2025	2024	2023	2022	FIVE-YEAR AVERAGE
GRADING AND WHEAT DATA						
Test Weight (lbs/bu)	60.5	61.9	60.8	61.3	61.8	61.3
Test Weight (kg/hl)	78.8	80.6	79.2	79.8	80.4	79.8
Total Defects (%)	1.5	2.3	1.4	1.0	1.1	1.4
Vitreous Kernels (%)	77	84	83	79	92	85
Grades	1 HAD	1 HAD	1 HAD	1 HAD	1 HAD	1 HAD
OTHER WHEAT DATA						
Dockage (%)	1.5	0.6	0.8	1.1	1.1	0.8
Protein: 12% moisture	14.5	14.2	14.3	14.2	13.7	14.4
1000 Kernel Weight (gm)	33.4	43.6	35.3	40.9	40.4	40.3
Moisture (%)	11.7	11.6	12.2	11.5	11.0	11.4
DON	0.21	0.56	0.27	0.0	<0.1	0.18
Ash (%)	1.60	1.55	1.58	1.43	1.64	1.58
Falling Number (sec)	397	325	463	394	433	409
Sedimentation (cc)	86	79	79	81	61	76
Semolina Data						
**Semolina Extraction (%)	54.0	58.8	60.7	52.0	53.9	56.0
Ash (%)	0.70	0.61	0.68	0.63	0.64	0.64
Wet Gluten (%)	30.9	34.5	31.7	32.1	33.4	33.8
Gluten Index	92	82	89	91	72	83
Specks (no/10 sq in)	25	33	25	27	27	27
*Color: L (Black-white)	81.5	80.9	81.1	83.4	83.3	82.4
*a (green-red)	-3.4	-3.0	-3.1	-2.5	-2.5	-2.7
*b (blue-yellow)	30.5	28.7	30.0	30.1	31.2	30.0
Glutopeak						
Peak Time (sec)	181	157	156	179	180	167
Max Torque (be)	40	46	46	41	43	45
SPAGHETTI PROCESSING DATA						
Color: L (black-white)	51.6	50.7	51.9	53.3	53.8	52.6
a (green-red)	3.7	3.9	2.9	3.2	2.9	3.2
b (blue-yellow)	25.4	23.1	23.8	25.5	25.9	24.7
Cooked Weight (gm)	29.7	32.1	30.1	31.6	29.7	31.2
Cooking Loss (%)	6.1	6.9	7.2	7.3	6.7	7.2
Cooked Firmness (g cm)	9.5	8.4	6.7	3.9	4.5	5.7

* Semolina color performed on CIE color scale. Granulation size is approximately 40 percent above 425 microns and 12 percent below 180 microns. Spaghetti color is performed on Hunter color scale.

U.S.
Durum
Wheat

MONTANA
NORTH DAKOTA

VARIETAL SUMMARY

Durum wheat production in the northern United States is concentrated in northwest North Dakota and northeast Montana, but also sees notable levels of production in north central Montana and southwest North Dakota. These are the primary target areas for durum breeding programs that develop varieties for growers, but focus is also given to the more fringe production areas in the two-state region, as on occasion, central and eastern areas of North Dakota also grow durum.

The public durum breeding program at North Dakota State University in Fargo, North Dakota is the largest in the U.S., and varieties developed in that program account for the majority of durum acres in the northern United States. Montana State University also has a major durum breeding program, and has begun to release varieties to growers. A few private breeding programs are involved in durum variety development, but the scope of those programs remains relatively small, especially when compared to other classes of wheat in the United States.

Top priorities for durum breeders in the northern United States are high yield potential, high protein content, high vitreous kernel levels, strong straw, drought tolerance, and resistance to leaf and head diseases. Resistance to Fusarium Head blight is a major focus for the main durum production areas in Montana and North Dakota, as well as for more fringe area production zones in central and eastern North Dakota. Wheat stem sawfly tolerance is a major focus for all of the Montana production region, and is becoming a more significant focus across western North Dakota production areas.

End-use quality traits have long been important in the varieties of durum developed for growers in the northern parts of the United States. Varieties that produce high semolina yields, high quality gluten and starch characteristics, and bright yellow color, are critical to meet the needs of both pasta and couscous customers. Extensive testing prior to commercial release, as well as evaluation of promising lines in field test plots, are undertaken to ensure varieties grown by producers have the potential, under favorable environments, to produce excellent end-use quality.



NORTH DAKOTA

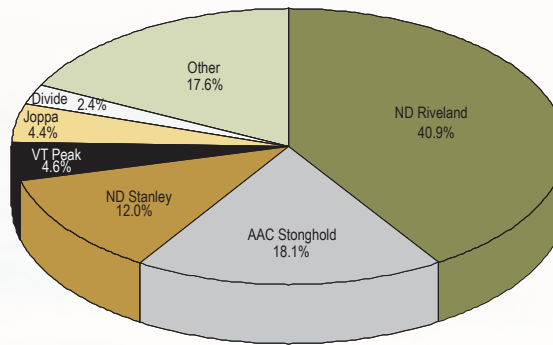
ND RIVELAND is the top durum variety planted in North Dakota accounting for nearly 41% of the acreage. ND Riveland has been the top variety planted in the state for five years. It is also the second most popular variety in Montana with 11% of the acreage. A 2017 NDSU release, it has very good yield potential and strong agronomic characteristics, including good straw strength. Similar to other NDSU releases, it has low cadmium (Cd) uptake traits. ND Riveland possesses very good end-use quality characteristics.

AAC STRONGHOLD is the second most popular variety planted in North Dakota for the second year, with about 18% of the acres, an increase from last year. The variety has gained some market share since it is a solid stem variety that has excellent wheat stem sawfly tolerance, an issue that has impacted producers in some areas. Released in Canada in 2019, the variety has strong straw, good disease resistance and is rated good for overall quality.

ND STANLEY holds the third place position again this year, with 12% of the acreage, up a few percent from last year. Developed by NDSU in 2021, ND Stanley has strong straw strength with excellent disease tolerance, high test weight, low grain cadmium and good overall end-use quality.

VT PEAK ranks fourth with 4.6% of the acres. A 2010 release from Vitera, it has medium height, good straw strength and high yield potential.

NORTH DAKOTA VARIETY SHARE OF PLANTED ACRES



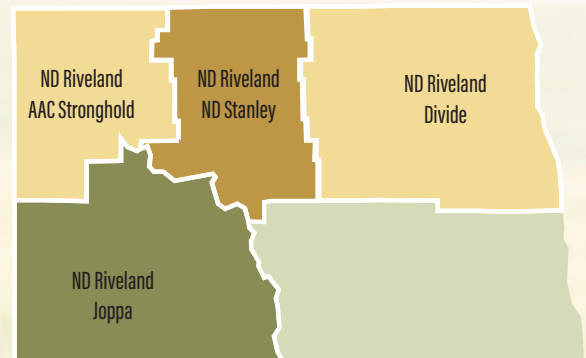
1. Percentage may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage and unknown varieties.
3. 1,000 acres (1 acre = 0.405 hectares)
2026 - 900,000 acres
2025 - 1,230,000 acres

U.S.
Durum

Wheat

MONTANA
NORTH DAKOTA

TOP NORTH DAKOTA VARIETIES BY CROP DISTRICT

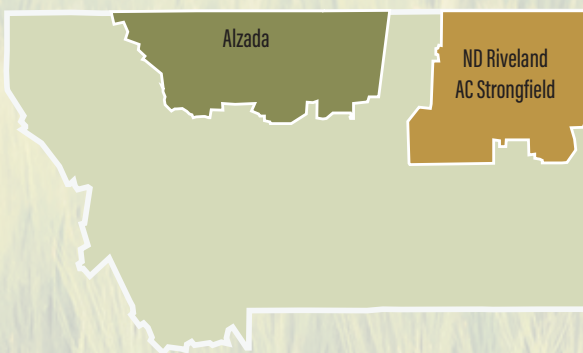


MONTANA

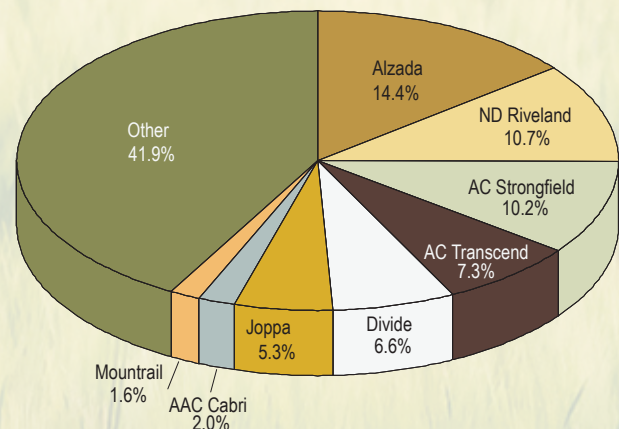
ALZADA remains the top planted variety in Montana with 14.4% of total acreage, down from last year. It is the dominant variety planted in the north central part of the state where it is primarily grown under contracted production. It is a 2004 release from West-bred with competitive yields, excellent straw strength, and good sawfly tolerance. Alzada is known for its strong gluten properties and excellent color scores.

AC STRONGFIELD is the third most common durum variety this year in Montana with a 10% acreage share. It is a 2004 release out of Canada and is known for its high grain yield potential, strong straw strength and good resistance to lodging and high protein.

TOP MONTANA VARIETIES BY CROP DISTRICT



MONTANA VARIETY SHARE OF PLANTED ACRES



1. Percentage may not add to 100 due to rounding.
2. Includes varieties with less than 1% of acreage and unknown varieties.
3. 1,000 acres (1 acre = 0.405 hectares)
2026 - 770,000 acres
2025 - 890,000 acres

2026 REGIONAL
QUALITY Report

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, Wheat Quality Specialist and assisted by Cerly Rini Yeruva, Food Technologist Specialist, and James Perleberg, chemist 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 and continued through the end of September. A total of 242 samples were collected from Montana (79) and North Dakota (163).

ANALYSIS • Half of the total wheat samples collected were analyzed for grade and other physical kernel characteristics. The data obtained from the analyses was used to generate frequency distributions as a percentage of the harvested crop. Distribution results may differ from the 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 AND 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, Grand Forks, 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).

TEST WEIGHT • American Association of Cereal Chemists Method 55-10.01 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 (AACC) Method: 46-30.01 (Combustion Method), expressed on dry basis and 12 percent moisture basis.

ASH • American Association of Cereal Chemists Method 08-1.01, approved April 1961, revised October 1999; expressed on a 14 percent moisture basis.

DON • Analysis was done on ground wheat using a gas chromatograph with an electron capture detector as described in J. Assoc. Official Anal. Chem 79,472 (1996)

FALLING NUMBER • American Association of Cereal Chemists Method 56-81.03, approved November 1972, revised September 1999; unites of seconds (14 percent moisture basis).

U.S.
Durum
Wheat

MONTANA
NORTH DAKOTA

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 38-12.01, approved October 1999; expressed on a 14 percent moisture basis determined with the glutomatic instrument.

GLUTEN INDEX • American Association of Cereal Chemists Method 38-12-02, approved October 1999; determined with the glutomatic instrument as an indication of gluten strength.

SEMOLINA

COLOR • Hunter Lab values were determined by light reflectance, using a Minolta Color Difference Meter (Model CR 410, Minolta Camera Co., Japan).

EXTRACTION • Durum tempered to 15.5% moisture and milled on a Brabender Quadrumat Jr mill configured to mill semolina.

ASH • AACC Method 08-01.01, approved April 1961, revised October 1999; expressed on a 14 percent moisture basis.

PROTEIN • AACC Method 46-30.01 (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.

GLUTOPEAK • Glutopeak is a shear-based device that measures the aggregation behavior of gluten. Flour and solvent are mixed at a constant speed with a rotating paddle, resulting in the separation of gluten and aggregation. The gluten aggregate mass exerts a resistance force on the paddle, and creates a torque curve. The curve records the complexity of aggregation and gluten breakdown, measured as Peak Maximum Time (PMT, in seconds), and the Maximum Torque (MT, in Brabender equivalents (BE)).

NDSU laboratory procedure: The semolina sample (8.5 g, 14% mb) was placed in 9.5 g solution of 0.5mol L-1 CaCl₂. e temperature at 350C. The mixing paddle was set to rotate at 2,750 rpm and the test was run for 5 min at 35C.

SPAGHETTI

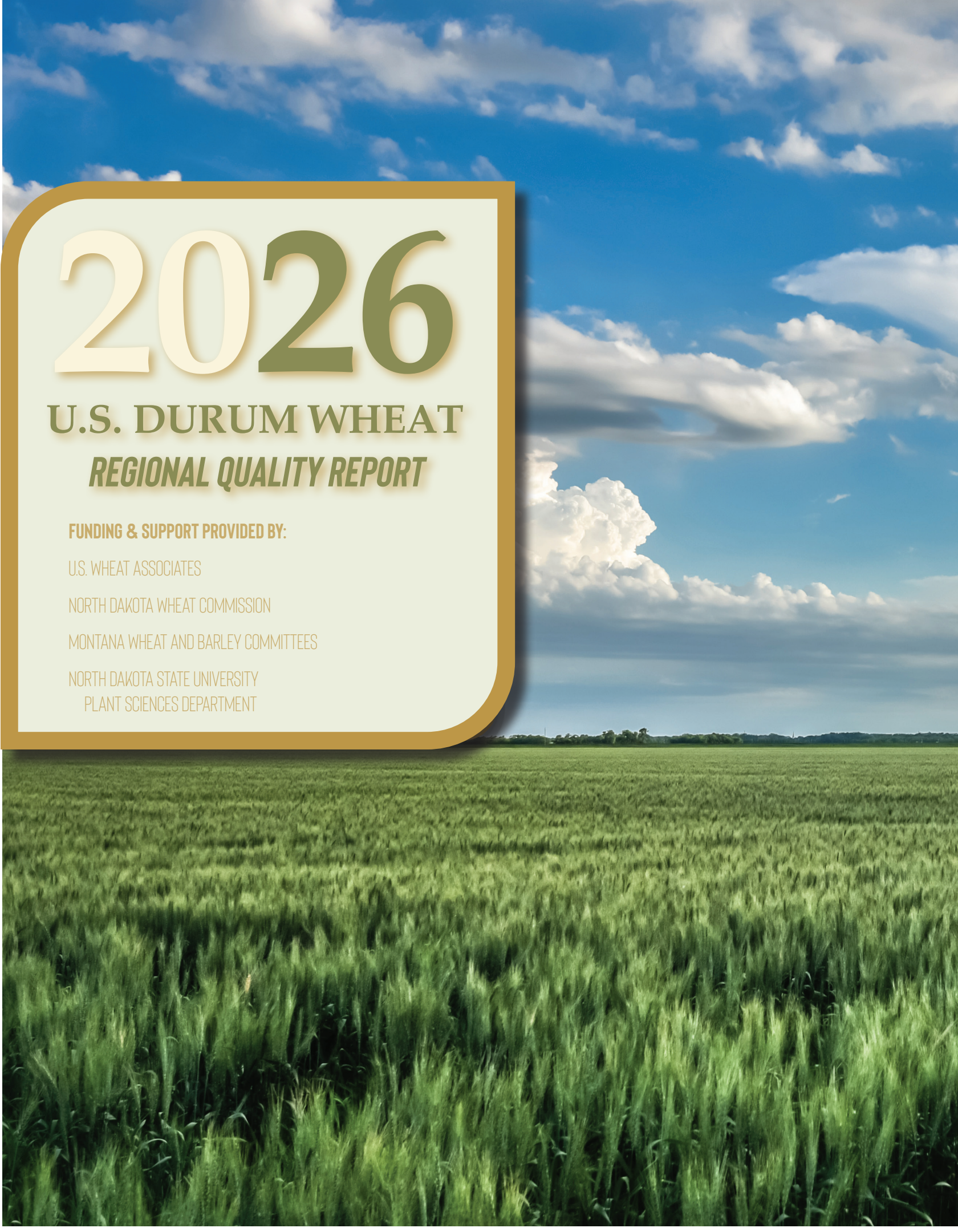
PROCESSING • Pasta was made using the laboratory procedure described by Walsh, Ebeling, and Dick, Cereal Sci. Today: 16(11) 385, 1971. A 1-Kg semolina was mixed with the appropriate amount of water that gave a dough consistency of 32 percent total water absorption. The other processing conditions used 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 • Hunter Lab values were determined by light reflectance, using a Minolta Color Difference Meter (Model CR 410, Minolta Camera Co., Japan).

COOKED WEIGHT • 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 66-50.01. Solids lost to the cooking water. After drying the residue was weighed and reported as percentage of the original dry sample.

FIRMNESS • AACC Method 66-50.01 with a Plexiglass tooth attached to a Texture Analyzer (Model TA-XT2, Texture Technology Corp., Scarsdale, New York).



2026

U.S. DURUM WHEAT *REGIONAL QUALITY REPORT*

FUNDING & SUPPORT PROVIDED BY:

U.S. WHEAT ASSOCIATES

NORTH DAKOTA WHEAT COMMISSION

MONTANA WHEAT AND BARLEY COMMITTEES

NORTH DAKOTA STATE UNIVERSITY
PLANT SCIENCES DEPARTMENT