



PLAINS GRAINS INC.

Hard Red  
Winter Wheat  
**Regional  
Quality  
Survey**

**2025**

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# Leadership in Action

Plains Grains, Inc. (PGI) serves the Great Plains and PNW states listed below and are guided by a board of directors who represent these states.



Colorado Wheat  
Administrative  
Committee  
[coloradowheat.org](http://coloradowheat.org)



Idaho Wheat  
Commission  
[idahowheat.org](http://idahowheat.org)



Oklahoma Wheat  
Commission  
[wheat.state.ok.us](http://wheat.state.ok.us)



*Rediscover Wheat*  
Kansas Wheat  
Commission  
[kswheat.com](http://kswheat.com)



North Dakota  
Wheat Commission  
[ndwheat.com](http://ndwheat.com)



South Dakota  
Wheat Commission  
[sdwheat.org](http://sdwheat.org)



Oregon Wheat  
Commission  
[owgl.org](http://owgl.org)



Washington Grain  
Commission  
[washingtongrainalliance.com](http://washingtongrainalliance.com)



Texas Wheat Producers  
Board and Association  
[texaswheat.org](http://texaswheat.org)



Montana Wheat & Barley  
Committee  
[wbc.agr.my.gov](http://wbc.agr.my.gov)



Nebraska Wheat Board  
[nebraskawheat.gov](http://nebraskawheat.gov)



Wyoming Wheat  
Growers Association  
[wyomingwheat.com](http://wyomingwheat.com)



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Lincoln, NE 68501

# Mission and Company Overview

Plains Grains, Inc. is not just an organization, it's a commitment to quality. Established in 2004 as a nonprofit initiative, PGI is the result of a collaborative effort to bridge the gap between wheat producers, grain companies, and flour millers in both domestic and international markets.

At PGI, our focus is clear: to provide quality data and facilitate the necessary wheat quality tracking that millers need to purchase U.S. wheat. We believe in the power of regional cooperation to meet the quality and quantity demands of the wheat industry. Together, we can achieve success on a global scale.



Gather and deliver timely quality and production data.

Cultivate relationships between producers, elevators, grain handlers, and domestic and foreign millers.

Effectively market the quality characteristics of annual HRW wheat to interested buyers.

# The Power of **Wheat**

Wheat is a cornerstone of global nutrition, providing approximately 20% of food protein and caloric intake. It's the United States' leading export crop and the third-leading most produced field crop.

The most common class produced in the U.S. is Hard Red Winter (HRW) wheat, fitting into a variety of categories based on hardness, kernel color, and planting time.

Approximately half of the wheat produced in the U.S. is exported, with HRW making up approximately 58% of those exports.

Mexico, Japan, and Nigeria are among the top importers of U.S. HRW wheat.

Wheat flour forms the backbone of numerous global dishes, making wheat one of the most versatile grains. Each class of wheat possesses unique characteristics that offer diverse functionality.

HRW wheat, representing 40% of total U.S. wheat production, boasts excellent milling and baking qualities, making it ideal for bread flour. It's also a preferred choice for Asian noodles, hard rolls, flatbreads, and blending applications.



# Survey Methodology

PGI facilitates quality testing on a “grainshed” basis. Grainsheds are defined by identifying key loading facilities and outlining the production region which contributes to that facility’s grain supply.

By defining the production areas in this manner, PGI’s survey provides a more precise representation of the wheat quality associated with each regional terminal. This approach enables buyers to gain a more precise understanding of the quality characteristics of Hard Red Winter (HRW) wheat available for export, ensuring confidence in U.S. wheat performance.

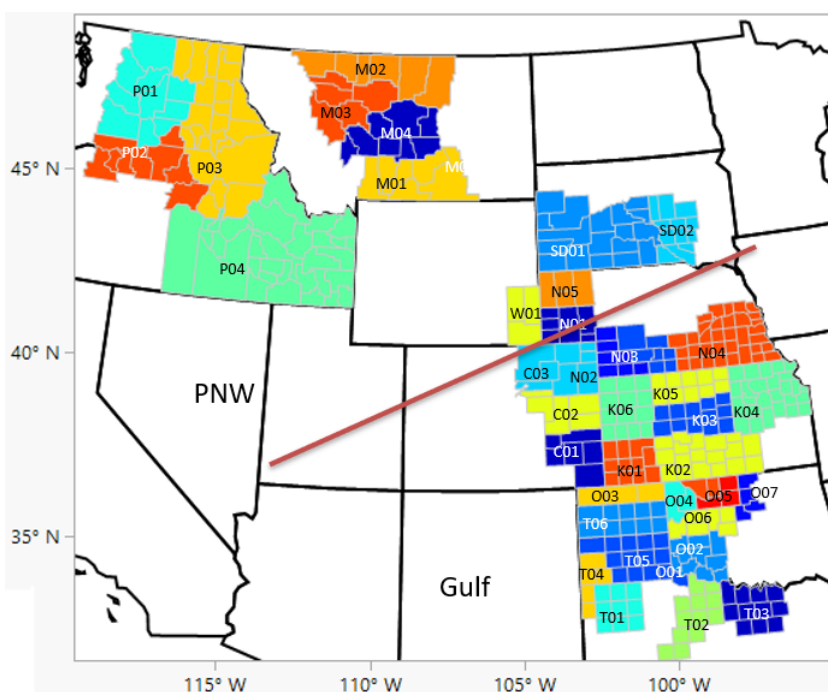
# 566

**Samples of  
Hard Red Winter**



**Collected from grain  
elevators in 38 reporting  
areas after at least  
30% of the local  
harvest was complete.**

The quality of wheat originating from a grainshed is determined by pulling samples from country and terminal elevators located within each defined grainshed.



These collected samples are then promptly sent to the USDA-ARS Hard Winter Wheat Quality lab in Manhattan, KS where they are analyzed and tested for more than 25 quality parameters. Official grade is determined at the Lincoln Inspection Service office in Lincoln, NE.

# Testing Methods

**The harvest samples were evaluated using these methods:**

**Grade:** Official U.S. Standards for Grain.  
**Dockage:** Official USDA procedure using the Carter Dockage Tester.

**Test Weight:** AACC Method 55-10; the weight Per Winchester Bushel (2150.42 in<sup>3</sup>) as determined using an approved device, USDA approved. The test weight is mathematically converted to hectoliter weight:  $\text{kg/hl} = \text{lb/bu} \times 1.292 + 1.419$ .

**Moisture:** DJ Gac 2100.

**Protein:** NIRT method.

**Ash:** AACC Method 08-01 expressed on a 14% moisture basis.

**Falling Number:** AACC Method 56-81B. An average value is a simple mean of sample results.

**Kernel Size Distribution:** Cereal Foods World (Cereal Science Today) 5:71-71, 75 (1960). Wheat is sifted with a RoTap sifter using a Tyler No. 7 screen (2.82 mm) and a Tyler No. 9 Screen (2.00 mm). Kernels retained on the No. 7 screen are classified as "Large." Kernels passing through the No. 7 screen and retained on the No. 9 screen are "Medium." Kernels passing through the No. 9 screen are "Small".

**Single Kernel Characterization:** AACC Method 55-31 using SKCS Model 4100.

**Extraction:** Samples cleaned and tempered according to AACC Method 26-10A. All were milled with identical mill settings on a

Buhler laboratory mill as follows: AACC Method 26-21A.

**Moisture:** NIR Protein: NIR Ash: AACC Method 08-01 expressed on a 14% moisture basis.

**Falling Number:** AACC Method 56-81B.  
**Wet Gluten & Gluten Index:** AACC Method 38-12

**Farinograph:** AACC Method 54-21 with 50-gram bowl.

**Absorption** is reported on 14% moisture basis.

**Alveograph:** AACC Method 54-30A.

**Loaf Volume:** AACC Method 10-10B producing 2 loaves per batch using wet compressed yeast and ascorbic acid. After mixing, dough is divided into two equal portions, fermented for 160 minutes, proofed and baked in "pup loaf" pans. Loaf volume is measured immediately after baking by rapeseed displacement.



*Plains Grains Inc. conducts crop quality testing using standard industry methods and to the best of its professional ability. While the information is provided with care, it is for informational purposes only. Plains Grains Inc. is not responsible for any financial loss or other consequences resulting from decisions based on this data.*

# Wheat Grading Characteristics

The Federal Grain Inspection Service (FGIS) of the USDA Grain Inspection, Packers and Stockyards Administration (GIPSA) sets the standard for U.S. grain grades and grade requirements. U.S. grain grades are reflective of the general quality and condition of a representative sample of U.S. wheat. These grades are based on characteristics such as 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 free of dockage. Grades issued used U.S. standards represent a sum of these factors.

Official U.S. Grades and Grade Requirements					
Grading Factors	Grades				
	No. 1	No. 2	No. 3	No. 4	No. 5
<b>Hard Red Winter - Minimum Test Weights</b>					
LB/BU	60.0	58.0	56.0	54.0	51.0
<b>Maximum Percent Limits Of:</b>					
<b>DEFECTS</b>					
Damaged Kenels					
Heat (part 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 and Broken Kernels	3.0	5.0	8.0	12.0	20.0
Total*	3.0	5.0	8.0	12.0	20.0
<b>WHEAT OF OTHER CLASSES**</b>					
Contrasting Classes	1.0	2.0	3.0	10.0	10.0
Total***	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
<b>Maximum Count Limits Of:</b>					
<b>OTHER MATIERIAL (1,000 gram sample)</b>					
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 Substance	3	3	3	3	3
Total****	4	4	4	4	4
<b>INSECT DAMAGED KERNELS in 100 grams)</b>	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.

Includes damaged kernels (total), foreign material, 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, gass, stones, or unknown foreign substance.

# 2025 U.S. HRW Wheat Crop: Resilient and Reliable

## Resilient Growth Through Variable Conditions

The 2025 U.S. Hard Red Winter (HRW) wheat crop reflects the strength and adaptability of America's wheat producers. Despite early-season dryness and intermittent heat stress in several production areas, timely rains and favorable mid-season conditions supported recovery and development. While yields vary across regions, the crop as a whole demonstrates balance, delivering strong protein, sound kernels, and dependable milling and baking characteristics.

## Consistent Quality and Strong Functionality

Grading and test weight results confirm a clean crop, complemented by a wide range of protein levels slightly above the five-year average. High falling numbers, solid dough stability, and reliable extensibility ensure consistent flour performance and

dependable baking outcomes. Across both Gulf and Pacific Northwest export channels, millers can anticipate uniform quality and efficient flour extraction, while bakers will appreciate steady absorption rates and predictable fermentation tolerance.

## Dependable Performance for Global Markets

The 2025 HRW crop continues to uphold the trusted reputation of U.S. wheat, supplying global markets with versatile, functional grain suited for pan breads, rolls, flatbreads, noodles, and other premium baked goods. With ample supply, balanced protein, and proven functionality, this year's crop reinforces the enduring value and reliability of U.S. Hard Red Winter wheat for customers worldwide.



# HRW Gulf-Exportable Overview

## Growing Conditions

Planting across the Southern Plains began under challenging conditions, with Texas, Oklahoma, Nebraska, and parts of Kansas facing limited soil moisture and uneven emergence. Early drought led to variable stands and some abandonment of acres. Colorado benefited from good snow cover that preserved soil moisture and supported early spring growth.

Moisture deficits persisted into early spring before widespread rains in April improved conditions. Timely precipitation during jointing, flowering, and grain fill boosted yield potential in Kansas, Oklahoma, and Texas. Localized flooding lodged some fields. Nebraska's Panhandle remained dry, resulting in additional abandonment.

## Weather and Environmental Impacts

Despite variable weather, the HRW crop showed resilience. Late-spring rains improved conditions in entire growing region and eased drought stress in parts of eastern Nebraska. Harvest delays from storms and humidity raised concerns about test weights and falling numbers, however, the impact was minimal. With the late moisture most disease and pest pressure were avoided, with stripe rust, leaf rust, wheat streak mosaic, and a late surge of stem sawfly remaining localized and mild crop stresses.

## Crop Production

Harvest ran later than average due to frequent rain events. Texas reported wide-ranging yields (20–80 bu/acre) and protein levels from 10–13%. Oklahoma's production was steady due to some flooding losses but showed solid yields in central and northern areas. Kansas delivered a strong crop—over 340 million bushels—with slightly lower protein than recent drought years. Colorado achieved strong test weights and average yields, while Nebraska's results were variable, from 25–100 bu/acre depending on moisture and stand establishment. Protein levels across Nebraska generally ranged from 12–14%.

## Summary

Overall, the 2025 Gulf HRW crop delivers balanced protein, sound kernel quality, and dependable functionality. It provides millers and bakers with versatile performance, ideal for blending or use as a standalone bread flour.

## Key Quality Takeaways



**PROTEIN** averages 12.0% (12% mb) slightly higher than last year and above the five-year average, offering strong gluten strength and excellent functional balance.

**1000 KERNEL WEIGHT** tested 29.9 g, modestly higher than 2024, reflecting dense, well-formed kernels that support efficient milling.

**FALLING NUMBER** averaged 374 seconds, confirming a sound crop with minimal sprout damage and strong storage stability for export.

**LAB MILL EXTRACTION** averaged 75.7%, indicating high flour yield potential and consistent performance across applications.

**SOLVENT RETENTION CAPACITY** values show excellent absorption and balanced water-holding capacity, promoting uniform dough performance.

**FARINOGRAPH** results show stability time 9.4 min, 59% absorption, and strong dough stability—hallmarks of reliable, high-performing bread flours.

**EXTENSOGRAPH** testing shows 576 BU resistance, demonstrating balanced elasticity and extensibility ideal for pan breads, rolls, and multipurpose blends.

# HRW Pacific Northwest Exportable Overview

## Growing Conditions

The 2025 HRW crop in the Pacific Northwest began under mixed conditions. Idaho benefited from good fall moisture and strong snow cover, supporting solid stand establishment, while Wyoming and parts of South Dakota faced early drought and entered dormancy with some concerns. Washington, Oregon, and Montana crops entered dormancy with a mix of good conditions to adverse weather events.

In the spring cool conditions persisted and slowed development. Late spring rains improved prospects in South Dakota and Wyoming, though cool temperatures delayed growth. Idaho and Montana sustained winter wheat with adequate moisture, but inconsistent late-season rains introduced stress. Washington and Oregon advanced steadily, but early-summer heat and dryness accelerated maturity and limited yield potential on dryland acres.

## Weather and Environmental Impacts

By late spring, rainfall eased stress across the Central and Northern Plains, supporting crop development in South Dakota and Wyoming. In the Pacific Northwest, unseasonably high temperatures in June and July hastened maturity, creating variability in fields. Disease pressure was limited: stripe rust appeared in test plots in Oregon and Idaho, while concerns about scab and wheat streak mosaic virus were minor. Environmental factors such as heat, drought, and wind had the largest impact on crop yields.

## Crop Production

Harvest reflected regional variation. Wyoming averaged 30 bu/acre with strong proteins (12–13%), exceeding early expectations. South Dakota yields ranged 45–55 bu/acre with slightly lower test weights. Montana delivered consistent yields and mid-12% proteins despite the variable conditions. Idaho achieved record irrigated yields. Washington and Oregon harvests were near average.

## Summary

Overall, the 2025 PNW HRW crop exhibits clean, high-quality grain with excellent test weights, steady protein, and strong functionality. The crop's uniformity and milling yield make it a preferred choice for millers seeking consistent, high-performing wheat for export markets.

## Key Quality Takeaways



The average **GRADE** is U.S. No. 1 HRW clean, uniform, and visually appealing, ideal for domestic and international buyers.

**PROTEIN** averages 12.3% (12% mb) consistent with last year and the five-year average, providing reliable gluten strength and functional performance.

**FALLING NUMBER** tested 359 seconds, confirming sound wheat with minimal weather impact and strong storage stability.

**LAB MILL EXTRACTION** averaged 76.0%, above last year and the five-year average, demonstrating high flour yield and efficient milling.

**SOLVENT RETENTION CAPACITY** values show balanced absorption and excellent dough performance across diverse formulations.

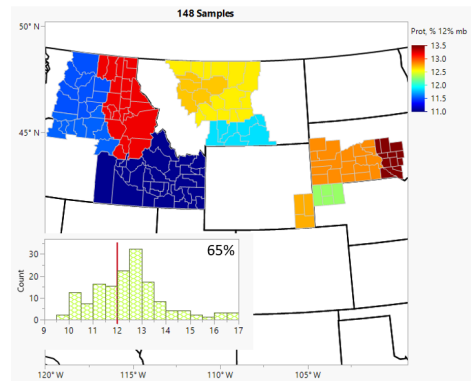
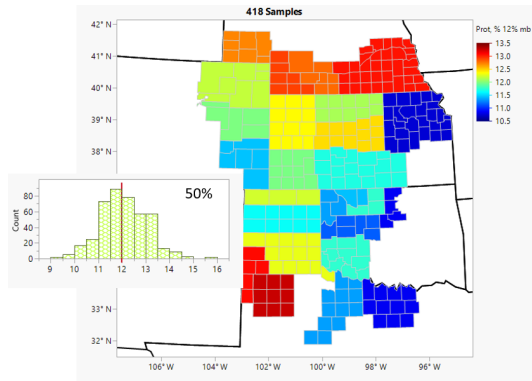
**KERNEL SIZE** tested 66% large, indicating uniform, plump kernels for steady test weights and milling efficiency.

**GLUTEN INDEX** testing shows 0.73, confirming strong gluten quality and elasticity for optimal dough structure.

**FARINOGRAPH** stability averaged 9.5 minutes, reflecting consistent mixing, predictable water absorption, and dependable dough tolerance.

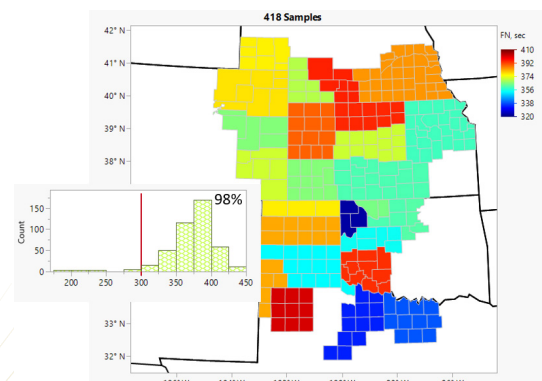
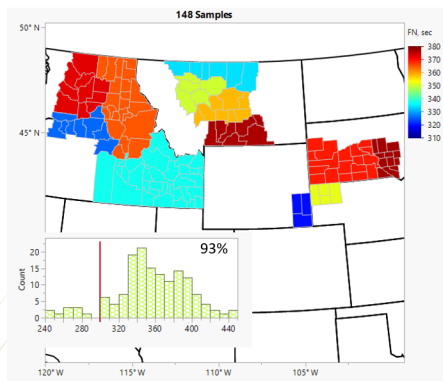
# Regional Quality Highlights

Gulf Wheat Protein (NIR, 12% mb), %    PNW Wheat Protein (NIR, 12% mb), %



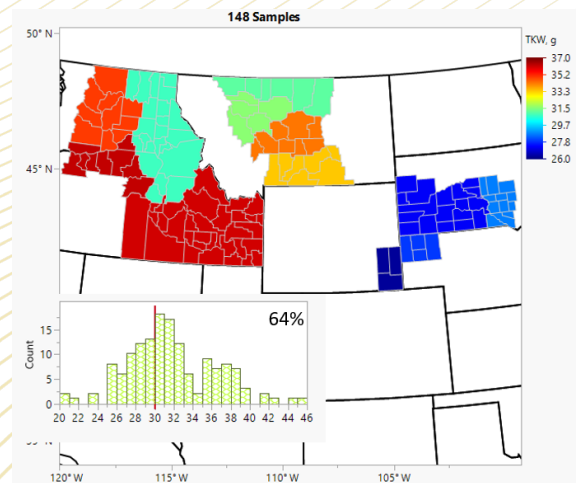
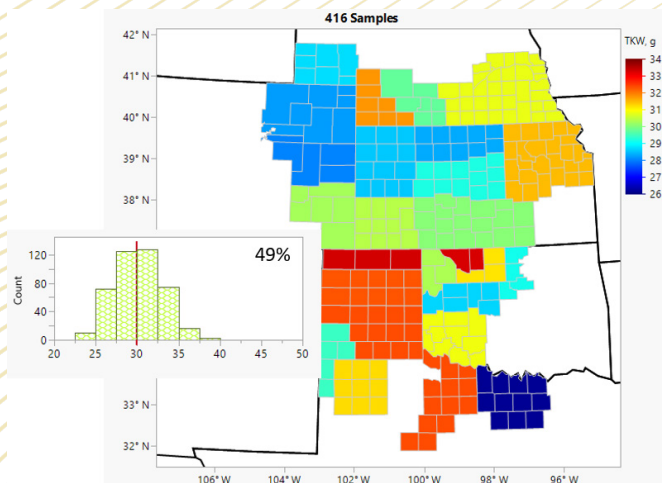
Gulf Wheat Falling Number, sec

PNW Wheat Falling Number, sec



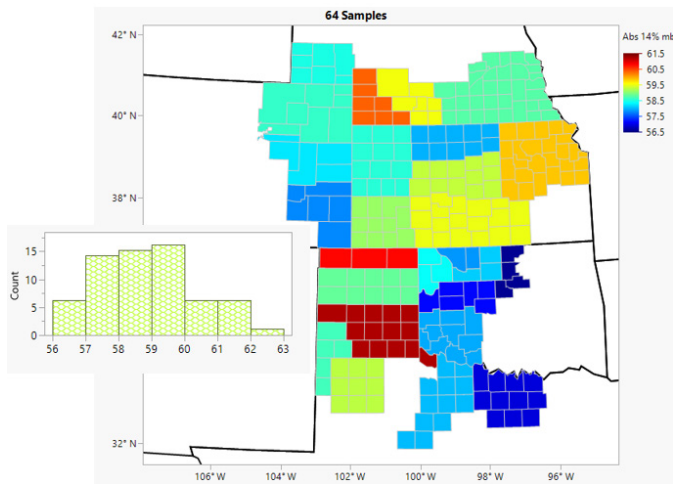
Gulf Thousand Kernel Weight, g

PNW Thousand Kernel Weight, g

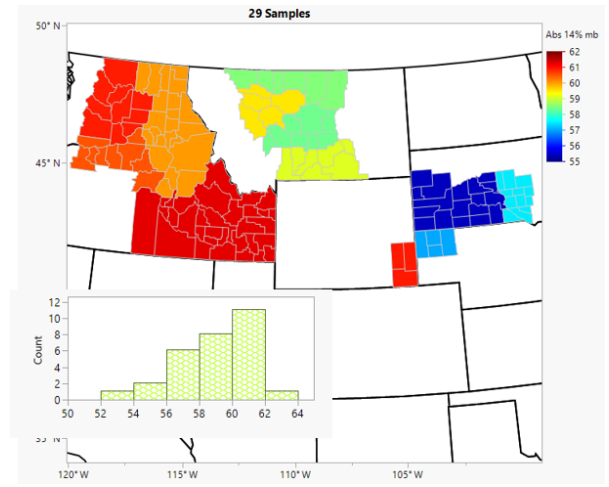


# Regional Quality Highlights

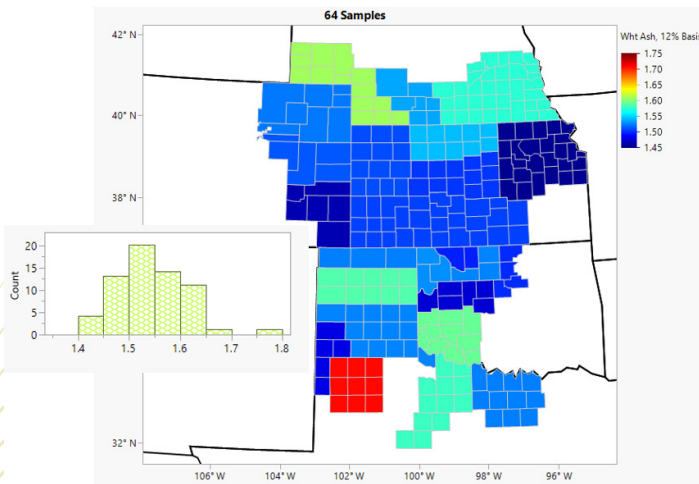
## Gulf Absorption (14% mb)



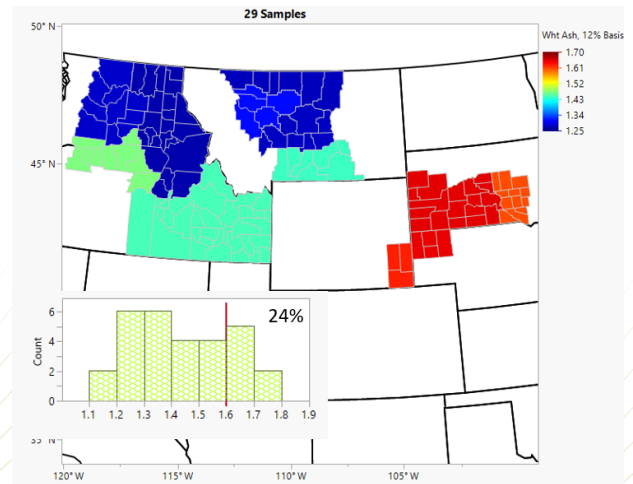
## PNW Absorption (14% mb)



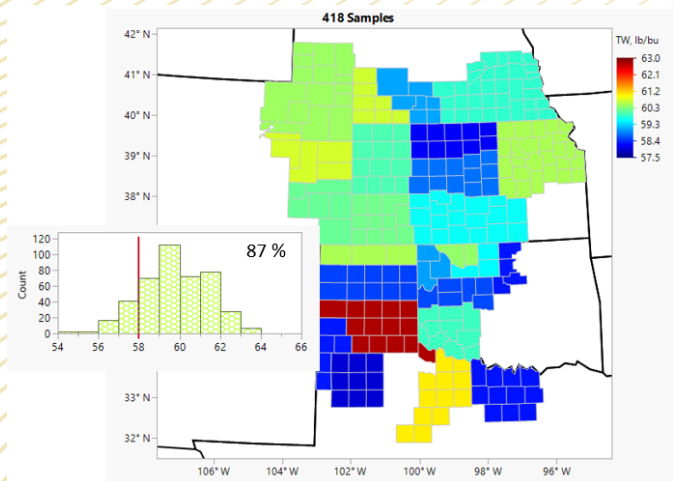
## Gulf Wheat Ash (12% mb), %



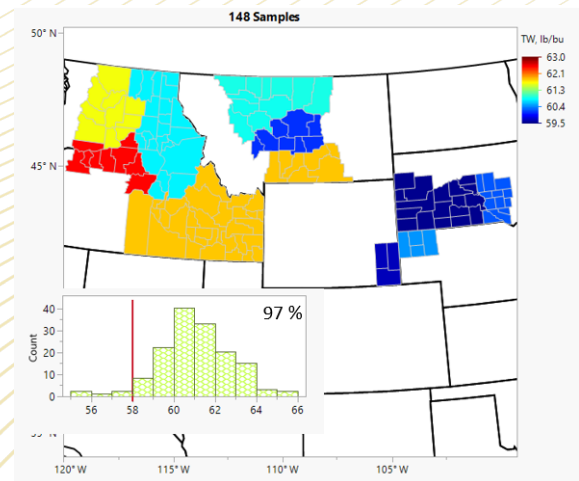
## PNW Wheat Ash (12% mb), %



## Gulf Test Weight (lb/bu)



## PNW Test Weight (lb/bu)



# Hard Red Winter Wheat Production Overview



**804**  
million bushel

HRW production  
U.S. total for 2025, up 4% from  
2024

## HRW Production for the Major Production States (1,000 bushels)

	2025	2024	2023	2022	2021
<b>Colorado</b>	67,507	61,824	68,092	34,320	66,777
<b>Idaho</b>	14,256	14,329	11,214,000	10,863	7,724
<b>Kansas</b>	234,460	289,003	187,162	229,548	342,160
<b>Montana</b>	99,640	90,585	85,680	59,400	53,630
<b>Nebraska</b>	35,186	44,969	34,742	24,665	39,102
<b>Oklahoma</b>	104,272	107,996	67,228	67,914	113,899
<b>Oregon</b>	3,677	4,599	2,419	2,448	2,538
<b>South Dakota</b>	31,500	47,880	31,490	37,960	26,980
<b>Texas</b>	80,845	76,570	75,369	36,660	69,560
<b>Washington</b>	12,172	12,250	9,450	9,792	8,517
<b>Wyoming</b>	2,563	2,764	2,646	1,566	2,918
<b>Eleven-State Total</b>	<b>686,079</b>	<b>752,770</b>	<b>575,493</b>	<b>515,137</b>	<b>733,807</b>
<b>Gulf-Exportable</b>	522,270	580,362	432,594	393,107	631,499
<b>PNW-Exportable</b>	163,809	172,407	142,899	122,029	102,308

# Hard Red Winter Wheat Production Overview



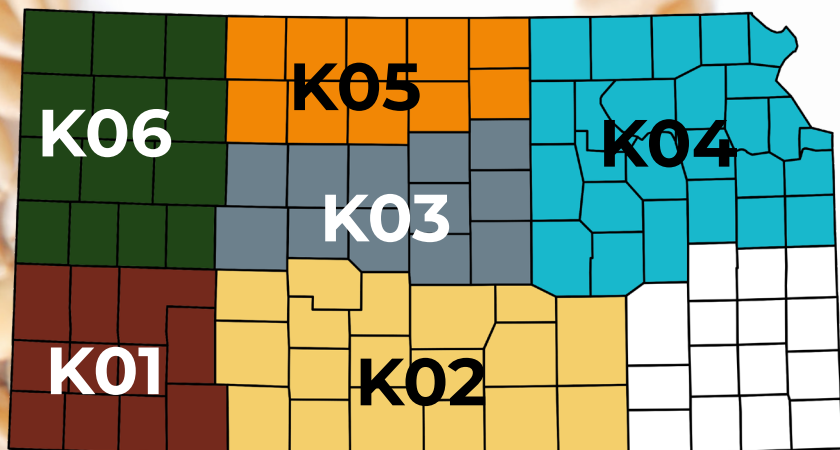
**21**  
million MT

HRW production  
U.S. total for 2025, up 4% from  
2024

HRW Production for the Major Production States (metric tons)					
	2025	2024	2023	2022	2021
Colorado	1,837,237	1,682,571	1,853,180	934,036	1,817,386
Idaho	387,984	389,971	305,195	295,642	210,234
Kansas	6,380,946	7,865,361	5,093,721	6,247,264	9,312,055
Montana	2,711,752	2,465,316	2,331,824	1,616,601	1,459,567
Nebraska	957,620	1,223,870	945,532	671,287	1,064,180
Oklahoma	2,837,815	2,939,165	1,829,644	1,848,313	3,099,832
Oregon	100,093	125,164	65,840	66,624	69,073
South Dakota	857,288	1,303,078	857,016	1,033,100	734,274
Texas	2,200,237	2,083,891	2,051,205	997,720	1,893,110
Washington	331,267	333,390	257,186	266,494	231,811
Wyoming	69,759	75,239	72,012	42,634	79,426
<b>Eleven-State Total</b>	<b>18,671,998</b>	<b>20,487,017</b>	<b>15,662,354</b>	<b>14,019,715</b>	<b>19,970,949</b>
Gulf-Exportable	14,213,854	15,794,858	11,773,281	10,698,620	17,186,564
PNW-Exportable	4,458,144	4,692,158	3,889,073	3,321,095	2,784,385

# KANSAS

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
K01	0.9	69.52	30.2	0.3	30.1	2.6
K02	1.2	70.05	29.6	0.3	29.8	2.6
K03	1.3	65.67	33.9	0.5	28.6	2.6
K04	0.9	67.65	31.9	0.4	30.0	2.6
K05	1.0	62.03	37.5	0.5	28.1	2.6
K06	1.2	62.47	37.0	0.6	28.6	2.5

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
K01	2	0.4	60.2	79.2	0.4	0.5	0.0
K02	2	0.4	59.6	78.4	0.6	0.6	0.0
K03	2	0.3	58.8	77.4	0.8	0.5	0.0
K04	1	0.6	60.5	79.6	0.3	0.5	0.0
K05	2	0.3	58.2	76.6	0.4	0.5	0.0
K06	1	0.4	60.0	78.9	0.3	0.9	0.1

## Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
K01	5.2	62.0	816.7	5.5	5.5
K02	4.8	62.5	803.3	4.8	4.8
K03	5.8	62.5	791.7	5.3	5.5
K04	5.4	60.7	720.0	4.8	5.2
K05	6.0	62.4	795.0	5.5	5.0
K06	4.7	62.4	778.3	5.5	4.5

## Dough Data

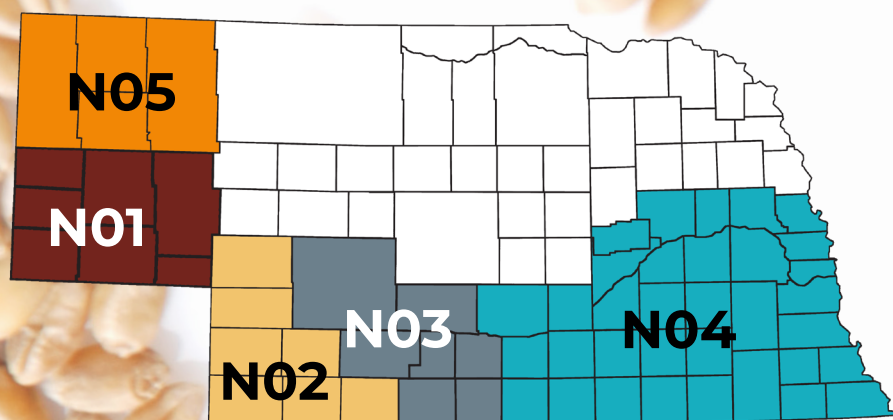
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
K01	79.00	78.7	211.3	1.2	5.4	9.4
K02	87.33	72.0	221.7	1.2	3.9	9.6
K03	88.00	76.7	243.3	1.2	4.8	11.0
K04	93.50	49.0	177.0	1.9	4.2	8.9
K05	87.00	83.7	262.7	1.1	4.7	12.4
K06	76.33	71.7	188.0	1.1	6.1	10.7

## Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sediment Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
K01	76.03	48.27	10.8	0.53	90.7	-1.4	10.4
K02	75.50	52.07	10.8	0.55	90.7	-1.4	9.9
K03	75.71	54.33	10.9	0.53	90.6	-1.3	10.3
K04	76.55	41.00	10.1	0.57	90.7	-1.5	11.1
K05	75.30	50.33	10.8	0.55	90.9	-1.5	10.7
K06	75.84	42.40	11.0	0.54	90.7	-1.5	10.8

# NEBRASKA

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large	Kernel Size Medium	Kernel Size Small	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
N01	1.2	63.05	36.6	0.5	28.3	2.6
N02	0.8	73.80	26.1	0.2	31.5	2.7
N03	1.3	70.30	29.4	0.3	29.3	2.6
N04	1.0	75.85	24.0	0.3	31.2	2.7
N05	1.1	58.13	41.2	0.8	27.3	2.5

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
N01	1	0.5	60.4	79.5	0.1	1.0	0.1
N02	2	0.4	60.7	79.8	0.3	0.5	0.0
N03	2	0.4	59.1	77.7	0.5	0.7	0.0
N04	1	0.3	59.8	78.7	0.5	0.5	0.0
N05	1	0.6	60.5	79.5	0.1	0.9	0.1

## Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
N01	4.3	62.8	775.0	6.3	5.2
N02	3.8	61.9	785.0	5.2	5.2
N03	4.0	61.1	758.3	5.3	4.5
N04	4.1	62.1	767.5	5.5	4.8
N05	4.8	61.7	781.7	5.3	5.3

## Dough Data

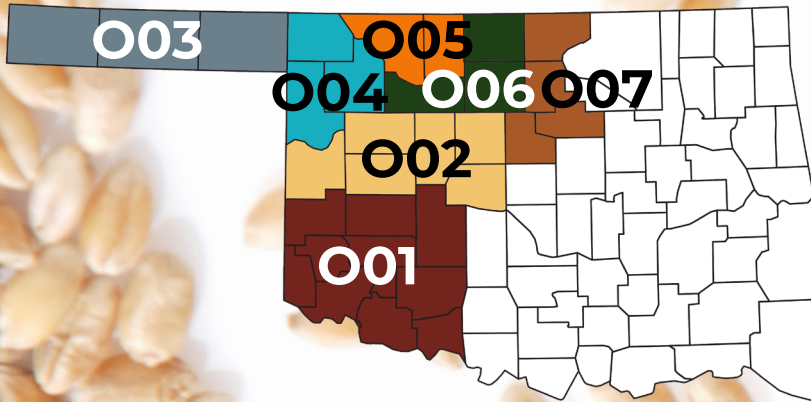
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
N01	71.00	81.5	185.5	0.9	5.3	7.5
N02	82.00	64.0	174.0	1.3	5.4	6.5
N03	79.67	73.3	186.3	1.2	4.9	7.8
N04	74.00	86.5	213.5	0.9	5.4	8.6
N05	80.33	68.3	192.0	1.2	5.1	8.2

## Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sediment Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
N01	75.11	52.75	11.7	0.55	90.7	-1.4	10.2
N02	75.41	43.70	11.9	0.60	90.3	-1.3	10.3
N03	76.12	40.80	11.3	0.60	90.3	-1.4	10.4
N04	77.05	42.25	11.6	0.59	90.5	-1.3	10.5
N05	75.55	48.47	11.0	0.55	91.1	-1.5	10.2

# OKLAHOMA

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
O01		75.95	23.7	0.4	31.2	2.7
O02	1.1	74.39	25.1	0.5	29.7	2.7
O03	1.1	78.28	21.5	0.2	32.7	2.7
O04	0.9	68.40	31.2	0.4	28.8	2.6
O05	0.8	81.23	18.6	0.2	33.3	2.8
O06	1.4	77.22	22.4	0.4	31.2	2.7
O07	1.1	73.40	25.9	0.7	27.8	2.6

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
O01	2	0.8	59.9	78.8	0.2		0.1
O02	2	1.3	58.6	77.1	0.2	0.7	0.2
O03	1	0.5	60.7	79.8	0.7	0.4	0.0
O04	2	0.3	59.4	78.1	0.4	0.5	0.0
O05	1	0.3	60.4	79.4	0.2	0.5	0.1
O06	2	0.5	59.6	78.4	0.2	0.7	0.5
O07	2	2.1	58.3	76.7	0.4	0.5	0.3

## Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
O01	4.7	61.0	873.3	5.5	5.8
O02	5.9	61.6	842.5	5.2	5.2
O03	4.6	63.0	797.5	4.8	4.8
O04	4.4	61.2	805.0	4.8	5.2
O05	5.1	60.9	790.0	4.8	4.8
O06	4.9	61.8	778.3	5.0	4.8
O07	5.0	59.7	755.0	4.0	4.0

## Dough Data

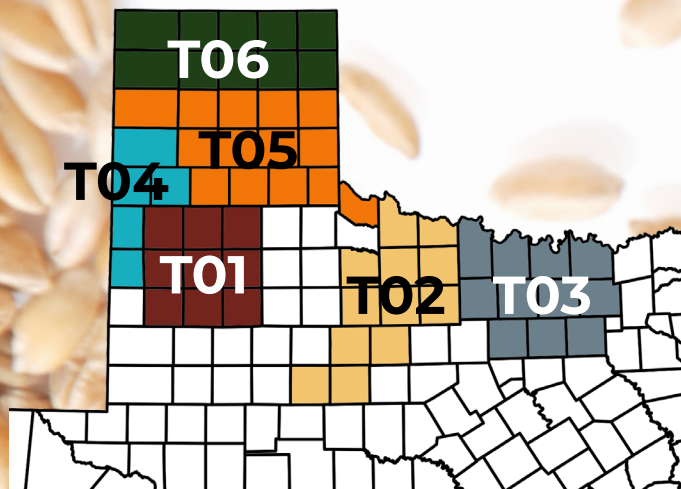
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
O01	77.00	903.	223.7	0.8	5.1	8.9
O02	75.00	100.0	246.5	0.8	4.3	9.7
O03	103.00	103.0	323.0	1.0	4.9	8.9
O04	78.50	85.0	214.0	1.0	4.4	7.3
O05	71.33	80.0	194.3	0.9	5.2	9.0
O06	69.33	76.0	179.3	1.0	5.3	8.0
O07	77.00	54.0	157.0	1.4	2.3	9.5

## Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sedimen Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
O01	75.99	48.97	10.6	0.55	90.5	-1.4	10.3
O02	76.51	54.40	10.7	0.51	90.4	-1.5	10.3
O03	75.82	51.65	11.3	0.53	90.6	-1.4	10.6
O04	75.75	50.95	10.6	0.54	91.0	-1.4	10.0
O05	75.99	52.47	10.4	0.52	91.1	-1.5	10.1
O06	75.84	52.70	10.8	0.53	90.8	-1.5	10.0
O07	75.78	40.00	9.5	0.54	90.7	-1.6	10.0

# TEXAS

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
T01	0.9	71.80	27.9	0.3	30.9	2.6
T02	0.9	73.25	26.2	0.6	30.2	2.7
T03	1.7	60.93	37.9	1.2	24.9	2.6
T04	1.1	68.05	31.5	0.4	29.1	2.6
T05	0.7	71.78	27.7	0.5	31.3	2.7
T06	1.1	78.48	21.3	0.2	31.6	2.7

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
T01	3	0.6	57.8	76.1	0.2	0.7	0.0
T02	1	0.3	61.0	80.3	0.1	0.6	0.2
T03	2	1.4	58.3	76.7	0.1	1.5	0.0
T04	2	0.9	58.3	76.8	0.3	0.7	0.0
T05	1	0.5	62.4	82.1	0.1	0.6	0.0
T06	2	0.9	58.5	77.0	0.6	0.4	0.1

## Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
T01	5.3	64.6	830.0	6.7	5.9
T02	5.6	60.7	802.5	5.6	6.3
T03	5.3	60.3	795.0	5.2	5.5
T04	3.8	62.2	850.0	5.5	5.9
T05	3.8	61.7	826.7	5.5	5.0
T06	4.8	61.4	828.3	5.8	5.8

## Dough Data

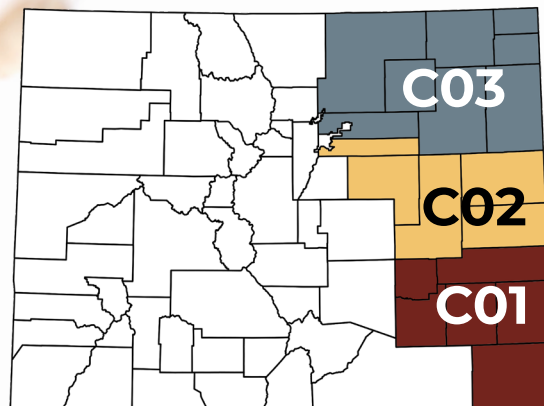
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
T01	88.00	91.0	277.5	1.0	5.7	11.0
T02	79.50	91.5	241.5	0.9	3.0	8.2
T03	81.00	80.5	214.5	1.1	3.2	8.1
T04	73.00	100.0	223.5	0.8	5.1	7.4
T05	90.67	67.3	205.0	1.4	4.5	6.5
T06	87.67	76.3	227.0	1.2	5.2	10.1

## Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sediment Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
T01	75.50	54.80	11.9	0.57	90.8	-1.2	9.4
T02	76.42	42.25	10.2	0.56	90.5	-1.2	9.7
T03	75.76	39.15	10.2	0.59	90.2	-1.4	10.8
T04	73.92	52.95	11.2	0.49	91.1	-1.5	9.7
T05	75.96	48.63	10.9	0.55	90.8	-1.3	10.1
T06	75.32	47.97	10.6	0.55	90.8	-1.4	9.9

# COLORADO

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
C01	0.9	74.55	25.1	0.4	31.5	2.6
C02	1.1	54.28	45.0	0.7	28.3	2.5
C03	0.9	54.45	45.0	0.6	28.0	2.5

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
C01	2	1.0	60.1	79.1	0.3	0.6	0.0
C02	1	0.5	60.7	79.9	0.2	0.9	0.0
C03	1	1.2	60.4	79.5	0.2	0.7	0.0

### Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
C01	5.4	62.1	775.0	5.2	5.2
C02	4.2	62.3	795.0	5.5	5.5
C03	4.1	61.9	785.0	5.3	5.5

### Dough Data

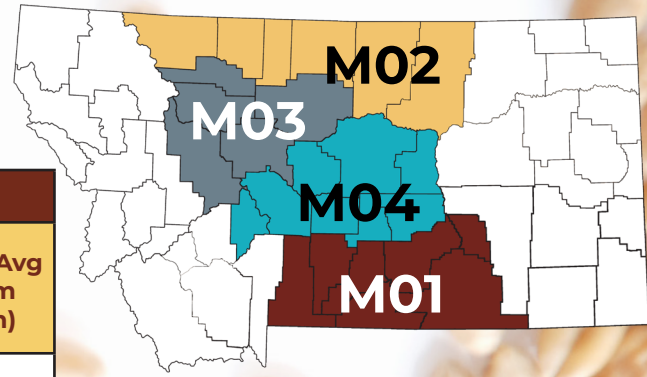
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
C01	86.50	89.0	267.0	267.0	4.3	11.1
C02	51.00	77.0	204.3	204.3	5.6	7.6
C03	82.67	67.7	190.3	190.3	5.4	7.7

### Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sedi-men Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
C01	76.13	48.40	10.5	0.52	91.1	-1.4	5.4
C02	75.88	44.30	11.0	0.55	91.0	-1.4	10.3
C03	74.53	45.30	11.1	0.58	90.8	-1.4	10.4

# MONTANA

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
M01	0.8	76.00	23.7	0.4	34.9	2.7
M02	0.6	61.90	37.9	0.3	31.4	2.7
M03	0.9	69.77	30.0	0.3	32.5	2.7
M04	1.1	69.05	30.4	0.6	30.7	2.7

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
M01	1	0.2	61.9	81.4	0.0	0.7	0.0
M02	1	0.4	60.9	80.1	0.0	0.6	0.0
M03	1	0.5	60.9	80.0	0.1	0.8	0.0
M04	2	0.5	60.1	79.1	0.1	1.1	0.0

### Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
M01	4.9	62.4	782.5	6.3	5.2
M02	5.4	62.4	903.3	5.5	5.0
M03	4.8	62.4	778.3	6.0	5.5
M04	6.8	62.9	777.5	6.3	6.3

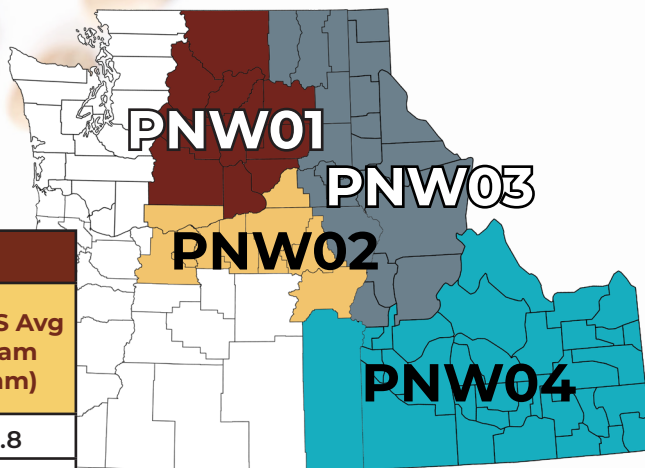
### Dough Data

Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
M01	89.50	88.5	268.5	1.0	5.0	8.9
M02	86.33	101.3	298.7	0.9	5.7	11.1
M03	84.33	95.3	260.7	0.9	5.4	8.9
M04	83.00	94.5	286.5	0.9	4.4	10.1

### Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sedimen Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
M01	76.74	55.30	11.1	0.53	90.8	-1.3	9.8
M02	76.01	63.03	11.1	0.47	91.0	-1.7	11.0
M03	75.96	58.43	11.2	0.52	90.5	-1.5	10.6
M04	75.63	63.50	11.3	0.47	91.0	-1.4	9.9

# PACIFIC NORTHWEST 2025 HRW Quality Data



Kernel Quality Data						
Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
PNW01	0.9	82.80	17.0	0.2	37.3	2.8
PNW02	0.6	85.65	14.2	0.3	38.0	2.9
PNW03	0.7	74.00	25.7	0.4	32.8	2.7
PNW04	0.6	85.20	14.5	0.4	37.6	2.9

Wheat Grading Data							
Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
PNW01	1	0.7	61.7	81.1	0.0	0.9	0.0
PNW02	1	0.3	62.6	82.2	0.0	0.6	0.1
PNW03	1	0.2	60.8	80.0	0.0	0.7	0.0
PNW04	1	0.3	61.9	81.4	0.0	0.6	0.0

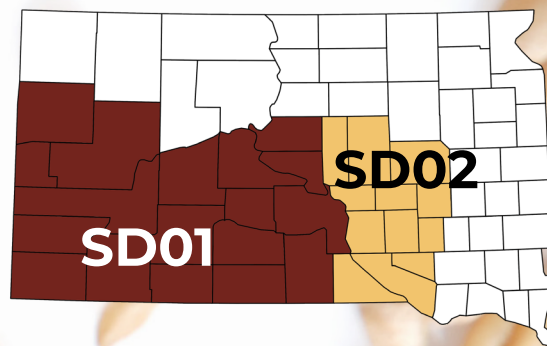
Baking Data					
Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
PNW01	4.6	62.4	763.3	5.3	5.3
PNW02	4.8	62.3	682.5	5.9	5.2
PNW03	6.3	63.1	755.0	5.8	4.8
PNW04	4.8	61.4	725.0	5.5	4.4

Dough Data						
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
PNW01	96.33	105.7	316.7	0.9	4.9	10.4
PNW02	100.00	63.5	240.5	1.7	4.5	7.9
PNW03	111.33	67.3	285.7	1.8	4.6	12.3
PNW04	107.00	54.5	212.5	2.1	4.3	8.5

Flour Data							
Grainshed	Buhler Flour Yield (%)	Zeleny Sediment Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
PNW01	76.59	55.80	11.0	0.45	91.0	-1.3	9.9
PNW02	76.33	47.25	10.6	0.50	91.1	-1.3	10.4
PNW03	75.31	62.23	10.9	0.41	91.1	-1.4	10.4
PNW04	77.51	46.05	10.3	0.43	90.6	-1.4	10.9

# SOUTH DAKOTA

## 2025 HRW Quality Data



### Kernel Quality Data

Grainshed	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
SD01	1.1	57.90	41.6	0.6	28.3	2.5
SD02	1.3	57.10	42.1	0.8	28.4	2.5

### Wheat Grading Data

Grainshed	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
SD01	2	0.6	59.6	78.4	0.1	1.1	0.0
SD02	1	0.5	60.2	79.2	0.2	1.0	0.0

### Baking Data

Grainshed	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
SD01	5.3	61.3	788.3	5.3	4.8
SD02	4.8	63.4	855.0	5.5	5.5

### Dough Data

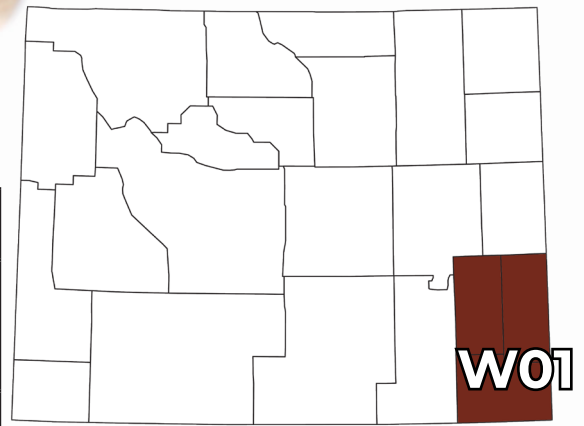
Grainshed	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
SD01	64.67	93.0	190.3	0.7	4.3	9.9
SD02	68.00	99.0	211.0	0.7	5.6	8.9

### Flour Data

Grainshed	Buhler Flour Yield (%)	Zeleny Sedimen Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
SD01	76.30	52.80	11.1	0.55	91.0	-1.3	9.5
SD02	75.52	61.80	12.2	0.56	90.8	-1.2	9.2

# WYOMING

## 2025 HRW Quality Data



Kernel Quality Data						
Grainsheded	Total Defects (%)	Kernel Size Large (%)	Kernel Size Medium (%)	Kernel Size Small (%)	Thousand Kernel Wt (g)	SKCS Avg Diam (mm)
W01	2.9	51.05	47.2	1.9	24.7	2.4

Wheat Grading Data							
Grainsheded	Grade	Dockage (%)	Test Wt (lb/bu)	Test Wt (kg/hl)	Damage Kernels (%)	Shrunken & Broken Kernels (%)	Foreign Material (%)
W01	2	0.9	59.7	78.6	0.0	2.6	0.2

Baking Data					
Grainsheded	Bake Mix (min)	Bake Abs (14% mb)	Loaf Volume (cc)	Crum Grain (1-10)	Crum Texture (1-10)
W01	3.4	63.8	772.5	5.2	5.5

Dough Data						
Grainsheded	ALVEO P (mm)	ALVEO L (mm)	ALVEO W (10-4 J)	ALVEO P/L Ratio	FARINO Development Time (min)	FARINO Stability (min)
W01	67.00	75.0	175.5	1.0	5.2	6.0

Flour Data							
Grainsheded	Buhler Flour Yield (%)	Zeleny Sedimen Test (cc)	NIR Flour Protein (14% mb)	Flour Ash (14% mb)	Flour Color L*	Flour Color a*	Flour Color b*
W01	74.31	49.35	12.4	0.58	90.2	-1.5	10.9

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