

U.S. PACIFIC NORTHWEST

2024 Harvest

**SOFT WHITE
WHEAT
QUALITY REPORT**

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Idaho Wheat Commission | Oregon Wheat Commission | Washington Grain Commission
U.S. Wheat Associates | Wheat Marketing Center



Photo courtesy of Washington Grain

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Pacific Northwest

Executive Summary

The 2024 Pacific Northwest (PNW) soft white and club wheat crop started with good soil moisture and strong germination through most of the region with some drier areas to the north. An extended period of cooler spring temperatures and timely rains supported good crop development, with higher temperatures in July accelerating maturity and harvest. A healthy crop was supported by low disease and pest pressure through most of the region as well.

Total estimated production of 6.71 MMT was higher than last year's 5.32 MMT and the five-year average of 5.89 MMT. The overall crop graded as #1 with protein contents that are lower than last year and the five-year average for both soft white and club. Average test weight was in line with the five-year average, and thousand kernel weight was above the five-year average. Farinograph, Alveograph, and SRC values all indicate very weak to medium gluten strength appropriate for the production of soft wheat flour products and those made with soft and hard wheat blends. End product tests show good sponge cake volume and texture with good to excellent steamed bread and cookie performance. Overall baking quality is consistent with typical performance for soft wheat.



Photo courtesy of Washington Grain

Pacific Northwest



U.S. soft white wheat grown in the Pacific Northwest includes the states of Idaho, Oregon and Washington.



Photo courtesy of Washington Grain

Soft White Wheat Class and Subclasses

Pacific Northwest soft white (SW) wheat is valued for its white bran, low moisture content, and weak gluten characteristics. Consequently, SW is well suited for products such as cakes, cookies, pancakes, and snack foods. SW with stronger gluten can be used in crackers, flat breads, and Chinese southern-type steamed breads by itself or in blends with hard wheat.

The soft white wheat class includes the subclasses of white club (WC) wheat and western white wheat. WC wheat has very weak gluten characteristics. Western white wheat is a blend of WC and SW wheat. The amount of WC wheat in western white ranges from 10 to 90 percent. The minimum percentage of WC in western white is 10 percent; higher amounts are determined by contract specifications negotiated between buyers and sellers (typically 10-30%).

2024 Top Varieties Soft White Wheat

Idaho	Oregon	Washington
LCS Shine	VI Voodoo CL+	Piranha CL+
Norwest Tandum	LCS Shine	LSC Shine
AP Exceed	Appleby CL+	VI Voodoo
VI Voodoo CL+	LCS CoAXium blend	Ryan
Stingray CL+	UI Magic CL+	Norwest Tandum
	TMC M-Press	Sockeye CL+



Photos courtesy of Wheat Marketing Center

Wheat Samples

At harvest, wheat samples were collected from a number of sources, including state and private grain inspection agencies and commercial wheat handling operations throughout the Pacific Northwest. Sample collection was based on wheat production in each location. For the 2024 harvest, Wheat Marketing Center (WMC) received and tested 429 SW and 27 WC samples from Idaho, Oregon, and Washington. Federal Grain Inspection Service (FGIS) graded and ran wheat protein on each sample. WMC conducted wheat, flour,

Photo courtesy of Washington Grain



solvent retention capacity (SRC), dough, and finished product tests on composites based on production zones and protein levels.

Soft White and White Club Wheat Summary

	Soft White		White Club	
	2024	5 Yr Avg	2024	5 Yr Avg
Test Weight (lb/bu)	60.9	60.8	60.5	60.6
Hectoliter Weight (kg/hl)	80.1	80.0	79.5	79.8
Grade	1SWH	1SWH	1WHCB	1WHCB
Dockage (%)	0.5	0.5	1.1	0.6
Whole Kernel Moisture (%)	9.0	9.2	8.4	8.4
Wheat Protein (% , 12% mb)	9.3	10.3	9.5	10.4
Wheat Ash (% , 14% mb)	1.36	1.41	1.31	1.31
Thousand Kernel Weight (g, 14% mb)	35.0	33.8	31.2	30.1
Wheat Falling Number (seconds, 14% mb)	327	330	332	333
Flour Extraction (%)	70.5	70.3	71.7	72.1
Flour Ash (% , 14% mb)	0.45	0.46	0.45	0.48
Flour Wet Gluten (% , 14% mb)	18.9	28.9	—	—
Farinograph: Absorption (% , 14% mb)	51.2	51.2	—	—
Peak Time (minutes)	1.3	2.5	—	—
Stability (minutes)	2.1	3.0	—	—
Alveograph: L (mm)	72	110	42	79
W (10-4 joules)	79	92	29	34
Production (mmt)	6.49	5.67	0.22	0.22

Photo courtesy of Terrance Ness and Oregon Wheat



Photo courtesy of Josh Duling and Oregon Wheat





Production Zones

Weather and Production

The 2023-2024 growing season in the Pacific Northwest saw mostly adequate moisture at planting supporting strong germination with some drier areas to the north. Winter brought below-average snowfall to the north with adequate snow protection to the south and higher snow amounts to the east. Mild spring temperatures and timely rains allowed for healthy winter wheat development and grain filling with low pest and disease pressure throughout the region. Pre-harvest heat accelerated crop development and harvest. USDA estimates PNW SW production at 6.71 MMT, a 19% increase from 2023 and above the five-year average.

Photo courtesy of Erin Heideman and Oregon Wheat



Photo courtesy of Josh Duling and Oregon Wheat



Soft White and Club Wheat Production by Region

Production Zone	Million Bushels (MB)	Million Metric Tons (MMT)
North Central	59.8	1.63
Northeast	84.5	2.30
Central	54.9	1.49
Southeast	34.9	0.95
Southwest	11.1	0.30
Northwest	1.2	0.03
Total Prod.	246.4	6.71

Source: USDA NASS Quick Stats data 2024

Photo courtesy of Washington Grain





Wheat Quality

Production Zone	Wheat Protein Range 12% mb %	Grade	Test Weight lb/bu	Dockage %	Whole Kernel Moisture %	Wheat Falling Number 14% mb seconds	Wheat Ash 14% mb %	Thousand Kernel Weight 14% mb g	SKCS Kernel Hardness	Whole Meal Wet Gluten 14% mb %
North Central	<8.5	1SWH	60.5	0.5	8.2	306	1.29	34.8	25	11.1
	8.5-9.4	1SWH	61.2	0.5	8.3	323	1.27	35.1	27	20.4
	9.5-10.4	1SWH	61.2	0.5	8.3	334	1.29	34.5	27	23.9
	10.5-12.0	1SWH	60.3	0.6	8.8	352	1.32	33.0	24	28.8
	2024 Average	1SWH	60.9	0.5	8.4	333	1.29	34.3	26	23.0
	2023 Average	1SWH	60.4	0.5	9.0	337	1.30	32.9	20	26.3
	5 Year Average	1SWH	60.9	0.4	8.7	338	1.30	33.1	29	25.5
Northeast	<8.5	1SWH	60.4	0.5	9.2	323	1.32	34.3	19	12.9
	8.5-9.4	1SWH	61.0	0.4	8.8	334	1.28	34.6	24	19.2
	9.5-10.4	1SWH	60.8	0.4	8.6	348	1.36	32.6	25	22.8
	10.5-12.0	1SWH	60.6	0.3	8.8	350	1.38	32.7	24	27.8
	>12.0	2SWH	59.3	0.3	7.3	379	1.62	25.9	33	36.1
	2024 Average	1SWH	60.6	0.4	8.8	337	1.34	33.5	23	19.7
	2023 Average	1SWH	61.1	0.3	8.8	349	1.38	31.8	22	25.9
5 Year Average	1SWH	61.3	0.5	9.3	340	1.40	33.3	28	23.7	
Central	<8.5	1SWH	60.8	0.4	8.7	303	1.31	35.6	18	13.6
	8.5-9.4	1SWH	60.7	0.5	8.8	322	1.38	35.7	19	17.0
	9.5-10.4	1SWH	60.8	0.5	9.4	332	1.46	36.0	20	22.5
	2024 Average	1SWH	60.8	0.4	8.9	314	1.36	35.7	19	16.3
	2023 Average	2SWH	59.7	0.3	8.8	342	1.40	29.2	22	30.1
5 Year Average	1SWH	60.7	0.5	9.1	331	1.43	33.1	27	24.2	
Southeast	8.5-9.4	1SWH	61.9	0.1	10.5	321	1.54	39.4	22	16.5
	9.5-10.4	1SWH	61.5	0.9	10.7	318	1.56	38.6	20	21.5
	10.5-12.0	1SWH	61.0	0.3	11.7	318	1.59	38.1	18	24.8
	2024 Average	1SWH	61.6	0.4	10.7	320	1.56	39.0	21	19.3
	2023 Average	1SWH	60.3	0.4	10.1	318	1.54	37.4	20	18.2
5 Year Average	1SWH	60.0	0.5	10.2	323	1.56	37.4	24	20.5	
Southwest	<8.5	1SWH	60.4	0.9	11.0	329	1.41	39.7	22	15.6
	8.5-9.4	1SWH	60.8	0.4	10.0	330	1.50	40.4	25	21.1
	2024 Average	1SWH	60.6	0.6	10.5	330	1.46	40.1	23	18.6
	2023 Average	1SWH	61.4	0.3	10.4	333	1.35	38.6	24	15.8
	5 Year Average	1SWH	60.2	0.5	10.9	326	1.43	37.2	25	18.5
White Club	2024 Average	1WHCB	60.5	1.1	8.4	332	1.31	31.2	26	—
	2023 Average	1WHCB	60.7	0.6	8.6	327	1.27	29.9	22	—
	5 Year Average	1WHCB	60.6	0.6	8.4	333	1.30	31.1	28	—



Flour Quality

Production Zone	Wheat Protein Range 12% mb %	Flour Yield %	Flour Ash 14% mb %	Flour Protein 14% mb %	Flour Color			Flour Wet Gluten 14% mb %	Flour Falling Number 14% mb seconds	Amylograph Peak Viscosity BU
					L*	a*	b*			
North Central	<8.5	70.6	0.44	6.0	93.4	-2.5	8.8	12.8	333	492
	8.5-9.4	70.7	0.43	7.5	93.1	-2.4	8.6	19.1	360	521
	9.5-10.4	70.7	0.42	8.3	93.0	-2.3	8.4	24.0	348	557
	10.5-12.0	69.7	0.42	9.7	92.9	-2.2	8.1	28.4	407	599
	2024 Average	70.4	0.42	8.2	93.0	-2.3	8.4	22.8	365	552
	2023 Average	70.2	0.43	9.7	93.0	-2.1	7.9	26.1	364	588
	5 Year Average	71.0	0.44	9.7	92.9	-2.2	8.2	25.0	363	549
Northeast	<8.5	70.7	0.42	6.4	93.2	-2.4	8.8	8.9	357	506
	8.5-9.4	71.7	0.45	7.3	93.1	-2.3	8.7	19.4	396	522
	9.5-10.4	70.3	0.41	8.1	92.9	-2.3	8.5	23.1	369	561
	10.5-12.0	71.4	0.42	9.2	92.8	-2.1	8.3	26.3	403	701
	>12.0	67.5	0.44	11.2	92.5	-2.2	8.6	32.4	430	678
	2024 Average	70.9	0.43	7.6	93.0	-2.3	8.6	18.3	379	554
	2023 Average	70.1	0.44	9.9	92.9	-2.2	8.4	29.9	380	592
	5 Year Average	72.1	0.45	9.1	92.8	-2.1	8.4	22.8	359	534
Central	<8.5	71.5	0.43	6.5	93.3	-2.4	8.5	12.9	354	536
	8.5-9.4	72.2	0.51	7.4	93.0	-2.3	8.3	17.5	351	558
	9.5-10.4	72.0	0.50	8.5	93.3	-2.1	8.0	20.2	369	531
	2024 Average	71.8	0.47	7.1	93.2	-2.3	8.3	15.7	356	542
	2023 Average	71.8	0.44	9.9	93.0	-2.2	8.1	32.3	372	647
	5 Year Average	71.6	0.44	9.1	92.8	-2.1	7.9	23.9	358	549
Southeast	8.5-9.4	71.2	0.45	6.9	93.2	-2.3	8.5	12.3	331	413
	9.5-10.4	71.9	0.45	8.2	93.2	-2.1	7.8	21.0	348	404
	10.5-12.0	71.7	0.50	9.3	92.9	-2.1	7.9	31.9	358	514
	2024 Average	71.5	0.46	7.7	93.1	-2.2	8.2	17.8	340	422
	2023 Average	69.7	0.50	8.1	93.3	-2.1	7.8	25.7	353	475
	5 Year Average	72.3	0.48	8.8	92.9	-2.1	7.9	21.0	342	466
Southwest	<8.5	72.4	0.52	6.8	93.3	-2.3	8.4	13.8	334	441
	8.5-9.4	73.5	0.55	7.4	93.2	-2.1	8.2	13.3	355	424
	2024 Average	73.0	0.54	7.1	93.2	-2.2	8.3	13.5	345	432
	2023 Average	69.0	0.52	7.1	92.6	-2.5	9.6	20.7	369	559
	5 Year Average	72.0	0.49	7.7	92.5	-2.2	8.6	19.6	339	438
White Club	2024 Average	71.7	0.45	7.9	93.4	-2.2	8.1	—	383	500
	2023 Average	72.1	0.48	9.5	93.2	-2.0	7.8	—	346	512
	5 Year Average	72.9	0.46	9.4	92.9	-2.0	7.8	—	365	505



Solvent Retention Capacity (SRC)

Production Zone	Wheat Protein Range 12% mb %	Water %	50% Sucrose %	5% Lactic Acid %	5% Sodium Carbonate %	Gluten Performance Index
North Central	<8.5	54	96	92	69	0.56
	8.5-9.4	54	100	89	72	0.52
	9.5-10.4	54	99	92	72	0.54
	10.5-12.0	57	99	99	71	0.58
	2024 Average	55	99	93	71	0.55
	2023 Average	52	98	106	69	0.63
	5 Year Average	54	97	114	71	0.68
Northeast	<8.5	54	96	90	66	0.56
	8.5-9.4	54	98	94	73	0.55
	9.5-10.4	54	99	99	72	0.58
	10.5-12.0	54	99	115	69	0.68
	>12.0	56	109	131	72	0.73
	2024 Average	54	98	98	70	0.58
	2023 Average	53	102	113	69	0.66
5 Year Average	52	95	104	70	0.64	
Central	<8.5	54	98	100	73	0.59
	8.5-9.4	54	100	95	74	0.55
	9.5-10.4	53	92	105	70	0.65
	2024 Average	54	98	99	73	0.58
	2023 Average	53	101	119	70	0.70
5 Year Average	53	95	108	70	0.65	
Southeast	8.5-9.4	52	96	75	73	0.44
	9.5-10.4	53	99	79	67	0.48
	10.5-12.0	53	100	94	70	0.56
	2024 Average	53	97	79	71	0.47
	2023 Average	52	97	78	68	0.47
5 Year Average	51	92	82	67	0.52	
Southwest	<8.5	55	94	84	74	0.50
	8.5-9.4	54	95	81	73	0.48
	2024 Average	54	94	83	73	0.49
	2023 Average	54	96	81	68	0.49
	5 Year Average	54	96	91	73	0.54
White Club	2024 Average	53	92	73	68	0.46
	2023 Average	51	93	71	66	0.44
	5 Year Average	52	92	75	71	0.46



Physical Dough Properties

Production Zone	Wheat Protein Range 12% mb %	Farinograph			Alveograph			
		Absorption 14%mb %	Peak Time minutes	Stability minutes	P mm	L mm	P/L	W 10-4 joules
North Central	<8.5	—	—	—	41	76	0.54	88
	8.5-9.4	—	—	—	42	83	0.51	84
	9.5-10.4	51.4	1.3	2.4	44	74	0.59	89
	10.5-12.0	52.3	1.5	2.3	44	75	0.59	89
	2024 Average	51.8	1.4	2.4	43	77	0.56	88
	2023 Average	51.7	2.6	3.3	35	94	0.38	88
	5 Year Average	—	—	—	40	110	0.39	108
Northeast	<8.5	—	—	—	39	72	0.54	77
	8.5-9.4	—	—	—	42	78	0.54	87
	9.5-10.4	50.1	1.3	3.0	42	94	0.45	105
	10.5-12.0	50.9	1.4	3.5	43	99	0.43	114
	>12.0	52.7	1.4	5.1	49	128	0.38	173
	2024 Average	50.6	1.3	3.3	41	84	0.50	95
	2023 Average	51.4	2.5	3.2	35	124	0.28	103
	5 Year Average	—	—	—	36	97	0.40	83
Central	<8.5	—	—	—	39	57	0.68	75
	8.5-9.4	—	—	—	41	87	0.47	98
	9.5-10.4	49.8	1.2	2.4	36	113	0.32	94
	2024 Average	49.8	1.2	2.4	39	76	0.55	86
	2023 Average	50.8	2.1	3.4	36	134	0.27	117
	5 Year Average	—	—	—	34	108	0.34	91
Southeast	8.5-9.4	—	—	—	38	37	1.03	43
	9.5-10.4	50.0	0.6	1.3	35	43	0.81	43
	10.5-12.0	49.8	1.2	1.6	36	54	0.67	54
	2024 Average	50.0	0.7	1.3	37	41	0.91	44
	2023 Average	51.7	1.6	2.7	33	72	0.48	54
	5 Year Average	—	—	—	29	82	0.41	51
Southwest	<8.5	—	—	—	42	57	0.74	63
	8.5-9.4	—	—	—	42	50	0.84	58
	2024 Average	—	—	—	42	53	0.79	60
	2023 Average	—	—	—	38	77	0.49	74
	5 Year Average	—	—	—	35	90	0.42	70
White Club	2024 Average	—	—	—	26	42	0.62	29
	2023 Average	—	—	—	23	79	0.29	34
	5 Year Average	—	—	—	23	75	0.36	34



Sponge Cake

Photo courtesy of Wheat Marketing Center

Production Zone	Wheat Protein Range 12% mb %	Sponge Cake	
		Volume cc	Firmness g
North Central	<8.5	1089	259
	8.5-9.4	1024	324
	9.5-10.4	1051	311
	10.5-12.0	1025	297
	2024 Average	1041	306
	2023 Average	1063	323
	5 Year Average	1091	—
Northeast	<8.5	1069	288
	8.5-9.4	1110	285
	9.5-10.4	1067	302
	10.5-12.0	1048	281
	>12.0	1014	383
	2024 Average	1075	293
	2023 Average	1040	389
5 Year Average	1101	—	
Central	<8.5	1082	252
	8.5-9.4	1088	301
	9.5-10.4	1055	339
	2024 Average	1079	283
	2023 Average	989	465
	5 Year Average	1089	—
Southeast	8.5-9.4	1111	233
	9.5-10.4	1069	245
	10.5-12.0	1036	262
	2024 Average	1087	241
	2023 Average	1119	276
	5 Year Average	1118	—
Southwest	<8.5	1097	239
	8.5-9.4	1090	316
	2024 Average	1093	280
	2023 Average	1118	257
	5 Year Average	1124	—
White Club	2024 Average	1081	287
	2023 Average	1143	284
	5 Year Average	1127	—





Cookies

Production Zone	Wheat Protein Range 12% mb %	Sugar Snap Cookie		
		Spread cm	Spread Ratio width/height	Top Grain Score
North Central	<8.5	9.3	12.3	7.0
	8.5-9.4	9.6	11.9	6.0
	9.5-10.4	9.6	12.0	3.5
	10.5-12.0	9.2	11.9	3.0
	2024 Average	9.4	12.0	4.4
	2023 Average	8.6	10.7	1.5
	5 Year Average	8.6	10.0	3.5
Northeast	<8.5	9.4	13.4	5.0
	8.5-9.4	9.5	12.2	6.0
	9.5-10.4	9.4	12.5	5.0
	10.5-12.0	9.3	12.4	4.0
	>12.0	8.6	9.5	3.0
	2024 Average	9.4	12.6	5.1
	2023 Average	8.6	10.9	1.6
5 Year Average	8.6	9.9	3.6	
Central	<8.5	9.5	12.7	6.5
	8.5-9.4	9.2	11.5	6.5
	9.5-10.4	9.4	11.8	6.0
	2024 Average	9.4	12.2	6.4
	2023 Average	8.5	11.2	1.0
	5 Year Average	8.6	10.1	3.5
Southeast	8.5-9.4	9.4	12.1	7.0
	9.5-10.4	9.5	11.8	7.0
	10.5-12.0	9.2	11.5	5.5
	2024 Average	9.4	11.9	6.8
	2023 Average	8.6	11.0	3.3
	5 Year Average	8.7	10.1	4.2
Southwest	<8.5	9.3	11.6	6.5
	8.5-9.4	9.5	11.9	6.5
	2024 Average	9.4	11.7	6.5
	2023 Average	8.6	10.7	2.5
	5 Year Average	8.6	9.5	3.9
White Club	2024 Average	9.825	14.0	6.5
	2023 Average	8.7	12.4	5.5
	5 Year Average	8.9	11.7	5.1



Photos courtesy of Wheat Marketing Center



Steamed Bread

Production Zone	Wheat Protein Range 12% mb %	Chinese Southern Type Steamed Bread	
		Specific Volume cc/g	Hardness g
North Central	<8.5	2.47	1925
	8.5-9.4	2.61	1729
	9.5-10.4	2.60	2038
	10.5-12.0	2.78	1994
	2024 Average	2.64	1934
	2023 Average	2.63	—
	5 Year Average	2.23	—
Northeast	<8.5	2.47	1825
	8.5-9.4	2.54	1935
	9.5-10.4	2.60	1669
	10.5-12.0	2.72	1698
	>12.0	2.84	1486
	2024 Average	2.57	1790
	2023 Average	2.58	—
Central	<8.5	2.50	1547
	8.5-9.4	2.55	1632
	9.5-10.4	2.64	1740
	2024 Average	2.54	1608
	2023 Average	2.61	—
	5 Year Average	2.24	—
Southeast	8.5-9.4	2.47	1635
	9.5-10.4	2.48	1955
	10.5-12.0	2.64	1842
	2024 Average	2.49	1774
	2023 Average	2.49	—
	5 Year Average	2.21	—
Southwest	<8.5	2.38	1952
	8.5-9.4	2.42	1975
	2024 Average	2.40	1964
	2023 Average	2.52	—
	5 Year Average	2.17	—
White Club	2024 Average	2.67	1621
	2023 Average	2.72	—
	5 Year Average	2.41	—

Photos courtesy of Wheat Marketing Center



Summary

These results were derived from composite samples from the 2024 Pacific Northwest soft white (SW) and white club (WC) wheat harvest. SW composites were prepared by production zone and protein levels. All WC samples were blended into one composite. The composite samples were analyzed for wheat quality, flour quality, solvent retention capacity, physical dough properties, and finished product characteristics. Please note that some production zones did not have low or high protein samples this year. Harvest results are summarized as follows:

Wheat Quality

Test Weight

- SW weighted average test weights are ≥ 60.0 pounds per bushel (lbs/bu) across all production zones.
- WC test weight is 60.5 lbs/bu.

Wheat Moisture

- SW wheat weighted average moistures are 10.7% or lower.
- WC wheat moisture is 8.4%.

Falling Number

- SW weighted average falling number values are ≥ 314 sec in all production zones.
- WC falling number is 332 sec.

Wheat Ash

- SW weighted average wheat ash values are between 1.29% to 1.56% (14% mb) across all production zones, similar to last year.
- WC wheat ash average is 1.31% (14% mb).

Thousand Kernel Weight (TKW)

- SW TKW ranges from 25.9 g to 40.4 g across the production zones with weighted average TKW values that are greater than last year for all production zones.
- WC TKW is 31.2 g.

SKCS Kernel Hardness Index

- SW SKCS hardness weighted averages range from 19 to 26 across all production zones.
- WC SKCS hardness average is 26.

Whole Meal Wet Gluten

- SW weighted average whole meal wet gluten values are lower than last year at 16.3% to 23.0%, with lower values from lower protein composites across all production zones. These wet gluten values are lower than last year and the 5-year average.
- WC whole meal wet gluten has been discontinued.

Flour Quality

Flour Yields

- SW weighted average flour yields range from 70.4% to 73.0%. These yields are based on tempered wheat weight and should not be compared to the 5-year average, which has been partially based on total product weight. Lower flour yields are more typical for higher protein composites that have a combination of lower test weight and TKW.
- WC flour yield is 71.7%.



Photo courtesy of Wheat Marketing Center



Photo courtesy of Washington Grain

Flour Ash

- SW weighted average straight grade flour ash values are $\leq 0.50\%$ (14% mb) across all production zones except for the Southwest zone, which has a value of 0.54% (14% mb).
- WC straight grade flour ash is 0.45% (14% mb).

Flour Color

- SW flour L^* (whiteness) values exceed 92.5 across all protein composites and production zones. Weighted average values range from 93.0 to 93.2.
- WC flour L^* is 93.4.

Wet Gluten

SW wet gluten ranges from 8.9% to 32.4% with weighted averages of $\geq 13.5\%$ across all production zones, lower than last year. These values are typical for samples with very weak to medium gluten strength.

WC wet gluten has been discontinued.

Flour Falling Number

SW flour falling number weighted average values are all ≥ 340 sec.

WC flour falling number is 383 sec.

Amylograph

- SW weighted average Amylograph peak viscosities are all ≥ 422 BU, lower than last year but comparable to the 5-year average.
- WC Amylograph peak viscosity is 500 BU.

Photo courtesy of Washington Grain



Photo courtesy of Erin Heideman and Oregon Wheat

Solvent Retention Capacity (SRC)

Water SRC

- SW water SRC values are $\leq 57\%$ for all protein composites across all production zones.
- WC water SRC is 53%.

Sucrose SRC

- SW sucrose SRC values are $\leq 100\%$ for all protein composites in all production zones, with the exception of the Northeast $> 12.0\%$ composite at 109%.
- WC sucrose SRC is 92%.

Lactic Acid SRC

- SW lactic acid SRC values range from 75% to 131% for all protein composites in all production zones. These values are typical for very weak to medium gluten strength.
- WC lactic acid SRC is 73%, indicative of very weak gluten.

Sodium Carbonate SRC

- SW sodium carbonate SRC values are $\leq 74\%$ for all protein composites in all production zones.
- WC sodium carbonate SRC is 68%.

Gluten Performance Index (GPI)

- SW GPI values range from 0.44 to 0.73. This is in line with the lactic acid SRC results and indicates that gluten strength is very weak to medium.
- WC GPI is 0.46, which is typical for very weak gluten.



Photo courtesy of Washington Grain

Physical Dough Properties

Farinograph

- SW Farinograph water absorption values are $\leq 52.7\%$ for all protein composites across all production zones with weighted average peak times and stabilities of ≤ 1.4 min and ≤ 3.3 min, respectively. Peak times and stabilities were longer for higher protein composites. Low water absorption values are desirable for products like cookies and crackers. Farinograph testing for low protein composites ($< 9.5\%$) have been discontinued.
- WC Farinograph testing has been discontinued.

Alveograph

- SW Alveograph P value weighted averages range from 37 mm to 43 mm with L value weighted averages of 41 mm to 84 mm and P/L ratio averages of 0.50 to 0.91. W value weighted averages range from 44 (10^{-4} J) to 95 (10^{-4} J). These values align with Farinograph data for gluten strength ranging from very weak to medium.
- WC Alveograph P, L, P/L and W values are 26 mm, 42 mm, 0.62 and 29 (10^{-4} J), respectively. These values are typical for very weak gluten strength.

Finished Products

Sponge Cake

- SW sponge cake volume weighted averages range from 1041 cc to 1093 cc across all production zones. Weighted averages for firmness values range from 241 g to 306 g which are generally softer for most production zones this year compared to 2023 weighted averages. The exception is the Southwest production zone which had a firmness of 280 g this year compared in 257 g last year. Control cakes from a commercially milled short patent cake flour have an average volume of 1132 cc and a firmness value of 273 g.
- WC sponge cake volume is 1081 cc with a firmness value of 287 g. The volume is smaller than last year while the firmness is comparable.

Sugar Snap Cookies

- SW cookie diameter weighted averages are all 9.4 cm, with spread ratios of 11.7 to 12.6 and top grain scores of 4.4 to 6.8, better than those observed last year. All composites show acceptable to good cookie quality.
- WC has an average cookie diameter of 9.8 cm with a spread ratio of 14.0 and a top grain score of 6.5, all of which are better than in 2023. These values are indicative of good cookie quality.

Steamed Bread

- SW steamed bread specific volume weighted averages are 2.40 cc/g or greater in all production zones with hardness values ranging from 1608 g to 1964 g. Control steamed breads have a volume of 2.57 cc/g with a hardness of 1954 g.
- WC steamed bread specific volume is 2.67 g/cc with a hardness of 1621 g.

In summary, the overall quality of the crop can be described as acceptable to good, characterized by very weak to medium gluten strength. WC and SW in the lower to mid-protein ranges show excellent potential in cakes, pastries, and other weak gluten applications while SW in the mid- to higher protein ranges show good potential in cookies, crackers, hard and soft wheat blends, and other moderate gluten strength applications.

Photo courtesy of Washington Grain

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