Technical Report - TR25-3

COLORADO STATE UNIVERSITY

Agricultural Experiment Station

College of Agricultural Sciences - Department of Soil & Crop Sciences - Extension

2025

2025 WINTER WHEAT VARIETY PERFORMANCE TRIALS

Making Better Decisions

CROPS TESTING PROGRAM

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Additional Resources

Colorado State University Crop Variety Testing Program: www.csucrops.org and on X with the handle @CSUCrops

Wheat Variety Performance Database: www.wheattrials.com

Colorado State University Wheat Breeding Program: www.agsci.colostate.edu/wheat/

Colorado State University Wheat Entomology Program: www.csuwheatentomology.com

Colorado Wheat Administrative Committee (CWAC), Colorado Association of Wheat Growers (CAWG), and Colorado Wheat Research Foundation (CWRF): www.coloradowheat.org

Overview of 2024-2025 Eastern Colorado Winter Wheat Trials

Sally Jones-Diamond

Colorado State University researchers strive to provide current, reliable, and unbiased wheat variety information to Colorado producers. Support of our research keeps public variety testing thriving in Colorado. Our work is possible due to the support and cooperation of the entire Colorado wheat industry, the Colorado Wheat Administrative Committee, the Colorado Wheat Research Foundation, seed companies that enter varieties, and farmers who donate their resources and time to host the replicated wheat variety trials.

The eastern Colorado winter wheat trials are conducted under a broad range of environmental conditions to best determine the expected performance of varieties. We have a regional uniform variety testing program, meaning the dryland varieties entered in our northeast region are tested across seven test locations in Northeast Colorado, and varieties entered in the southeast region are tested across six test locations in Southeast Colorado. All irrigated varieties are tested in three irrigated trials spread across Northeast Colorado. In the dryland trials, 52 varieties were tested, including experimental lines across the two regions of the 13 total trial locations. The three irrigated trials had 28 varieties. The variety trials included a combination of public and private varieties and experimental lines. Seed companies with entries in the variety trials included AgriPro Syngenta, CROPLAN by WinField United, Armor by WinField United, WestBred Bayer, Limagrain Cereal Seeds, and Frenchman Valley Coop. There were entries from the Colorado State University marketing organization PlainsGold, the Kansas State University marketing organization Kansas Wheat Alliance, the University of Nebraska-Lincoln marketing organization NU Horizon Genetics, and Montana State University.

All dryland and irrigated trials were planted in a randomized complete block design with three replicates. Plot sizes were approximately 150 ft^2 (except the Fort Collins irrigated trial, which was 80 ft^2). All varieties were planted at 700,000 seeds per acre for dryland trials and 2 million seeds per acre for irrigated trials. Individual location management data is listed in the 2025 Wheat Trial Management and Characteristics table in this report. Grain yield and protein were corrected to 12% moisture content. Variety trial grain weight, test weight, and grain moisture content information were obtained from a HarvestMaster H2 GrainGage™ weigh system on a Zurn 150 plot combine. Protein content was obtained using a FOSS Infratec™ NOVA grain analyzer. Data were analyzed using a spatial mixed model applied within each location, with location included as a random effect in the overall analysis in the multi-location results tables.

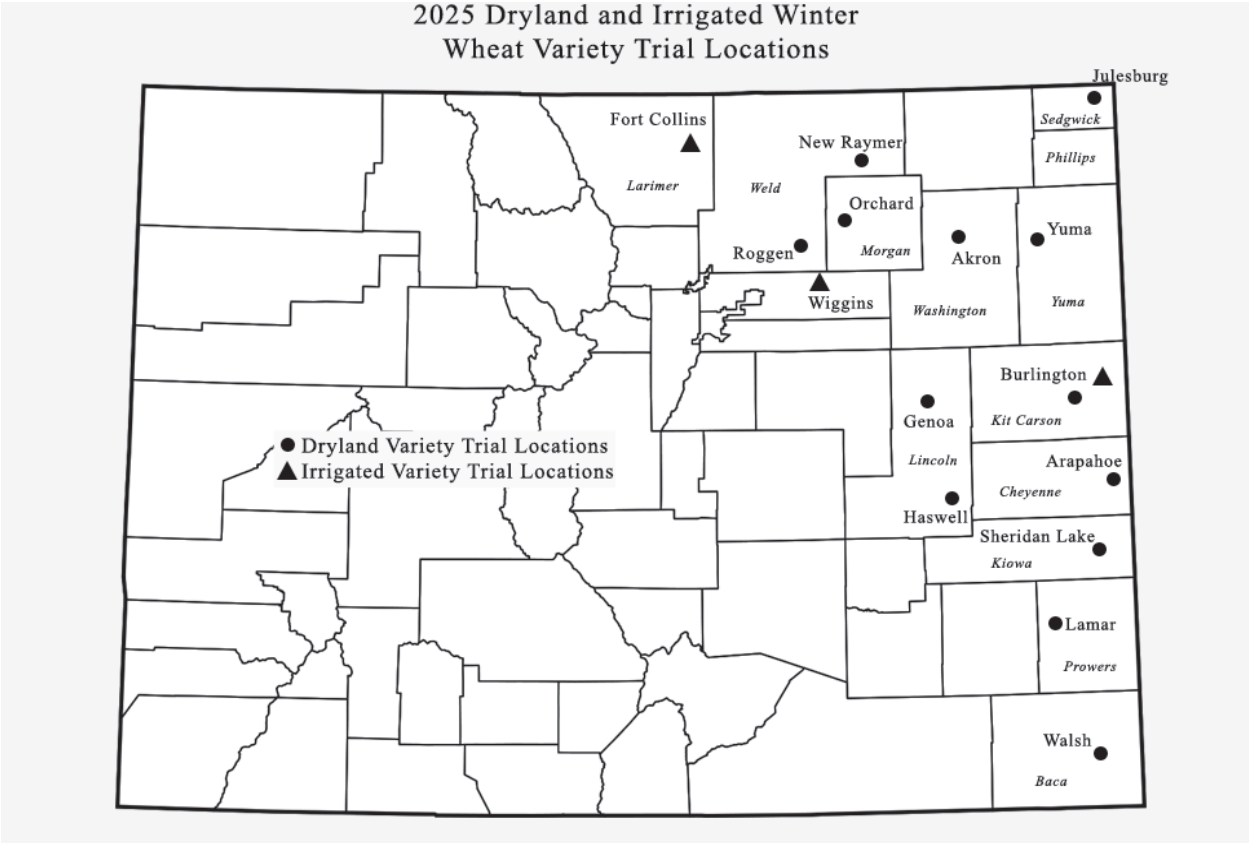
General Growing Conditions Affecting the 2025 Colorado Wheat Crop

Wheat planting conditions in the fall of 2024 were drier than average for the region. While conditions were mostly normal in Northeast Colorado, from Kit Carson County south, it was abnormally dry to severe drought conditions. Fall stand establishment in Southeast Colorado was poor to average in most areas due to dry planting conditions. The abnormally dry to drought conditions encompassed all of eastern Colorado by the first week of November. A significant snowstorm the week of November 4th brought much needed moisture to most of the region.

By early December, drought conditions had largely disappeared, except in north-central Colorado, which experienced persistent drought conditions into June. By mid-March, extreme southeast Colorado was in a moderate drought again, which persisted until mid-June. East-Central Colorado received timely and frequent rainfall throughout the spring, lasting until mid-June. Northeast Colorado experienced abnormally dry to moderate drought conditions from May to early July. Isolated hail events either destroyed or severely damaged wheat fields for several producers.

Triticum mosaic virus (TriMV), an aphid-vectored disease, was widespread across the eastern part of the state and severely affected yield in some fields with susceptible varieties. There were few co-infections of TriMV with WSMV based on field samples and rarely was WSMV the only virus in fields showing symptomology. Stripe rust disease was not an issue until June, when frequent precipitation and high humidity favored the disease along the I-70 corridor. Some growers sprayed fungicides if the crop was not yet in the grain-fill period. Brown wheat mites were observed at low levels in southeast Colorado in the early spring. Cutworms were widespread in southeast Colorado at varying levels of infestation. Wheat Stem Sawfly (WSS) is widespread across many northeastern Colorado counties and continues to spread south and east.

Harvest occurred about 2 weeks earlier than normal in Colorado this year. Wheat yields were mostly higher than expected, test weight was generally around 60 lb/bu, and protein ranged from 10-12% on average.



2025 Wheat Trial Management and Characteristics

		Dryland Locations													Irrigated Locations		
		Akron	**Arapahoe**	**Burlington**	**Genoa**	**Haswell**	**Julesburg**	**Lamar**	**New Raymer**	**Orchard**	**Roggen**	**Sheridan Lake**	**Walsh**	**Yuma**	**Burlington**	**Fort Collins**	**Wiggins**
Location	**Average Yield (bu/ac)**	44	-	63	45	-	57	75	51	28	-	66	67	83	84	94	137
	GPS Coordinates (Lat/Long)	40.1499108, -103.1371728	38.903798, -102.31431	39.2851853, -102.279391	39.380358, -103.47343	38.6386854, -103.24749	40.836209, -102.33952	38.012272, -102.62205	40.553532, -103.89849	40.5110819, -104.071168	40.06925124, -104.2814146	38.5385583, -102.469833	37.434262330, -102.31464905	40.18668, -102.65383	39.410895, -102.15287	40.65285, -104.9995	39.997682, -104.104908
	County	Washington	Cheyenne	Kit Carson	Lincoln	Lincoln	Sedgwick	Prowers	Weld	Morgan	Weld	Kiowa	Baca	Yuma	Kit Carson	Larimer	Adams
Soil	**Soil Type**	Weld silt loam	Wiley complex	Kuma-Keith silt loams	Weld silt loam	Wilid silt loam	Keith-Kuma silt loams	Manvel silt loam	Olney fine sandy loam	Briggsdale fine sandy loam	Weld loam	Wiley loam	Wiley loam	Haxtun sandy loam	Kuma-Keith silt loams	Fort Collins loam	Truckton sandy loam
	Soil Organic Matter	1.3%	1.4%	1.7%	1.9%	1.7%	1.3%	0.9%	-	0.8%	1.5%	1.0%	1.8%	1.6%	1.7%	-	0.8%
	Soil pH	6.3	7.8	7.2	6.3	7.7	5.7	8.0	-	5.1	7.4	7.6	8.2	6.9	6.6	-	7.8
	Soil Nutrients at Planting Based on Soil Test (N-P lb/ac)	132 lb N 48 lb P	38 lb N 10 lb P	84 lb N 36 lb P	152 lb N 70 lb P	50 lb N 38 lb P	240 lb N 84 lb P	122 lb N 16 lb P	-	196 lb N 220 lb P	58 lb N 16 lb P	31 lb N in top 8" 21 lb P	46 lb N 14 lb P	89 lb N 96 lb P	19 lb N 52 lb P	-	118 lb N 50 lb P
	Fertilizer applied at Planting	4.7 lb N 15.9 lb P	4.7 lb N 15.9 lb P	2.9 lb N 9.9 lb P	7.6 lb N 25.7 lb P	14 lb N 48 lb P	5.6 lb N 19 lb P	5.8 lb N 20 lb P	7.6 lb N 25.7 lb P	15 lb N 53 lb P	4.7 lb N 16 lb P	5.6 lb N 19 lb P	7.6 lb N 25.7 lb P	5.0 lb N 17 lb P	3.5 lb N 11.9 lb P	7.6 lb N 25.7 lb P	5.3 lb N 18 lb P
	Fertilizer applied In-Season (lb nutrient/acre)	None	23.8 lb N 4.4 lb S	20 lb N 3.6 lb S	55 lb N	55 lb N	20 lb N, 5 lb S, 25 lb Zn	30.1 lb N, 5.4lb S	-	Manure application pre-plant	6.2 lb N, 0.7 lb K 0.7 lb S	30 lb N 1.5 lb S	-	-	-	-	-
Management	**Tillage**	No-Till	Sweep Tillage	Tilled	No-Till	No-Till	No-Till	No-Till	No-Till	No-Till	No-Till	Sweep Tillage	No-Till	No-Till	Tilled	Tilled	Tilled
	Previous Crop	Proso Millet to Fallow	Corn to Fallow	Corn to Fallow	Grain Sorghum to Fallow	Grain Sorghum to Fallow	Corn to Fallow	Wheat to Fallow	Proso Millet to Fallow	Proso Millet to Fallow	Wheat to Fallow	Grain Sorghum to Fallow	Grain Sorghum	Millet to Fallow	Corn	Dry Beans	Black-Eyed Peas
	Planting Depth	1.5"	1.5"	1.5"	1.5"	1.25"	1"	1.5"	1.5"	1.25"	1.25"	1.5"	1"	1.25"	1.25"	1"	1.25"
	Planter Type	Disc drill	Disc drill	Disc drill with shanks down	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill	Disc drill
	Planting Date	9/26/2024	9/24/2024	10/4/2024	9/23/2024	9/23/2024	9/25/2024	9/24/2024	9/20/2024	9/27/2024	9/27/2024	9/24/2024	9/27/2024	9/25/2024	10/11/2024	9/25/2024	10/8/2024
	Harvest Date	7/2/2025	N/A	7/9/2025	7/20/2025	N/A	7/15/2025	6/26/2025	7/14/2025	7/18/2025	N/A	6/26/2025	6/26/2025	7/3/2025	7/11/2025	7/21/2025	7/21/2025
Environment	**Biotic Stress**	Yellowing disease and wheat stem sawfly	N/A	Triticum and wheat streak mosaic virus	Wheat stem sawfly	N/A	None	None	Wheat stem sawfly	Wheat stem sawfly	Wheat stem sawfly	Brown wheat mite	Yellowing disease and cutworm	Wheat stem sawfly	Wheat stem sawfly	None	Wheat stem sawfly
	Abiotic Stress	Freeze and hail	Drought	None	Drought	Drought	Drought during emergence	None	Drought during emergence	Drought during emergence and late season hail	Hail	Drought during emergence	None	None	None	None	None
	Total Rainfall: January 1 to Harvest	7.91"	N/A	9.48"	10.17"	N/A	11.81"	7.23"	10.05"	10.21"	N/A	8.25"	6.52"	9.89"	9.4"	7.89"	10.36"
	Growing Degree-Days (Jan 1 - Harvest, 32°F base)	3,163	N/A	3,613	3,851	N/A	3,736	3,555	3,752	3,707	N/A	3,481	3,561	3,263	3,955	3,987	4,125
	General Comments	Planted into moisture. Fall emergence and stands were excellent, good moisture through fall and winter. Good growth in the spring. Heavy yellowing disease pressure in the spring caused significant yield losses in varieties without tolerance. Minor freeze damage from late April frost and ~10% yield loss from hail in June.	Lost to poor emergence and drought.	Fall emergence and stands were excellent. Good growth in the spring, but in April Triticum mosaic virus symptoms were apparent and pressure was heavy.	Fall emergence and stands were average with some areas of poor emergence. Spring emergence helped with final stand. Wheat stem sawfly pressure was light to moderate.	Lost to drought.	Fall emergence and stands were poor. Spring emerged plants helped trial get to final stand of ~75%. Well-timed moisture in the spring and early summer allowed for increased plant tillering and good yield.	Planted into mixed moisture. Fall emergence and stands were excellent, good moisture through fall and winter. Good growth in the spring, trial area was grazed in late winter by cattle. Timely rainfall received in spring with 2" accumulated from a storm in early May.	Fall emergence and stands were average with some spots of poor emergence. Well-timed moisture in the spring and early summer allowed for plant tillering. Wheat stem sawfly pressure was moderate.	Fall emergence and stands were below-average with areas of poor emergence. Spring emergence helped final stand. Wheat stem sawfly pressure was moderate. Moderate damage from late season hail.	Lost to late season hail.	Planted into mixed moisture. Fall emergence was below-average and stands were spotty. Good growth in the spring and some spring emergence noted. Low level of brown wheat mites noted in April. Timely rainfall received in spring.	Fall emergence and stands were excellent, good moisutre through most of fall and winter. Good growth in the spring, moderate cutworm pressure in April which was sprayed. Heavy yellowing disease pressure noted in May/June.	Planted into mixed moisture. Fall emergence and stands were below average. Good moisture through most of fall and winter. Good growth in the spring and some spring emergence noted. Well-timed moisture in the spring. Wheat stem sawfly were present but did not lodge plots.	Field had water applied immediately after planting. Good fall emergence and very late to green-up in the spring due to later planting date. Wheat stem sawfly present at low levels.	Good fall emergence. Trial irrigated as needed starting in late May due to irrigation equipment breakdowns.	Water applied immediately after planting. Excellent fall emergence and stands. Plant growth regulator applied in late spring. Wheat stem sawfly present at moderate levels but lodging was due to high yield environment.

Dashes denote missing information, N/A means not applicable

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Summary of 2025 Dryland Winter Wheat Variety Performance Results

Brand/Source	Market Class	Variety[a]	2025 Multi-Location Average Yield[b]	Yield	Test Weight	Protein[c]	Heading[d]	Wheat Stem Sawfly	2025 Individual Trial Yield[b] Akron	Burlington	Genoa	Lamar	Julesburg	New Raymer	Orchard	Sheridan Lake	Walsh	Yuma
			bu/ac	percent of average	lb/bu	percent	days from	rating (1-9)[c]	bu/ac									
PlainsGold	HRW	Whistler	**67.2**	114%	58.0	12.8	1	4	**57**	72	47	79	**65**	56	36	**76**	**80**	92
PlainsGold	**HWW**	Breck	64.0	109%	**60.0**	13.7	-1	4	48	71	**51**	**83**	60	58	33	68	**77**	88
PlainsGold	HRW	Avery	62.6	107%	58.3	12.6	0	4	49	73	46	77	54	**62**	29	72	73	88
PlainsGold	HRW	Byrd	61.1	104%	57.9	12.8	-1	3	50	68	47	76	60	**60**	23	63	73	88
PlainsGold	HRW	Langin	60.8	104%	57.6	12.7	-2	3	47	66	42	**85**	61	56	18	67	71	91
AgriPro	HRW	AP Sunbird	60.6	103%	58.7	13.1	0	4	48	70	50	80	56	51	24	68	65	88
PlainsGold	**HWW**	Monarch	60.4	103%	57.9	12.5	1	3	47	67	41	78	60	53	25	66	68	90
PlainsGold	HRW	Crescent AX	60.3	103%	58.0	12.8	-1	4	48	72	48	75	57	54	24	62	68	91
PlainsGold	**HWW**	Telluride	60.1	102%	58.0	12.9	0	4	42	73	44	76	54	53	20	67	**77**	90
Armor	HRW	AR Iron Eagle 22AX	60.1	102%	59.2	12.8	0	3	48	65	48	74	59	54	23	68	65	88
Kansas Wheat Alliance	HRW	KS Territory	59.3	101%	58.0	13.3	0	4	53	66	47	71	59	40	23	68	70	82
PlainsGold	**HWW**	Windom SF	59.0	100%	59.0	13.5	-1	1	42	53	51	75	56	52	38	67	61	82
PlainsGold	HRW	Canvas	58.8	100%	59.0	13.0	0	4	46	65	43	72	57	54	29	66	68	84
PlainsGold	**HWW**	Snowmass 2.0	58.7	100%	57.7	13.0	-1	4	47	66	42	76	55	48	22	68	65	90
PlainsGold	HRW	Byrd CL Plus	58.6	100%	58.1	13.0	1	4	46	64	47	68	62	51	24	63	64	88
PlainsGold	HRW	Sheridan	58.6	100%	57.7	13.0	1	4	41	61	44	72	62	49	25	68	68	83
CROPLAN	HRW	CP7017AX	58.3	99%	59.2	13.1	0	3	49	66	46	75	52	55	23	66	67	86
PlainsGold	HRW	Kivari AX	57.6	98%	56.7	12.5	0	4	37	57	43	79	54	55	36	68	60	86
Kansas Wheat Alliance	HRW	KS Bill Snyder	57.3	98%	58.0	13.3	0	3	42	65	47	68	61	48	20	61	69	83
PlainsGold	HRW	Guardian	56.8	97%	58.7	13.6	0	4	50	59	38	75	53	51	24	65	69	84
PlainsGold	HRW	Amplify SF	55.5	95%	58.1	13.3	0	2	39	51	**51**	65	57	51	33	62	62	81
PlainsGold	HRW	Fortify SF	55.4	94%	57.6	13.3	-1	2	43	64	43	66	55	49	26	61	58	81
Croplan	HRW	CP7869	53.3	91%	57.5	13.4	-2	4	35	47	45	71	53	47	31	63	57	79
Armor	HRW	AR Turret 25	52.8	90%	57.4	13.6	-1	4	35	51	43	70	52	47	23	63	62	79
Croplan	HRW	CP7909	48.5	83%	56.7	13.7	-1	3	25	43	44	74	52	47	19	65	46	72
Experimentals																		
Colorado State University exp.	HRW	CO19410R	63.6	108%	59.2	12.9	0	4	51	**77**	46	83	55	53	27	68	74	88
Colorado State University exp.	HRW	CO22SF047RA	63.6	108%	58.5	12.6	-1	1	49	66	**52**	81	**66**	**63**	32	68	73	88
Colorado State University exp.	HRW	CO20D036R	63.1	107%	58.0	12.8	-3	3	50	70	**55**	81	61	56	21	68	69	92
Colorado State University exp.	HRW	CO20022RC	61.8	105%	**59.4**	12.8	1	5	49	72	45	71	62	55	30	68	72	85
Colorado State University exp.	HRW	CO19D087R	61.4	105%	57.0	12.8	-2	3	46	64	47	**86**	59	58	18	68	69	**95**
Colorado State University exp.	HRW	CO21D1790R	61.3	104%	58.6	12.5	-1	3	44	65	49	82	**68**	49	19	69	69	88
Colorado State University exp.	HRW	CO200037R	61.3	104%	59.0	13.2	1	4	52	71	40	73	**65**	52	28	67	73	80
Colorado State University exp.	HRW	CO22SF003R	60.2	103%	57.3	13.0	0	2	45	57	42	**85**	57	50	**43**	66	61	86
Colorado State University exp.	HRW	CO20D108R	60.0	102%	57.3	12.6	1	4	46	69	35	78	54	**60**	26	67	73	90
Colorado State University exp.	HRW	CO20SFD020R	59.3	101%	58.7	12.9	0	2	46	65	47	69	58	53	26	67	70	88
Colorado State University exp.	HRW	CO21SF226R	59.0	100%	**59.4**	13.1	1	1	44	58	48	69	**64**	52	32	67	63	82
Colorado State University exp.	HRW	CO21SFD0950R	58.7	100%	55.5	12.9	3	1	48	55	41	80	52	44	**42**	66	65	80
Colorado State University exp.	HRW	CO21SF191RA	56.2	96%	55.8	14.1	3	3	43	51	40	72	57	43	37	64	64	78
Colorado State University exp.	HRW	CO18042RA	54.6	93%	56.9	13.2	0	3	39	57	41	79	53	44	22	57	58	85
Colorado State University exp.	HRW	CO20SFD019R	54.4	93%	57.3	13.3	-2	2	40	60	51	70	55	48	14	57	62	83
Colorado State University exp.	HRW	CO21SF263RA	51.1	87%	54.8	14.3	4	3	38	47	40	66	47	48	34	58	56	73
Colorado State University exp.	HRW	CO22SF039M	50.7	86%	57.6	14.6	3	1	37	52	35	59	50	51	**41**	58	57	73
		Average	**58.7**	**100%**	**57.9**	**13.1**	**0**	**3**	**45**	**63**	**45**	**75**	**58**	**52**	**27**	**66**	**67**	**85**
		[f]LSD (0.30)	2.4		0.6				2	3	4	3	4	4	3	2	4	3
		[f]LSD (0.05)	4.5		1.1				4	5	7	5	8	8	6	4	7	5
		Coeffecient of Variation (CV)	10.3		1.4				6	5	9	3	8	7	11	3	4	4

[a]Varieties grouped according to released varieties or experimentals, and then ranked from highest to lowest yield across nine Colorado trials in 2025.

[b]Yield adjusted to 12% moisture content. Variety yield and test weight values in the top least significant difference (LSD) yield group are in bold. Multi-location yield and test weight values for each variety are least squares means across the nine sites and not arithmetic averages.

[c]Protein adjusted to 12% moisture content and averaged across nine trials in 2025.

[d]Varieties with positive values headed later than the trial averages and varieties with negative values headed earlier than average. Based on two trials.

[e]Wheat Stem Sawfly cutting score: 1 equals no cutting and 9 is severe cutting. Scores are based on four trials.

[f]Farmers selecting a variety based on yield should use the LSD (.30) to protect themselves from false negative conclusions (concluding varieties are the same when they are actually different). Companies or researchers may use the LSD (.05) to avoid false positive conclusions (concluding varieties are different when they are actually the same).

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Summary of 2025 Dryland Winter Wheat Variety Performance Results - Northeast Region

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			2025 Multi-Location Average						2025 Individual Trial Yield[b]					
Brand/Source	Market Class	Variety[a]	Yield[b]	Yield	Test Weight	Protein[c]	Heading[d]	Wheat Stem Sawfly	Akron	Genoa	Julesburg	New Raymer	Orchard	Yuma
			bu/ac	percent of average	lb/bu	percent	days from average	rating (1-9)[e]	bu/ac					
PlainsGold	HRW	Whistler	**59.0**	115%	57.5	12.8	1	4	**57**	47	**65**	56	36	92
PlainsGold	**HWW**	Breck	**56.3**	110%	**59.5**	13.6	-1	4	48	**51**	60	58	33	88
PlainsGold	HRW	Avery	54.9	107%	57.9	12.9	0	4	49	46	54	**62**	29	88
PlainsGold	HRW	Byrd	54.6	106%	57.0	13.1	-1	3	50	47	60	**60**	23	88
PlainsGold	**HWW**	Windom SF	54.5	106%	58.5	13.8	-1	1	42	51	56	52	38	82
PlainsGold	HRW	Crescent AX	53.9	105%	57.2	13.0	-1	4	48	48	57	54	24	91
Armor	HRW	AR Iron Eagle 22AX	53.7	105%	58.2	13.1	0	3	48	48	59	54	23	88
PlainsGold	HRW	Byrd CL Plus	53.4	104%	57.8	13.5	1	4	46	47	62	51	24	88
AgriPro	HRW	AP Sunbird	53.3	104%	58.1	13.7	0	4	48	50	56	51	24	88
PlainsGold	**HWW**	Monarch	53.2	104%	57.1	12.8	1	3	47	41	60	53	25	90
PlainsGold	HRW	Langin	52.9	103%	57.0	13.2	-2	3	47	42	61	56	18	91
AgriPro	HRW	AP Solid	52.7	103%	57.6	13.6	3	1	49	46	58	47	37	78
AgriPro	HRW	AP Bigfoot	52.7	103%	57.1	13.9	0	5	49	43	**64**	54	26	80
CROPLAN	HRW	CP7017AX	52.1	102%	58.2	13.5	0	3	49	46	52	55	23	86
PlainsGold	HRW	Canvas	52.1	102%	**58.7**	13.4	0	4	46	43	57	54	29	84
PlainsGold	HRW	Amplify SF	52.1	102%	58.0	13.6	0	2	39	**51**	57	51	33	81
PlainsGold	HRW	Kivari AX	51.4	100%	56.7	12.4	0	4	37	43	54	55	36	86
Kansas Wheat Alliance	HRW	KS Territory	51.1	100%	56.9	14.0	0	4	53	47	59	40	23	82
PlainsGold	**HWW**	Telluride	51.0	99%	57.1	13.0	0	4	42	44	54	53	20	90
PlainsGold	HRW	Sheridan	50.9	99%	57.0	13.1	1	4	41	44	62	49	25	83
PlainsGold	**HWW**	Snowmass 2.0	50.9	99%	57.4	13.4	-1	4	47	42	55	48	22	90
PlainsGold	HRW	Guardian	50.4	98%	58.3	14.0	0	4	50	38	53	51	24	84
PlainsGold	HRW	Fortify SF	50.2	98%	57.1	13.5	-1	2	43	43	55	49	26	81
Kansas Wheat Alliance	HRW	KS Homesteader CL+	50.1	98%	58.5	14.4	0	4	53	43	56	43	30	75
Kansas Wheat Alliance	HRW	KS Bill Snyder	49.8	97%	57.3	13.8	0	3	42	47	61	48	20	83
Frenchman Valley Coop	**HWW**	Valley	49.6	97%	56.2	13.5	0	4	42	40	48	**58**	29	81
Croplan	HRW	CP7869	48.8	95%	57.1	13.7	-2	4	35	45	53	47	31	79
WestBred	HRW	WB4444	47.8	93%	55.8	14.6	1	1	39	46	52	42	35	71
Armor	HRW	AR Turret 25	46.1	90%	56.9	13.9	-1	4	35	43	52	47	23	79
NU Horizon Genetics	HRW	NHH19668	45.8	89%	56.9	13.9	-1	5	38	42	49	45	19	82
WestBred	HRW	WB4733CLP	44.7	87%	55.6	14.8	2	1	38	39	50	35	37	67
Croplan	HRW	CP7909	43.4	85%	55.7	14.0	-1	3	25	44	52	47	19	72
Montana State University	HRW	MT WarCat	37.3	73%	54.0	15.1	7	2	22	31	47	30	26	64
Experimentals														
Colorado State University exp.	HRW	CO22SF047RA	**58.6**	114%	57.7	13.0	-1	1	49	**52**	**66**	**63**	32	88
Colorado State University exp.	HRW	CO20D036R	**56.0**	109%	57.2	13.2	-3	3	50	**55**	61	56	21	92
Colorado State University exp.	HRW	CO19D087R	54.4	106%	56.3	13.1	-2	3	46	47	59	58	18	**95**
Colorado State University exp.	HRW	CO21SF226R	54.1	105%	**59.2**	13.6	1	1	44	48	**64**	52	32	82
Colorado State University exp.	HRW	CO19410R	54.0	105%	**58.6**	13.3	0	4	51	46	55	53	27	88
Colorado State University exp.	HRW	CO20022RC	53.9	105%	**59.0**	13.1	1	5	49	45	62	55	30	85
Colorado State University exp.	HRW	CO22SF003R	53.9	105%	56.7	13.3	0	2	45	42	57	50	**43**	86
Colorado State University exp.	HRW	CO20SFD020R	53.8	105%	58.3	13.2	0	2	46	47	58	53	26	88
Colorado State University exp.	HRW	CO200037R	52.9	103%	57.9	13.6	1	4	52	40	**65**	52	28	80
Colorado State University exp.	HRW	CO21D1790R	52.9	103%	58.4	12.8	-1	3	44	49	**68**	49	19	88
Colorado State University exp.	HRW	CO20D108R	51.7	101%	56.4	13.3	1	4	46	35	54	**60**	26	90
Colorado State University exp.	HRW	CO21SFD0950R	51.4	100%	55.4	13.3	3	1	48	41	52	44	**42**	80
Colorado State University exp.	**HWW**	CO22SF008WC	51.4	100%	55.9	13.4	2	3	44	44	59	53	29	81
Colorado State University exp.	HRW	CO21SF191RA	50.1	98%	55.8	14.4	3	3	43	40	57	43	37	78
Colorado State University exp.	HRW	CO20SFD019R	49.1	96%	56.5	13.5	-2	2	40	51	55	48	14	83
Colorado State University exp.	HRW	CO22SF039M	47.6	93%	57.4	15.2	3	1	37	35	50	51	**41**	73
Colorado State University exp.	HRW	CO18042RA	47.6	93%	56.0	13.7	0	3	39	41	53	44	22	85
Colorado State University exp.	HRW	CO21SF263RA	46.4	91%	54.9	14.7	4	3	38	40	47	48	34	73
Colorado State University exp.	HRW	CO22SFD101R	45.2	88%	56.8	13.8	3	2	36	40	46	40	27	76
		Average	**51.3**	**100%**	**57.2**	**13.6**	**0**	**3**	**44**	**45**	**57**	**51**	**28**	**83**
		[f]LSD (0.30)	3.0		0.8									
		[f]LSD (0.05)	5.8		1.6									
		Coeffecient of Variation (CV)	15.1		1.9									

[a]Varieties grouped according to released varieties or experimentals, and then ranked from highest to lowest yield across six northeast Colorado region trials in 2025.

[b]Yield adjusted to 12% moisture content. Variety yield and test weight values in the top least significant difference (LSD) yield group are in bold. Multi-location yield and test weight values for each variety are least squares means across the six sites and not arithmetic averages.

[c]Protein adjusted to 12% moisture content and averaged across six trials in 2025.

[d]Varieties with positive values headed later than the trial averages and varieties with negative values headed earlier than average. Based on two trials.

[e]Wheat Stem Sawfly cutting score: 1 equals no cutting and 9 is severe cutting. Scores are based on four trials.

[f]Farmers selecting a variety based on yield should use the LSD (.30) to protect themselves from false negative conclusions (concluding varieties are the same when they are actually different). Companies or researchers may use the LSD (.05) to avoid false positive conclusions (concluding varieties are different when they are actually the same).

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Summary of 2025 Dryland Winter Wheat Variety Performance Results - Southeast Region

Brand/Source	Market Class	Variety[a]	2025 Multi-Location Average Yield[b]	Yield	Test Weight[b]	Protein[c]	2025 Individual Trial Yield[b] Burlington	Lamar	Sheridan Lake	Walsh
			bu/ac	percent of average	lb/bu	percent	bu/ac			
PlainsGold	HRW	Whistler	**76.9**	114%	59.0	12.8	71.6	78.9	**75.8**	**79.6**
PlainsGold	**HWW**	Breck	**74.3**	110%	**60.5**	13.9	70.8	**83.1**	68.4	**76.8**
PlainsGold	HRW	Avery	**73.9**	110%	58.8	12.2	72.9	76.7	72.0	73.5
PlainsGold	**HWW**	Telluride	73.1	109%	59.4	12.7	72.6	76.1	66.7	**76.9**
PlainsGold	HRW	Langin	72.1	107%	58.3	12.1	65.8	**84.6**	66.7	71.1
AgriPro	HRW	AP Sunbird	70.3	104%	**59.9**	12.4	69.7	79.6	67.8	65.5
PlainsGold	HRW	Byrd	70.2	104%	58.9	12.5	67.6	75.9	63.5	72.6
PlainsGold	**HWW**	Monarch	70.1	104%	59.1	12.2	67.4	77.8	66.3	68.4
PlainsGold	**HWW**	Snowmass 2.0	69.0	102%	58.4	12.6	65.7	76.2	68.2	64.9
PlainsGold	HRW	Crescent AX	68.8	102%	59.0	12.6	72.0	74.9	61.5	68.2
Armor	HRW	AR Iron Eagle 22AX	68.4	102%	**60.3**	12.3	65.3	73.6	68.3	65.0
Kansas Wheat Alliance	HRW	KS Territory	68.2	101%	59.2	12.4	65.8	71.4	67.9	69.6
Croplan	HRW	CP7017AX	67.8	101%	**60.4**	12.5	66.2	74.6	65.5	67.4
PlainsGold	HRW	Canvas	67.7	101%	59.5	12.5	65.4	72.1	65.6	68.5
PlainsGold	HRW	Sheridan	67.6	100%	58.8	12.8	60.9	72.5	68.3	68.5
PlainsGold	HRW	Guardian	67.0	100%	59.4	13.1	59.0	75.1	65.5	69.2
PlainsGold	HRW	Kivari AX	66.2	98%	57.2	12.5	56.9	79.1	68.2	59.6
Kansas Wheat Alliance	HRW	KS Bill Snyder	65.7	98%	59.0	12.5	65.4	67.6	61.4	68.7
PlainsGold	HRW	Byrd CL Plus	65.0	97%	58.7	12.4	63.7	67.7	62.7	63.6
PlainsGold	**HWW**	Windom SF	64.1	95%	**59.9**	13.0	53.1	75.5	66.6	60.6
PlainsGold	HRW	Fortify SF	62.6	93%	58.4	13.0	64.0	66.0	60.8	58.1
Armor	HRW	AR Turret 25	61.5	91%	58.0	13.1	51.0	69.7	63.2	62.2
PlainsGold	HRW	Amplify SF	59.8	89%	58.7	12.8	51.0	64.5	61.8	61.6
Croplan	HRW	CP7869	59.3	88%	57.9	13.0	47.1	70.9	62.6	57.3
Croplan	HRW	CP7909	57.0	85%	57.7	13.2	43.0	73.6	64.9	46.4
Experimentals										
Colorado State University exp.	HRW	CO19410R	**75.8**	113%	**60.0**	12.4	**77.3**	82.8	67.5	74.2
Colorado State University exp.	HRW	CO20D108R	72.3	107%	58.7	11.7	69.4	77.6	67.1	73.3
Colorado State University exp.	HRW	CO20D036R	71.9	107%	58.8	12.3	69.7	80.6	68.0	69.0
Colorado State University exp.	HRW	CO22SF047RA	71.7	106%	59.6	12.0	65.7	81.2	67.6	73.2
Colorado State University exp.	HRW	CO19D087R	71.3	106%	57.9	12.4	63.9	**85.6**	68.0	69.5
Colorado State University exp.	HRW	CO21D1790R	71.0	105%	58.9	12.0	64.6	81.9	69.1	69.0
Colorado State University exp.	HRW	CO20022RC	70.7	105%	**60.2**	12.5	72.0	70.5	67.9	71.7
Colorado State University exp.	HRW	CO200037R	70.5	105%	**60.5**	12.6	71.1	72.5	67.3	73.4
Colorado State University exp.	HRW	CO20SFD020R	67.2	100%	59.2	12.4	65.0	68.5	66.9	70.2
Colorado State University exp.	HRW	CO22SF003R	67.1	100%	58.4	12.6	56.8	**84.6**	65.8	60.6
Colorado State University exp.	HRW	CO21SFD0950R	66.4	99%	56.4	12.4	55.3	79.9	66.1	65.4
Colorado State University exp.	HRW	CO21SF226R	64.8	96%	59.7	12.6	58.5	69.3	67.4	63.3
Colorado State University exp.	HRW	CO21SF191RA	62.7	93%	56.4	13.7	51.1	71.6	63.9	64.0
Colorado State University exp.	HRW	CO18042RA	62.3	93%	58.1	12.6	56.8	79.1	57.1	58.3
Colorado State University exp.	HRW	CO20SFD019R	62.1	92%	58.7	12.9	59.9	70.0	57.1	61.9
Colorado State University exp.	HRW	CO21SF263RA	56.7	84%	55.2	13.7	47.0	65.6	58.1	56.1
Colorado State University exp.	HRW	CO22SF039M	56.2	83%	58.5	13.7	51.5	58.6	57.8	56.8
		Average	***67.3***	***100%***	***58.8***	***12.7***	**62.5**	**74.5**	**65.5**	**66.5**
		[d]LSD (0.30)	3.4		0.6		2.7	2.5	2.3	3.5
		[d]LSD (0.05)	6.4		1.2		5.1	4.7	4.3	6.6
		Coeffecient of Variation (CV)	5.0		1.6		4.6	2.8	3.4	4.2

[a]Varieties grouped according to released varieties or experimentals, and then ranked from highest to lowest yield across four southeast Colorado trials in 2025.

[b]Yield adjusted to 12% moisture content. Variety yield and test weight values in the top least significant difference (LSD) yield group are in bold. Multi-location yield and test weight values for each variety are least squares means across the four sites and not arithmetic averages.

[c]Protein adjusted to 12% moisture content and averaged across four trials in 2025.

[d]Farmers selecting a variety based on yield should use the LSD (.30) to protect themselves from false negative conclusions (concluding varieties are the same when they are actually different). Companies or researchers may use the LSD (.05) to avoid false positive conclusions (concluding varieties are different when they are actually the same).

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Summary of 2-Year (2024-2025) Dryland Winter Wheat Variety Performance Results

Brand/Source	Market Class[b]	Variety[c]	2-Year Average[a] Yield	Yield	Test Weight	Test Weight	Protein	Protein
			bu/ac	% trial average	lb/bu	% trial average	percent	% trial average
PlainsGold	HRW	Whistler	63.6	111%	58.3	100%	12.3	99%
PlainsGold	**HWW**	Breck	61.1	106%	59.8	102%	12.7	102%
Colorado State University exp.	HRW	CO19410R	60.8	106%	59.5	102%	12.4	100%
PlainsGold	HRW	Avery	60.7	106%	58.4	100%	11.9	96%
Colorado State University exp.	HRW	CO19D087R	60.2	105%	57.4	98%	11.9	96%
PlainsGold	**HWW**	Telluride	59.3	103%	58.5	100%	12.1	98%
PlainsGold	HRW	Byrd	59.2	103%	58.3	100%	12.2	99%
AgriPro	HRW	AP Sunbird	59.2	103%	59.4	102%	12.3	99%
PlainsGold	**HWW**	Monarch	59.2	103%	58.6	100%	11.9	96%
PlainsGold	HRW	Langin	58.7	102%	57.9	99%	12.0	97%
PlainsGold	HRW	Crescent AX	58.6	102%	58.3	100%	12.1	98%
Colorado State University exp.	HRW	CO20022RC	58.5	102%	59.4	102%	12.3	99%
Colorado State University exp.	HRW	CO20D108R	58.4	102%	58.2	100%	12.0	97%
CROPLAN	HRW	CP7017AX	58.2	101%	59.3	102%	12.4	100%
Colorado State University exp.	HRW	CO20SFD020R	57.8	101%	59.3	101%	12.1	98%
PlainsGold	HRW	Canvas	57.7	101%	59.1	101%	12.5	101%
PlainsGold	HRW	Kivari AX	57.7	101%	57.3	98%	11.9	96%
PlainsGold	HRW	Sheridan	57.6	100%	58.5	100%	12.5	101%
Colorado State University exp.	HRW	CO200037R	57.2	100%	59.2	101%	12.7	102%
PlainsGold	**HWW**	Snowmass 2.0	57.1	99%	58.4	100%	12.2	99%
PlainsGold	HRW	Byrd CL Plus	56.0	98%	58.4	100%	12.1	98%
PlainsGold	**HWW**	Windom SF	55.6	97%	58.1	99%	12.8	103%
PlainsGold	HRW	Guardian	55.2	96%	59.3	101%	12.9	104%
Colorado State University exp.	HRW	CO18042RA	54.5	95%	57.6	99%	12.3	99%
PlainsGold	HRW	Amplify SF	54.1	94%	58.7	101%	12.7	102%
PlainsGold	HRW	Fortify SF	53.4	93%	58.2	100%	12.6	102%
Colorado State University exp.	HRW	CO20SFD019R	52.8	92%	58.2	100%	12.7	103%
Colorado State University exp.	HRW	CO21SF191RA	52.7	92%	56.6	97%	13.2	107%
Colorado State University exp.	HRW	CO21SF263RA	48.7	85%	56.0	96%	13.4	108%
		Average	**57.4**	**100%**	**58.4**	**100%**	**12.4**	**100%**

[a]The 2-year average yield, test weight, and protein are based on 16 trials (six 2024 and ten 2025 trials).

[b]Market class: HRW=hard red winter wheat; **HWW**=hard white winter wheat.

[c]Varieties ranked from highest to lowest average 2-year yield.

Summary of 3-Year (2023-2025) Dryland Winter Wheat Variety Performance Results

Brand/Source	Market Class[b]	Variety[c]	3-Year Average[a] Yield	Yield	Test Weight	Test Weight	Protein	Protein
			bu/ac	% trial average	lb/bu	% trial average	percent	% trial average
Colorado State University exp.	HRW	CO19410R	66.6	106%	58.7	101%	11.9	101%
PlainsGold	HRW	Whistler	66.4	106%	57.3	99%	11.6	98%
PlainsGold	**HWW**	Monarch	65.9	105%	58.1	100%	11.5	97%
Colorado State University exp.	HRW	CO19D087R	65.1	104%	56.8	98%	11.6	98%
PlainsGold	**HWW**	Telluride	64.5	103%	58.0	100%	11.6	98%
PlainsGold	HRW	Avery	64.3	103%	57.6	99%	11.3	96%
CROPLAN	HRW	CP7017AX	63.8	102%	58.9	102%	11.9	101%
Colorado State University exp.	HRW	CO20D108R	63.7	102%	57.7	100%	11.6	98%
PlainsGold	**HWW**	Breck	63.5	102%	59.1	102%	12.0	102%
PlainsGold	HRW	Sheridan	63.2	101%	58.3	101%	12.1	102%
PlainsGold	**HWW**	Snowmass 2.0	63.1	101%	57.8	100%	11.7	99%
PlainsGold	HRW	Byrd	63.0	101%	58.0	100%	11.6	99%
PlainsGold	HRW	Crescent AX	63.0	101%	58.2	101%	11.7	99%
PlainsGold	HRW	Kivari AX	61.9	99%	56.5	98%	11.4	97%
PlainsGold	HRW	Canvas	61.7	99%	58.2	100%	12.1	102%
PlainsGold	HRW	Langin	61.7	99%	57.2	99%	11.7	99%
Colorado State University exp.	HRW	CO200037R	61.1	98%	58.2	101%	12.1	103%
PlainsGold	HRW	Byrd CL Plus	60.7	97%	57.7	100%	11.7	99%
PlainsGold	HRW	Amplify SF	59.9	96%	58.1	100%	12.3	104%
PlainsGold	HRW	Guardian	59.9	96%	58.8	102%	12.3	104%
Colorado State University exp.	HRW	CO18042RA	59.8	96%	57.3	99%	11.7	99%
PlainsGold	**HWW**	Windom SF	59.1	94%	57.5	99%	12.1	103%
PlainsGold	HRW	Fortify SF	57.4	92%	57.6	99%	12.0	102%
		Average	**62.6**	**100%**	**57.9**	**100%**	**11.8**	**100%**

[a]The 3-year average yield and test weight are based on 26 trials (ten 2025, six 2024, and ten 2023 trials). Protein is based on 23 trials (ten 2025, six 2024, and seven 2023 trials).

[b]Market class: HRW=hard red winter wheat; **HWW**=hard white winter wheat.

[c]Varieties ranked from highest to lowest average 3-year yield.

2025 Collaborative On-Farm Test (COFT) Variety Performance Results

Sally Jones-Diamond, Jason Webb, Ron Meyer, Michaela Mattes, Kat Caswell, and Catie Green

The COFT program is in its 29th year. The majority of Colorado's winter wheat acreage is planted to varieties that have been tested in the program. On-farm testing leads to wider and faster adoption of improved varieties. It also brings Colorado State University wheat results to rural communities. The varieties tested in COFT this year fit different farmer needs, and producers are encouraged to study the tables in the Description of Winter Wheat Varieties in Eastern Colorado and the Dryland Decision Tree for more information.

In the fall of 2024, twenty eastern Colorado wheat producers received seed of five varieties of wheat and planted them in side-by-side strips under the same conditions as the wheat in the rest of the field. Fifteen sites produced viable harvest results. The objective of our on-farm testing program is to compare the performance of wheat varieties of interest for Colorado farmers under their field conditions and management. Each of the five varieties tested has potential advantages for farmers and should be chosen on a case-by-case basis depending on the specific farm needs.

The same five varieties were included in all tests. Amplify SF, AP Solid, Kivari AX, Sheridan, and Whistler are all hard red winter wheat varieties. Two semi-solid stemmed varieties were included in the test to help combat the wheat stem sawfly (WSS): Amplify SF and AP Solid. One CoAXium® variety was also included for grass weed control, Kivari AX. Two regular hard red varieties were included for their excellent yield potential: Sheridan and Whistler.

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Summary of 2025 Collaborative On-Farm Test (COFT) Winter Wheat Variety Performance Results

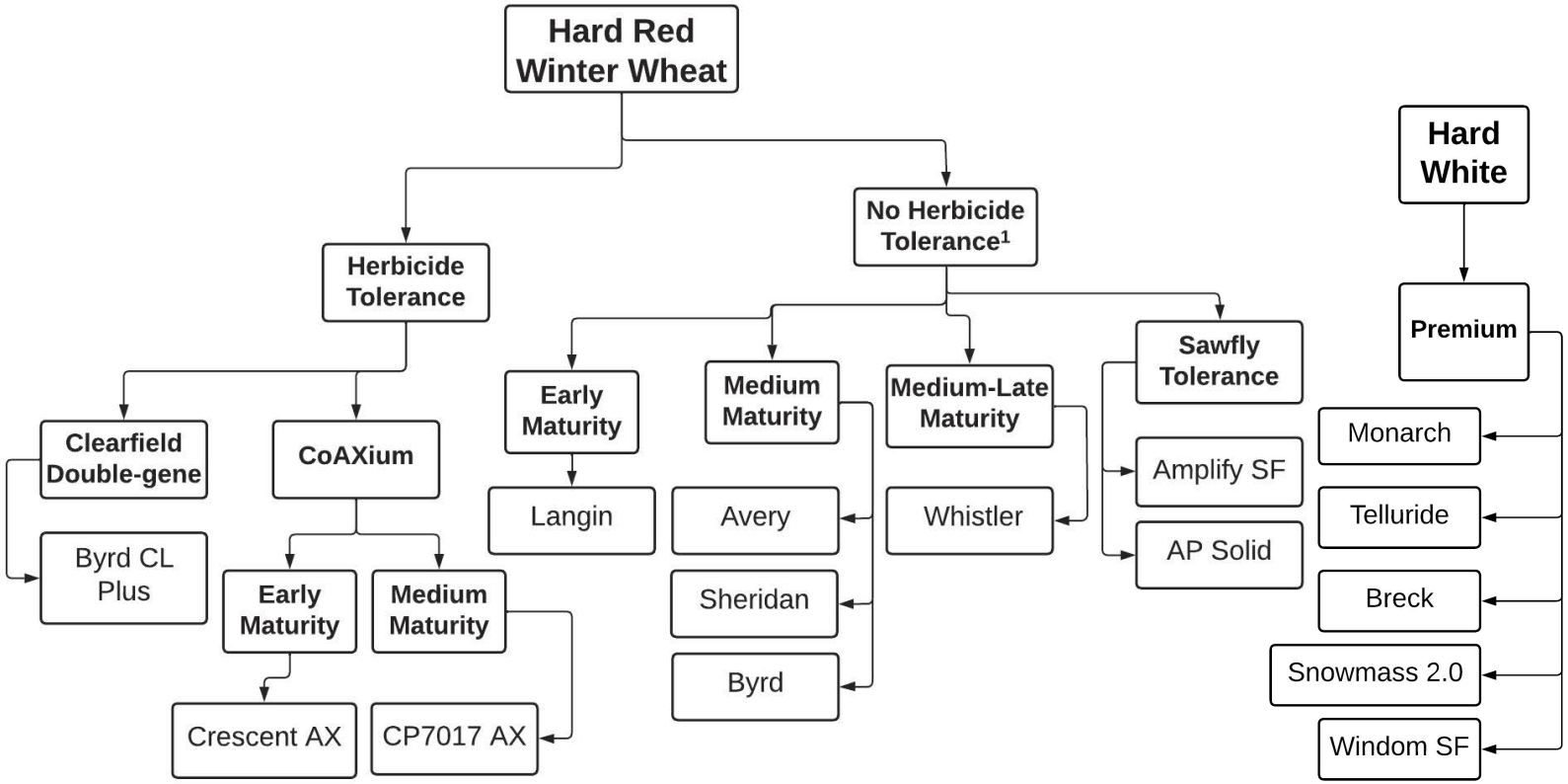
2025 Varieties (ranked left to right by highest yield)

	Whistler			Sheridan			Kivari AX			Amplify SF			AP Solid			COFT Average		
Nearest Town/County	Yield[a]	Test Weight	Protein	Yield[a]	Test Weight	Protein	Yield[a]	Test Weight	Protein	Yield[a]	Test Weight	Protein	Yield[a]	Test Weight	Protein	Yield[a]	Test Weight	Protein
	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent
Arriba/Lincoln	60	57	13	51	59	13	60	58	12	68	58	13	53	56	13	**59**	**58**	**13**
Bennett/Adams	39	61	11	37	62	11	47	61	10	48	63	10	37	61	11	**42**	**62**	**10**
Bethune/Kit Carson	43	57	13	43	60	13	41	58	12	38	59	13	40	62	13	**41**	**59**	**13**
Burlington/Kit Carson	56	59	10	61	58	11	47	56	10	48	58	12	45	58	12	**51**	**58**	**11**
Cheyenne Wells/Cheyenne	60	57	13	46	57	14	34	54	13	36	56	13	42	56	15	**44**	**56**	**14**
Eads/Kiowa	15	57	9	19	58	9	20	58	8	15	58	9	15	60	10	**17**	**58**	**9**
Julesburg/Sedgwick	72	59	11	62	59	13	70	58	11	56	59	13	60	60	12	**64**	**59**	**12**
Lamar S/Prowers	65	60	8	54	61	8	56	60	8	47	61	9	48	62	9	**54**	**61**	**9**
Lamar SW/Bent	33	57	13	19	55	15	21	56	15	22	56	15	19	55	16	**23**	**56**	**15**
Platner/Washington	37	57	16	35	57	15	27	56	15	17	56	18	26	56	17	**28**	**56**	**16**
Prospect Valley/Adams	29	57	12	29	58	11	32	59	10	28	59	11	27	60	11	**29**	**58**	**11**
Severance/Weld (Irrigated)	82	61	16	80	-	-	80	59	16	58	60	17	46	61	17	**69**	**60**	**17**
Vilas/Baca	48	60	11	43	60	13	42	60	12	37	60	13	39	60	13	**42**	**60**	**12**
Walsh/Baca	44	55	15	43	57	13	32	56	13	38	57	14	42	57	15	**40**	**56**	**14**
Yuma/Yuma	45	60	10	46	62	10	54	58	9	52	59	10	51	58	10	**50**	**60**	**10**
Average	**48.6**	**58.2**	**12.0**	**44.5**	**58.8**	**12.1**	**44.0**	**57.7**	**11.6**	**40.6**	**58.4**	**12.6**	**39.4**	**58.7**	**13.0**	**43.4**	**58.4**	**12.3**
Yield Significance[b]	A			B			B			C			C					

LSD $_{(P<0.30)}$ for yield = 2.4 bu/ac, for test weight = 0.4 lb/bu, and for protein = 0.2 percent

[a]All yield and protein data are corrected to 12% moisture.

Fall 2025 CSU Dryland Wheat Decision Tree



[1]No tolerance to herbicides used in Clearfield or CoAXium wheat production systems.
In categories with two or more varieties, they are listed from highest to lowest yield based on the 3-year CSU trial averages.

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Summary of 2025 Irrigated Winter Wheat Variety Performance Results

Brand/Source	Market Class	Variety[a]	2025 Multi-Location Average Yield[b]	Yield	Test Weight	Protein[c]	Lodging	Heading[d]	2025 Individual Trial Yield[b] Burlington	Fort Collins	Wiggins
			bu/ac	percent of average	lb/bu	percent	score (1-9)[e]	days from average	bu/ac		
PlainsGold	**HWW**	Telluride	115.6	110%	58.3	13.6	3	0	96	98	**153**
Limagrain	HRW	LCS Atomic AX	113.4	108%	59.5	14.1	3	-4	**99**	93	**149**
PlainsGold	HRW	Canvas	111.4	106%	60.3	13.6	4	0	91	97	146
Colorado State University exp.	HRW	CO20022RC	110.9	106%	60.5	13.9	7	0	93	94	146
PlainsGold	HRW	Sheridan	110.4	105%	59.2	13.4	3	1	87	102	142
PlainsGold	**HWW**	Monarch	109.4	104%	59.4	13.0	2	1	89	98	142
PlainsGold	HRW	Crescent AX	108.4	104%	59.5	14.5	7	-1	90	94	141
PlainsGold	**HWW**	Snowmass 2.0	108.1	103%	59.1	13.9	1	0	90	94	140
AgriPro	HRW	AP Sunbird	108.0	103%	59.5	14.0	4	-1	**100**	82	142
PlainsGold	HRW	Breck	107.0	102%	60.0	14.7	5	0	86	91	143
Limagrain	HRW	LCS Steel AX	105.8	101%	58.9	14.0	4	3	70	**114**	133
Armor	HRW	AR Iron Eagle 22AX	105.1	100%	59.6	13.7	6	-2	94	92	130
Colorado State University exp.	HRW	CO20SFD020R	105.0	100%	58.7	13.5	6	1	89	97	129
PlainsGold	HRW	Byrd CL Plus	104.9	100%	58.2	13.7	7	0	85	95	135
Limagrain	HRW	LCS Helix AX	104.9	100%	58.8	13.6	5	-2	94	79	142
PlainsGold	HRW	Guardian	104.8	100%	59.7	14.5	5	1	83	107	124
PlainsGold	HRW	Amplify SF	104.1	99%	59.5	13.8	5	1	77	100	136
Colorado State University exp.	**HWW**	CO22SF008WC	103.7	99%	58.1	13.7	8	0	83	96	133
PlainsGold	HRW	Kivari AX	102.7	98%	57.8	13.1	9	0	77	103	128
University of Nebraska-Lincoln (	HRW	NE18435	102.4	98%	59.5	13.7	4	-1	79	89	140
Armor	HRW	AR Turret 25	101.6	97%	58.3	13.7	6	-2	76	89	140
Limagrain	HRW	LCS Radar	101.6	97%	58.8	14.5	2	-3	88	78	139
PlainsGold	**HWW**	Windom SF	100.8	96%	59.8	13.9	9	-1	83	85	134
Limagrain	HRW	LCS Mojo	100.6	96%	58.5	13.7	1	0	75	83	143
Croplan	HRW	CP7909	97.8	93%	58.4	13.8	1	-4	65	88	140
Croplan	HRW	CP7869	97.5	93%	58.6	13.8	3	-3	74	85	134
Colorado State University exp.	HRW	CO21SF191RA	97.5	93%	56.4	14.9	4	3	63	103	127
Colorado State University exp.	HRW	CO21SF263RA	87.6	84%	55.5	15.2	7	4	61	98	103
		Average	***104.7***	***100%***	***58.9***	***13.9***	***5***	***0***	**84**	**94**	**137**

[a]Varieties ranked from highest to lowest yield across three irrigated trials in 2025.

[b]Yield adjusted to 12% moisture content. Multi-location yield and test weight values for each variety are arithmetic averages from across the three sites and could not be statistically analyzed due to the wide variation among sites.

[c]Protein adjusted to 12% moisture content and averaged across three trials in 2025.

[d]Varieties with positive values headed later than the trial averages and varieties with negative values headed earlier than average. Based on one trial.

[e]Lodging score: 1 equals no lodging and 9 is severe lodging. Scores from one trial in 2025.

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Summary of 2-Year (2024-2025) Irrigated Winter Wheat Variety Performance Results

Brand/Source	Market Class[b]	Variety[c]	2-Year Average[a] Yield	Yield	Test Weight	Test Weight	Protein	Height	Lodging
			bu/ac	% trial average	lb/bu	% trial average	percent	in	score (1-9)[d]
PlainsGold	**HWW**	Telluride	118.4	105%	59.1	99%	13.1	33	2
Colorado State University exp.	HRW	CO20022RC	117.5	104%	61.0	102%	13.3	33	3
PlainsGold	HRW	Canvas	116.8	103%	60.6	102%	13.3	31	2
PlainsGold	HRW	Sheridan	116.3	103%	60.0	101%	13.1	33	2
PlainsGold	**HWW**	Monarch	115.9	103%	59.7	100%	12.8	32	1
PlainsGold	HRW	Crescent AX	115.7	103%	59.6	100%	13.6	33	7
Colorado State University exp.	HRW	CO20SFD020R	114.7	102%	60.1	101%	12.9	31	2
PlainsGold	**HWW**	Breck	113.6	101%	60.6	102%	14.2	32	3
Limagrain	HRW	LCS Atomic AX	113.0	100%	60.0	101%	13.6	31	2
PlainsGold	**HWW**	Snowmass 2.0	112.2	99%	59.4	100%	13.4	31	1
PlainsGold	HRW	Byrd CL Plus	111.9	99%	59.1	99%	13.4	35	4
PlainsGold	HRW	Kivari AX	111.2	99%	58.1	97%	12.7	32	7
PlainsGold	HRW	Amplify SF	111.0	98%	59.9	101%	13.4	34	2
PlainsGold	**HWW**	Windom SF	110.5	98%	59.5	100%	13.4	30	3
PlainsGold	HRW	Guardian	110.3	98%	60.1	101%	14.0	33	2
Limagrain	HRW	LCS Steel AX	109.7	97%	59.1	99%	13.6	35	2
Limagrain	HRW	LCS Radar	108.2	96%	59.1	99%	14.2	31	1
Colorado State University exp.	HRW	CO21SF191RA	105.0	93%	57.0	96%	14.5	33	3
		Average	**112.9**	**100%**	**59.6**	**100%**	**13.5**	**32**	**3**

[a]The 2-year average yield, test weight, and protein are based on six trials (three 2025 and three 2024). Plant heights are based on five trials (two 2025 and three 2024). Lodging is based on four trials (one 2025 and three 2024).

[b]Market class: HRW=hard red winter wheat; **HWW**=hard white winter wheat.

[c]Varieties ranked from highest to lowest average 2-year yield.

[d]Lodging score: 1 equals no lodging and 9 is severe lodging.

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Summary of 3-Year (2023-2025) Irrigated Winter Wheat Variety Performance Results

Brand/Source	Market Class[b]	Variety[c]	3-Year Average[a] Yield	Yield	Test Weight	Test Weight	Protein	Height	Lodging
			bu/ac	% trial average	lb/bu	% trial average	percent	in	score (1-9)[d]
PlainsGold	HRW	Sheridan	113.2	105%	59.6	101%	12.8	33	2
PlainsGold	**HWW**	Monarch	112.7	104%	59.2	101%	12.4	31	1
PlainsGold	**HWW**	Telluride	112.0	103%	58.3	99%	12.8	32	2
PlainsGold	HRW	Canvas	110.5	102%	59.5	101%	13.0	31	2
PlainsGold	HRW	Crescent AX	110.2	102%	59.4	101%	13.2	33	7
PlainsGold	HRW	Amplify SF	108.5	100%	59.3	101%	13.2	34	3
PlainsGold	HRW	Byrd CL Plus	108.4	100%	58.4	99%	13.0	35	4
PlainsGold	HRW	Guardian	107.5	99%	59.5	101%	13.6	33	3
PlainsGold	**HWW**	Snowmass 2.0	107.1	99%	58.4	99%	13.1	31	2
PlainsGold	**HWW**	Breck	106.3	98%	59.5	101%	13.7	32	3
Limagrain	HRW	LCS Atomic AX	106.3	98%	59.5	101%	13.2	32	3
Limagrain	HRW	LCS Steel AX	105.6	98%	58.8	100%	13.3	33	2
PlainsGold	**HWW**	Windom SF	104.5	96%	58.4	99%	13.1	31	3
PlainsGold	HRW	Kivari AX	103.4	95%	57.3	97%	12.2	32	7
		Average	**108.3**	**100%**	**58.9**	**100%**	**13.0**	**32**	**3**

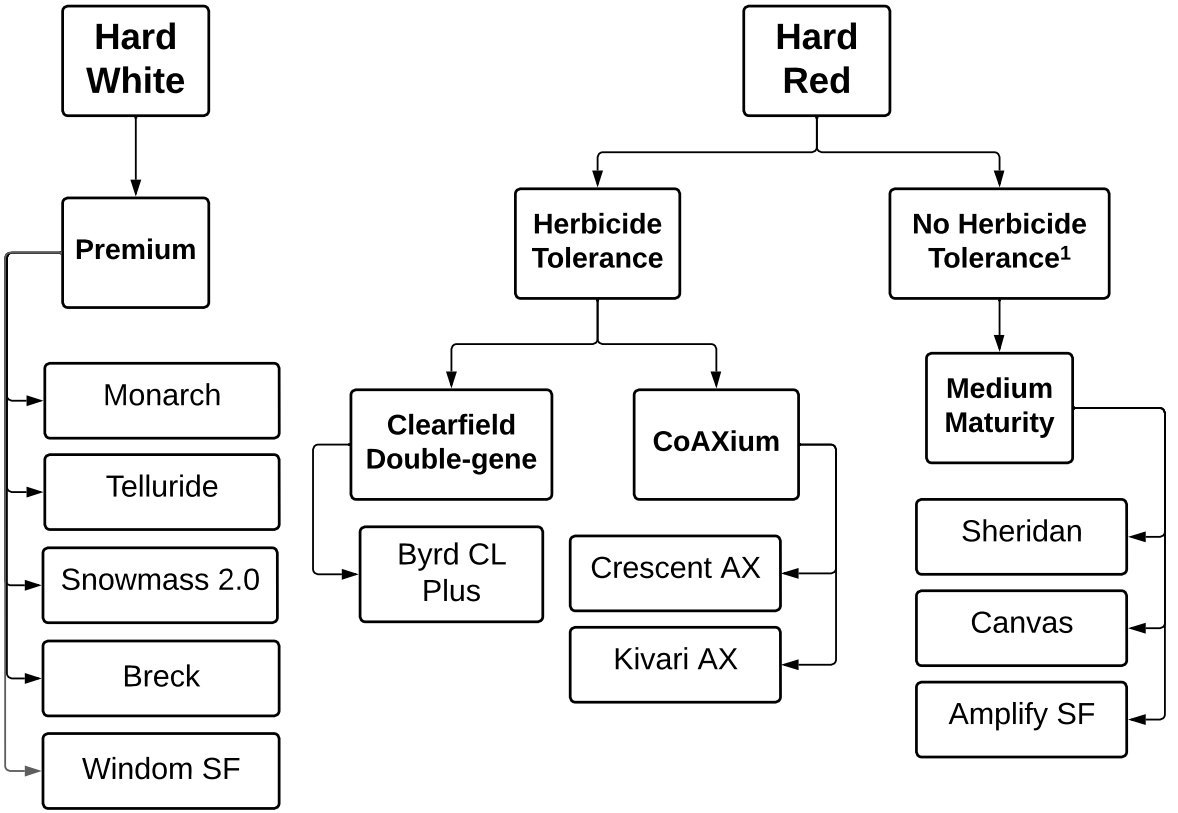
[a]The 3-year average yield and test weight are based on nine trials (three each year). Protein is based on eight trials (three 2025 and 2024, and two 2023). Plant heights and lodging are based on seven trials (two 2025, three 2024, and two 2023).

[b]Market class: HRW=hard red winter wheat; **HWW**=hard white winter wheat.

[c]Varieties ranked from highest to lowest average 3-year yield.

[d]Lodging score: 1 equals no lodging and 9 is severe lodging.

CSU Fall 2025 Irrigated Winter Wheat Decision Tree



[1]No tolerance to herbicides used in Clearfield or CoAXium wheat production systems.
In categories with two or more varieties, they are listed from highest to lowest yield based on the 3-year CSU trial averages.

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Wheat Production Management Tips

Sally Jones-Diamond and Tyler Benninghoven

These tips are designed to help farmers make better management decisions for their fields and farm as a whole. Although wheat is a commonly grown crop in our region, sometimes basic agronomic practices that can vastly improve the production of the crop are ignored or forgotten. These are also tips that can help prevent problems during the growing season when it's often too late to fix, such as with wheat viral diseases.

- **Focus on multi-year and location yield summary results when selecting a variety**. Use results from the two or three-year variety performance trials. Results across years and locations are a better predictor of how a variety will perform on your farm than looking at single year or location data. All CSU replicated wheat variety trial results can be accessed at our Crops Testing Program website at www.csucrops.org. You can also use the wheat variety database, which is an excellent resource for regional and multi-state data found at www.wheattrials.com.

- **Plant multiple varieties with different maturity and agronomic qualities to spread and reduce the risk of crop damage from environmental issues (drought, pests, etc.).** Planting a single variety across your whole farm can pose undue risk to your production as no single variety is best suited for all of your acres. Focus on a few important characteristics and find varieties that are best suited to each of them (examples could be high yielding, sawfly tolerance, virus resistance, early maturity, etc).

- **Plant in seeds per acre and not in pounds per acre.** Different varieties and seed lots can vary widely in seed size. Reassess and adjust your seeding rate as necessary when changing varieties, switching seed lots, and as planting season progresses. Plant population is very impactful to success with all crop production, and it's a factor we can control so we should aim to be accurate.

- **Control volunteer wheat and weeds to avoid loss of valuable soil moisture and to avoid creating a green bridge.** A green bridge is an area where the presence of weeds or volunteer wheat allows for unimpeded disease spread. Green bridges can lead to serious virus disease infections vectored by the wheat curl mite (wheat streak mosaic virus, High Plains wheat mosaic virus, and Triticum mosaic virus) or vectored by aphids (barley yellow dwarf virus and cereal yellow dwarf virus).

- **Plant nutrition is vital to produce healthy, high yielding, protein-rich grain.** Whether using conventional or organic sources, always aim to understand plant nutrition better each season. Never stop experimenting - incremental changes in plant available macronutrients like nitrogen, phosphorus, potassium, and sulfur are a great place to start. Nothing proves the success of a practice better than seeing the difference on your own farm.

- **Soil sample periodically to determine optimum fertilizer application rates.** Sampling should be done prior to planting. Soil samples can be sent to the CSU Soil, Water, and Plant Testing Laboratory, or the lab of your choice. Make sure the lab uses the correct testing methods for your soil. An example is using the Olsen bicarbonate test for accurate phosphorus levels in high pH soils.
- **Banded phosphate (MAP/40 rock/etc.) with or nearby the seed is recommended for optimum seedling health.** If banding phosphate has not been a common practice in your operation, consider trying 50 lb/acre of actual product on a few drill-fills next to your usual planting practice and see the difference for yourself.
- **Scout your fields throughout the season.** Noticing issues as they occur can help tremendously in avoiding bigger problems later in the season. If you don't have the time to scout all your acres, consider hiring a consultant to monitor a few fields and/or consult with your local CSU Extension agronomy agent for assistance.
- **Although tempting, do not try to spray for wheat stem sawfly.** There are no effective insecticides for WSS at this time.
- **Crop rotation is imperative to help control diseases and pests in wheat.** When considering rotational options, keep in mind that rotating to broadleaf crops is the best way to combat disease and weed problems.

Description of Winter Wheat Varieties in Eastern Colorado Dryland and Irrigated Trials (2024-2025)

Name/Class/Pedigree	Origin	HD	HT	SS	COL*	YR	LR	SR	WSMV**	YD**	WSS+	TW	PRO++	MILL	BAKE	Comments
Amplify SF Hard red winter Bearpaw/Antero//Antero	CSU 2021	6	7	4	7	6	3	2	8	6	1	3	4	3	6	CSU release (2021), marketed by PlainsGold. Medium height, medium maturity. Carries the semi-solid stem trait (17 out of 25 rating) for partial resistance to the wheat stem sawfly. Certified seed only.
AP Bigfoot Hard red winter Undisclosed	AgriPro 2022	4	5	3	3	6	2	2	4	2	6	3	4	4	6	Agripro release (2021). First entered in CSU variety trials in 2022. Early to med-early variety with very good test weight and WSMV tolerance.
AP Solid Hard red winter Undisclosed	AgriPro 2021	7	3	3	5	8	6	5	5	2	1	2	2	3	5	Agripro release (2021). First entered in CSU variety trials in 2020. Medium-late semi-solid stem variety for use in managing wheat stem sawfly. Very good test weight and straw strength.
AP Sunbird Hard red winter Undisclosed	AgriPro 2023	3	4	4	5	7	2	5	3	1	9	4	2	2	4	AgriPro release (2024). First entered in CSU variety trials in 2023. Early to medium early variety with moderately strong WSMV resistance. Very good milling and baking qualities.
AR Iron Eagle 22AX Hard red winter Undisclosed	Armor Seed 2023	1	2	4	2	4	--	--	5	2	--	4	7	--	--	Armor Seed release (2023). First entered in CSU variety trials in 2025. Dual-purpose variety for grain or grazing. Good straw strength and test weight.
AR Turret 25 Hard red winter Undisclosed	Armor Seed 2023	5	5	5	3	3	3	3	9	7	--	3	3	--	--	Armor Seed release (2023). First entered in CSU variety trials in 2025. Medium maturity. Moderately resistant to stripe rust. Very good test weight and protein.
Avery Hard red winter TAM 112/Byrd	CSU 2015	5	7	5	6	6	8	8	1	1	6	4	6	3	3	CSU release (2015), marketed by PlainsGold. Doubled haploid-derived line, similar to Byrd with higher yield potential, larger kernels and slightly improved quality. Carries wheat curl mite resistance from TAM 112 parent. Susceptible to stripe rust.
Breck Hard white winter Denali/HV9W07-482W//Antero	CSU 2017	5	5	5	8	8	5	2	4	1	7	4	2	2	4	CSU release (2017), marketed by PlainsGold in CWRF-Ardent Mills UltraGrain Premium Program. Good stripe rust resistance, sprouting tolerance, straw strength, grain protein deviation, and quality. Very high test weight, lower polyphenol oxidase (PPO) activity for improved whole grain bread and noodle quality. Certified seed only.
Byrd Hard red winter TAM 112/CO970547-7	CSU 2011	4	6	5	5	8	7	8	4	3	7	5	5	3	3	CSU release (2011), marketed by PlainsGold. Excellent drought tolerance (from TAM 112) and quality. Average test weight and straw strength. Moderately susceptible to stripe rust. Carries wheat curl mite resistance from TAM 112 parent.

Column Key - heading date (HD), plant height (HT), straw strength (SS), coleoptile length (COL), stripe rust resistance (YR), leaf rust resistance (LR), stem rust resistance (SR), wheat streak mosaic virus tolerance (WSMV), yellowing disease (YD), wheat stem sawfly tolerance (WSS), test weight (TW), protein (PRO), milling (MILL) and baking quality (BAKE). Rating scale: 1 - very good, very resistant, very early, or very short to 9 - very poor, very susceptible, very late, or very tall/long. A priority is given to data collected in Colorado. Regional data or developer input is utilized when Colorado specific data is unavailable.

* Coleoptile length ratings range from 1=very short (~ 50 mm or ~2 in) to 9=very long (~100 mm or ~4 in). Coleoptile lengths should be interpreted for relative variety comparisons only.

** WSMV and YD ratings are based on field evaluations in Colorado under pressure from wheat curl mite transmitted viruses. Scores may reflect both resistance to the wheat curl mite and resistance to mite-transmitted viruses. Lines susceptible to YD have been shown to contain high levels of *Triticum mosaic* virus.

+WSS ratings are based on field evaluation of tolerance to wheat stem sawfly cutting in Colorado. Values do not represent the level of stem solidness expression. See comments for solidness rating.

++ PRO ratings represent “grain protein deviation” (relative grain protein level accounting for differences in grain yield).

Description of Winter Wheat Varieties in Eastern Colorado Dryland and Irrigated Trials (2024-2025)

Name/Class/Pedigree	Origin	HD	HT	SS	COL*	YR	LR	SR	WSMV**	YD**	WSS+	TW	PRO++	MILL	BAKE	Comments
Byrd CL Plus Hard red winter CO06072/4*Byrd	CSU 2018	5	8	5	6	5	5	8	3	2	4	5	6	4	5	CSU release (2018), marketed by PlainsGold. Two-gene Clearfield wheat in Byrd background. Highly similar to Byrd with exception of tolerance to Beyond herbicide. Has shown some non solid-stem based tolerance to wheat stem sawfly. Certified seed only.
Canvas Hard red winter Denali/Antero//Byrd	CSU 2018	5	4	2	6	3	6	2	2	2	4	4	4	2	3	CSU release (2018), marketed by PlainsGold. Hard red winter, medium maturing, medium-short, good straw strength. Good stripe and stem rust resistance and carries wheat curl mite resistance from Byrd parent. Good test weight and milling and baking quality.
CO19410R Hard red winter Avery/CO07W722-F5//CO11D1316W	CSU EXP	5	4	5	5	4	8	2	1	1	5	3	4	3	2	CSU experimental line, first entered into the CSU trials in 2023. Performed at 110% of the trial mean for yield in 2023. Resistant to the wheat curl mite which vectors the mosaic virus complex. Moderate susceptibility to stripe rust and good resistance to stem rust. Good milling and baking quality. Potential release in 2025.
CO19D087R Hard red winter CO12D1777/Langin	CSU EXP	3	2	4	3	2	7	2	3	1	7	4	4	4	3	CSU release (2024), first entered into the CSU trials in 2023. Performed at 115% of the trial mean for yield in southeastern Colorado in 2023. Resistant to the wheat curl mite which vectors the mosaic virus complex. Good resistance to stripe rust and stem rust. Good milling and baking quality. Acid soil tolerant. Foundation seed available in 2025.
CO200037R Hard red winter Canvas//X170868/Canvas	CSU EXP	6	4	3	7	4	5	1	1	1	3	4	4	3	4	CSU release (2024), first entered into the CSU trials in 2023. Similar performance as Canvas. Resistant to the wheat curl mite and contains a new gene, *Wsm3,* with broad resistance against the mosaic virus complex. Moderate resistance to stripe rust and stem rust. Good milling and baking quality. Acid soil tolerant. Foundation seed available in
CO20022RC Hard red winter CO14079RC/CO12D075	CSU EXP	5	5	4	6	5	--	--	2	1	7	4	7	1	4	CSU experimental line, first entered in the CSU trials in 2024. Two-gene Clearfield. Resistant to wheat curl mite which vectors the mosaic virus complex. Potential release in 2025 or 2026.
CO20D108R Hard red winter CO13D1320/Valley//Canvas	CSU EXP	6	5	3	7	4	5	1	1	1	4	6	7	3	3	CSU experimental line, first entered into the CSU trials in 2023. Performed at 106% of the trial mean for yield in 2023. Resistant to the wheat curl mite which vectors the mosaic virus complex. Moderate resistance to stripe rust and good resistance to stem rust. Good milling and excellent baking quality. Potential release in 2025.
CO20SFD020R Hard red winter CO16SFD020/CO16SF029	CSU EXP	6	3	4	2	5	--	--	3	1	2	4	7	2	8	CSU experimental line, first entered into the CSU trials in 2024. Semi-solid stem (15 out of 25) for partial resistance to wheat stem sawfly. On foundation increase for potential release in 2025.
CO21SF191RA Hard red winter CO15SFD088/Battle AX//CO16SF075	CSU EXP	7	5	5	7	3	--	--	5	2	3	6	3	4	9	CSU experimental line, first entered into the CSU trials in 2024. Semi-solid stem (14 out of 25) for partial resistance to wheat stem sawfly. CoAXium wheat for winter annual grassy weed control. On foundation increase for potential release in 2025.

Column Key - heading date (HD), plant height (HT), straw strength (SS), coleoptile length (COL), stripe rust resistance (YR), leaf rust resistance (LR), stem rust resistance (SR), wheat streak mosaic virus tolerance (WSMV), yellowing disease (YD), wheat stem sawfly tolerance (WSS), test weight (TW), protein (PRO), milling (MILL) and baking quality (BAKE). Rating scale: 1 - very good, very resistant, very early, or very short to 9 - very poor, very susceptible, very late, or very tall/long. A priority is given to data collected in Colorado. Regional data or developer input is utilized when Colorado specific data is unavailable.

* Coleoptile length ratings range from 1=very short (~ 50 mm or ~2 in) to 9=very long (~100 mm or ~4 in). Coleoptile lengths should be interpreted for relative variety comparisons only.

** WSMV and YD ratings are based on field evaluations in Colorado under pressure from wheat curl mite transmitted viruses. Scores may reflect both resistance to the wheat curl mite and resistance to mite-transmitted viruses. Lines susceptible to YD have been shown to contain high levels of *Triticum mosaic* virus.

+WSS ratings are based on field evaluation of tolerance to wheat stem sawfly cutting in Colorado. Values do not represent the level of stem solidness expression. See comments for solidness rating.

++ PRO ratings represent “grain protein deviation” (relative grain protein level accounting for differences in grain yield).

Description of Winter Wheat Varieties in Eastern Colorado Dryland and Irrigated Trials (2024-2025)

Name/Class/Pedigree	Origin	HD	HT	SS	COL*	YR	LR	SR	WSMV**	YD**	WSS+	TW	PRO++	MILL	BAKE	Comments
CP7017AX Hard red winter Undisclosed	Croplan 2020	4	2	6	3	5	4	1	3	2	7	4	6	3	7	CROPLAN by WinField United release (2020). First entered into CSU trials in 2020. CoAXium wheat for winter annual grassy weed control. Strong yield potential, strong drought tolerance, tolerates acid soils and resistant to soilborne mosaic virus. Certified seed only.
CP7869 Hard red winter Undisclosed	Croplan 2017	6	4	4	5	2	1	1	7	7	8	4	5	2	6	CROPLAN by WinField United release (2017). First entered into CSU trials in 2020. High yield potential, strong straw, good test weight. Good resistance to leaf, stem, and stripe rusts.
CP7909 Hard red winter Undisclosed	Croplan 2018	4	5	5	5	7	5	5	8	7	7	5	7	3	6	CROPLAN by WinField United release (2018). First entered into CSU trials in 2020 Excellent yields and higher protein potential with very good winterhardiness, broad adaptation, and excellent soilborne mosaic resistance.
Crescent AX Hard red winter (AF28/Byrd)//(AF10/2*Byrd)	CSU 2018	3	7	8	5	5	6	--	2	2	6	4	7	3	2	CSU release (2018), marketed by PlainsGold. CoAXium wheat for winter annual grassy weed control. Approximately 66% Byrd and 34% Hatcher parentage. Earlier and much improved yield and test weight relative to Incline AX. Intermediate reaction to stripe rust and carries wheat curl mite resistance from Byrd parent. Certified seed only.
Fortify SF Hard red winter Byrd/Bearpaw//Byrd	CSU 2019	4	6	6	5	6	7	4	3	1	2	2	5	3	6	CSU release (2019), marketed by PlainsGold. Medium height, medium maturity. Carries wheat curl mite resistance from Byrd parent and semi-solid stem trait (13 out of 25 rating) for partial resistance to the wheat stem sawfly. Certified seed only.
Guardian Hard red winter Antero/Snowmass//Byrd	CSU 2019	6	7	6	7	3	4	2	4	5	6	3	2	3	3	CSU release (2019), marketed by PlainsGold. Medium height, medium maturity. Excellent resistance to WSMV due to combination of resistance to wheat curl mite and the virus itself via *Wsm2*. Good combined resistance to all three rusts, good test weight, good milling and baking quality, high grain protein deviation. Certified seed only.
Kivari AX Hard red winter (AF28/Byrd)//(AF10/2*Byrd)	CSU 2020	5	6	8	6	6	8	5	6	5	5	6	8	3	3	CSU release (2020), marketed by PlainsGold. CoAXium wheat for winter annual grassy weed control. Higher yielding and slightly later maturing than Crescent AX. Intermediate reaction to stripe rust and carries wheat curl mite resistance from Byrd parent. Certified seed only.
KS Bill Snyder Hard red winter KS11HW15-4-1/KS060476-M-6	KS-Hays 2023	5	3	1	4	4	2	3	2	2	--	5	--	--	--	KSU release (2023), marketed by Kansas Wheat Alliance. Medium maturity with moderate stripe rust resistance. Average test weight. Certified seed only (CSO) variety.
KS Homesteader CL+ Hard red winter KS14-50809/Brawl CL Plus	KS-Hays 2024	7	7	4	--	2	7	4	2	3	5	4	--	--	--	KSU release (2023), marketed by Kansas Wheat Alliance. Two-gene Clearfield wheat. Medium-late maturity. Resistant to stripe rust and has higher temperature resistance to WSMV. Certified seed only (CSO) variety.

Column Key - heading date (HD), plant height (HT), straw strength (SS), coleoptile length (COL), stripe rust resistance (YR), leaf rust resistance (LR), stem rust resistance (SR), wheat streak mosaic virus tolerance (WSMV), yellowing disease (YD), wheat stem sawfly tolerance (WSS), test weight (TW), protein (PRO), milling (MILL) and baking quality (BAKE). Rating scale: 1 - very good, very resistant, very early, or very short to 9 - very poor, very susceptible, very late, or very tall/long. A priority is given to data collected in Colorado. Regional data or developer input is utilized when Colorado specific data is unavailable.

* Coleoptile length ratings range from 1=very short (~ 50 mm or ~2 in) to 9=very long (~100 mm or ~4 in). Coleoptile lengths should be interpreted for relative variety comparisons only.

** WSMV and YD ratings are based on field evaluations in Colorado under pressure from wheat curl mite transmitted viruses. Scores may reflect both resistance to the wheat curl mite and resistance to mite-transmitted viruses. Lines susceptible to YD have been shown to contain high levels of *Triticum mosaic* virus.

+WSS ratings are based on field evaluation of tolerance to wheat stem sawfly cutting in Colorado. Values do not represent the level of stem solidness expression. See comments for solidness rating.

++ PRO ratings represent “grain protein deviation” (relative grain protein level accounting for differences in grain yield).

Description of Winter Wheat Varieties in Eastern Colorado Dryland and Irrigated Trials (2024-2025)

Name/Class/Pedigree	Origin	HD	HT	SS	COL*	YR	LR	SR	WSMV**	YD**	WSS+	TW	PRO++	MILL	BAKE	Comments
KS Territory Hard red winter KS11HW15/TX10A001006	KS-Hays 2022	5	4	3	4	2	4	4	3	2	6	5	4	5	7	KSU release (2022), marketed by the Kansas Wheat Alliance. First entered in the CSU trial in 2023. Medium maturity, excellent straw strength, and resistant to WSMV and Triticum mosaic virus (TriMV).
Langin Hard red winter CO050270/Byrd	CSU 2016	2	3	8	3	2	6	8	4	2	6	5	6	4	3	CSU release (2016), marketed by PlainsGold. Early maturing semidwarf. Good drought stress tolerance and winterhardiness, stripe rust resistance, and quality. Medium coleoptile. Carries wheat curl mite resistance from Byrd parent. Very high yield potential for irrigation, but straw strength requires use of growth regulator.
LCS Atomic AX Hard red winter Undisclosed	Limagrain 2019	3	4	4	4	3	2	9	--	7	7	7	5	4	5	Limagrain release (2019), first entered in CSU Variety Trials in 2021. CoAXium wheat for winter annual grassy weed control. Excellent straw strength and resistance to stripe rust. Certified seed only.
LCS Helix AX Hard red winter Undisclosed	Limagrain 2019	4	4	4	6	5	4	2	--	--	8	3	8	4	4	Limagrain release (2018), first entered in CSU Variety Trials in 2020. CoAXium wheat for winter annual grassy weed control. Broad adaptation, good resistance to stem rust and Fusarium head blight. Certified seed only.
LCS Mojo Hard red winter Undisclosed	Limagrain 2023	5	7	4	2	9	--	--	2	--	--	4	4	5	5	Limagrain release (2023). Medium maturity with good straw strength. Strong resistance to WSMV. Good test weight and protein.
LCS Radar Hard red winter Undisclosed	Limagrain 2024	2	5	4	3	1	2	5	3	1	8	5	3	3	4	Limagrain release (2024). First entered into the CSU trials in 2024. Broadly adapted across the Great Plains, very good to excellent stripe and leaf rust resistance.
LCS Steel AX Hard red winter LCH13KSDH-20-87/ACC 7-38	Limagrain 2021	4	4	3	4	5	2	8	--	7	5	4	3	3	5	Limagrain release (2021). First entered into the trials in 2023. CoAXium wheat for winter annual grass weed control. Broad adaptation, very good leaf rust resistance and excellent straw strength. Certified seed only.
Monarch Hard white winter CO07W722-F5/Snowmass//CO07W722-F5	CSU 2018	6	3	3	6	4	5	2	4	1	3	4	7	4	4	CSU release (2018), marketed by PlainsGold. Hard white winter with excellent straw strength and very high irrigated yield potential. Good stripe rust resistance. Quality more similar to Breck, but very low PPO. Certified seed only.
MT WarCat Hard red winter Loma/AAC Gateway//Loma	MT 2022	8	4	--	--	1	6	4	--	8	2	6	4	3	1	Montana State University release (2022). Late maturity. Semi-solid stem for resistance to WSS. Excellent resistance to stripe rust. Average test weight and above-average protein. Certified seed only (CSO) variety.

Column Key - heading date (HD), plant height (HT), straw strength (SS), coleoptile length (COL), stripe rust resistance (YR), leaf rust resistance (LR), stem rust resistance (SR), wheat streak mosaic virus tolerance (WSMV), yellowing disease (YD), wheat stem sawfly tolerance (WSS), test weight (TW), protein (PRO), milling (MILL) and baking quality (BAKE). Rating scale: 1 - very good, very resistant, very early, or very short to 9 - very poor, very susceptible, very late, or very tall/long. A priority is given to data collected in Colorado. Regional data or developer input is utilized when Colorado specific data is unavailable.

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Name/Class/Pedigree	Origin	HD	HT	SS	COL*	YR	LR	SR	WSMV**	YD**	WSS+	TW	PRO++	MILL	BAKE	Comments
NHH19668 Hard red winter OK09915C/NH11565	UNL EXP	3	2	5	5	--	--	--	--	3	7	4	4	3	8	University of Nebraska experimental line. First entered into the CSU trials in 2024.
Sheridan Hard red winter CO12D906/CO11D1353//Monarch	CSU 2023	5	6	4	8	2	5	1	5	2	7	3	3	3	3	CSU release (2023), not yet commercially available. Medium maturity and height and moderate straw strength. Very long coleoptile. Good overall yield performance in irrigated and dryland environments. Good resistance to stripe rust, stem rust, and moderate for leaf rust. Excellent grain protein deviation. Good milling and baking quality.
Snowmass 2.0 Hard white winter CO07W722-F5/Snowmass//Brawl CL Plus	CSU 2018	4	4	4	5	5	5	1	4	3	5	5	4	3	1	CSU release (2018), marketed by PlainsGold in CWRF-Ardent Mills Ultragrain Premium Program. Hard white wheat, quality profile very similar to Snowmass but low PPO and better grain protein deviation. Good stripe and stem rust resistance and wheat streak mosaic virus resistance. Good straw strength, good test weight. Certified seed only.
Telluride Hard white winter CO12D906/CO07W722-F5	CSU 2023	4	4	2	4	8	6	1	4	1	7	4	2	3	3	CSU release (2023), not yet commercially available. Hard white winter wheat. Mid to early maturity and slightly short stature. Excellent straw strength and overall yield performance in irrigated and dryland environments. Excellent grain protein deviation. Very good milling and baking quality.
Valley Hard white winter CO07W722-F5/Antero//Snowmass	CSU 2022	5	7	4	3	3	6	4	4	1	3	7	4	4	2	CSU release (2018) marketed by PlainsGold in CWRF-Ardent Mills Ultragrain Premium Program. White-seeded with excellent quality and good pre-harvest sprouting tolerance. Moderately resistant to stripe, leaf, and stem rust. Medium height and medium maturity.
WB4444 Hard red winter Undisclosed	Westbred 2022	5	5	2	--	4	6	4	6	4	2	7	1	4	4	WestBred release (2022). Medium maturity. Solid solid stem for resistance to WSS. Excellent protein and good stripe rust resistance. Certified seed only (CSO) variety.
WB4733CLP Hard red winter Undisclosed	Westbred 2022	7	2	3	6	2	3	6	6	7	1	7	4	--	--	WestBred release (2022). Two-gene Clearfield wheat. Medium-late maturity. Very good to excellent resistance to leaf and stripe rusts. Certified seed only (CSO) variety.
Whistler Hard red winter CO08W218/Snowmass//Byrd	CSU 2018	7	9	9	8	3	6	1	2	1	6	6	5	4	3	CSU release (2018), marketed by PlainsGold. Hard red winter, later maturing, tall, marginal straw strength. Good stripe and stem rust resistance and carries wheat curl mite resistance from Byrd parent. Very good milling and baking quality.
Windom SF Hard white winter Warhorse/Breck//CO12D1028	CSU 2022	4	2	4	7	6	8	1	7	4	1	3	4	3	2	CSU release (2021), marketed by PlainsGold in CWRF-Ardent Mills Ultragrain Premium Program. White-seeded with strong mixing and baking properties. Semi-solid stem (16/25) for partial resistance to the wheat stem sawfly. Wsm2 for resistance to wheat streak mosaic virus. Good test weight, long coleoptile, tolerance to lower pH. Certified seed

Column Key - heading date (HD), plant height (HT), straw strength (SS), coleoptile length (COL), stripe rust resistance (YR), leaf rust resistance (LR), stem rust resistance (SR), wheat streak mosaic virus tolerance (WSMV), yellowing disease (YD), wheat stem sawfly tolerance (WSS), test weight (TW), protein (PRO), milling (MILL) and baking quality (BAKE). Rating scale: 1 - very good, very resistant, very early, or very short to 9 - very poor, very susceptible, very late, or very tall/long. A priority is given to data collected in Colorado. Regional data or developer input is utilized when Colorado specific data is unavailable.

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2025 Small Grain Forage Trial Results

Sally Jones-Diamond, Jason Webb, Kat Caswell, and Ron Meyer

The 2024-2025 growing season was the fourth year of testing winter annual forages as a potential dual-purpose crop. There is little external information available on the quality and yield of forage for dual-purpose wheats, as they have not been widely grown in our region. It is critical to possess local information about wheat varieties that have favorable forage characteristics with a potential for grain production and vice versa.

Testing Methods:
Entries were planted in small plots (6' by 30') at three dryland locations: Akron, Burlington, and Orchard. Each site had a minimum of eight entries, up to ten. The eight core varieties tested at all sites were Ray, Willow Creek, MTF1435, MT Cash, OK Corral, Big Country, Whistler, and Amplify SF. Amplify SF and Whistler are traditional, non-forage wheat varieties that were included. Akron had two additional entries, KWS Aviator and KWS Progas, which are hybrid rye.

Forage sub-samples were cut from the center of the plots as each variety reached the early heading stage (Akron) or at a single date (Orchard and Burlington) to determine forage yield and quality. If the entries were harvested on one date, the growth stage of each plot was reported. Forage wet and dry weights were obtained and used to calculate dry matter yield. Hay quality information based on NIR analyses was done by Dairyland Laboratories in Acadia, WI. The remainder of the plots were harvested for grain (yield area adjusted to account for forage sampling), and grain test weight analyses were performed.

Yield, test weight, and dry matter yield values were statistically analyzed, and least significant differences are provided under each location table to compare entries within a location.

SOIL AND CROP SCIENCES
COLORADO STATE UNIVERSITY

CROPS TESTING PROGRAM

2025 Dryland Winter Forage Variety Performance Trials at Akron, Burlington, and Orchard

Akron

			Forage Harvest			Grain Harvest				Forage Quality[a]								
Brand/Source	Variety	Forage Species[b]	Dry Matter Yield	Moisture	Harvest Date[c]	Yield	Test Weight	Protein	Plant Height	RFQ	CP	Dry Matter	aNDFom	NDFD30	TDN	NEL	NEG	Milk/Ton
			ton/ac	% at harvest		lb/ac	lb/bu	percent	in		percent					Mcal/cwt		lb/ton
Montana State Univ.	MTF1435	W	**5.7**	66	29-May	2730	50.5	15	40	114	12.6	93.6	55	59	59	61	34	2578
KWS Cereals	PROGAS	H. Rye	**5.3**	68	12-May	**5097**	49.8	11	48	115	14.2	94.1	57	60	60	62	36	2655
PlainsGold	Ray	W	**5.3**	62	29-May	3312	51.3	14	34	130	13.0	93.7	52	62	62	64	37	2791
PlainsGold	Whistler	W	**5.3**	66	21-May	4508	**55.0**	13	36	136	12.8	93.9	49	61	62	64	38	2848
PlainsGold	Amplify SF	W	5.2	66	21-May	3059	**54.0**	13	33	138	13.9	93.3	49	62	63	65	39	2871
KWS Cereals	AVIATOR	H. Rye	5.0	69	12-May	4768	49.9	9	51	112	13.3	93.5	58	59	59	61	34	2592
Oklahoma Genetics, Inc	Big Country	W	5.0	64	21-May	2790	**54.8**	14	31	159	12.6	94.4	48	66	64	66	40	3085
Montana State Univ.	MT Cash	W	4.7	65	29-May	2763	**54.2**	15	43	124	13.2	93.4	53	60	61	63	36	2744
Oklahoma Genetics, Inc	OK Corral	W	4.3	64	21-May	3884	52.5	12	28	141	12.5	93.5	48	61	63	65	38	2893
Montana State Univ.	Willow Creek	W	4.2	62	2-Jun	1621	53.9	-	40	127	13.7	93.8	52	60	61	62	36	2736
		Average	5.0	65	22-May	3453	52.6	13	39	130	13.2	94	52	61	62	63	37	2779
		LSD (0.30)[d]	0.40			175	0.9											
		LSD (0.05)[d]	0.70			345	1.7											
		Coefficient of Variation (CV)	6.6			4.8	1.1											

Burlington

			Forage Harvest			Grain Harvest				Forage Quality[a]								
Brand/Source	Variety	Forage Species[b]	Dry Matter Yield	Moisture	Harvest Growth Stage[c]	Yield	Test Weight	Protein	Plant Height	RFQ	CP	Dry Matter	aNDFom	NDFD30	TDN	NEL	NEG	Milk/Ton
			ton/ac	% at harvest		bu/ac	lb/bu	percent	in		percent					Mcal/cwt		lb/ton
Montana State Univ.	MTF1435	W	**5.9**	53	Soft Dough	45.2	47.9	17	34	144	11.1	90.3	49	47	63	65	38	2969
PlainsGold	Whistler	W	**5.8**	52	Soft Dough	**71.4**	**54.3**	15	32	141	10.1	88.4	48	52	63	65	38	2977
PlainsGold	Ray	W	5.2	55	Milk	51.1	46.6	16	32	139	10.2	90.0	52	55	61	63	35	2905
Oklahoma Genetics, Inc	Big Country	W	5.2	52	Soft Dough	47.4	**53.8**	16	31	150	12.7	90.1	46	50	63	65	39	3025
Montana State Univ.	MT Cash	W	5.2	54	Soft Dough	41.5	53.3	17	42	131	10.5	89.4	52	44	62	63	36	2768
PlainsGold	Amplify SF	W	4.8	50	Soft Dough	48.7	**54.3**	15	28	154	11.6	90.8	46	49	65	67	41	3111
Oklahoma Genetics, Inc	OK Corral	W	4.5	50	Soft Dough	64.9	52.5	15	26	143	11.2	90.4	48	49	63	65	38	2930
Montana State Univ.	Willow Creek	W	4.1	54	Milk	20.9	47.4	-	39	111	11.2	89.7	58	50	55	56	27	2359
		Average	5.1	52		48.9	51.3	16	33	139	11.1	90	50	50	62	63	36	2881
		LSD (0.30)[d]	0.4			2.3	0.9											
		LSD (0.05)[d]	0.9			4.6	1.9											
		Coefficient of Variation (CV)	6.7			5.0	1.2											

Orchard

			Forage Harvest			Grain Harvest				Forage Quality[a]								
Brand/Source	Variety	Forage Species[b]	Dry Matter Yield	Moisture	Harvest Growth Stage[c]	Yield	Test Weight	Protein	Plant Height	RFQ	CP	Dry Matter	aNDFom	NDFD30	TDN	NEL	NEG	Milk/Ton
			ton/ac	% at harvest	Feekes	bu/ac	lb/bu	percent	in		percent					Mcal/cwt		lb/ton
Oklahoma Genetics, Inc	OK Corral	W	**1.7**	70	10.5	33.0	56.2	14	30	184	15.7	89.2	49	69	65	67	43	3393
PlainsGold	Whistler	W	**1.6**	72	10.4	**39.7**	**59.2**	14	27	191	14.7	88.1	48	70	65	67	42	3327
PlainsGold	Ray	W	**1.5**	72	10.2	29.0	55.5	16	34	180	16.5	89.4	48	70	66	68	44	3369
Montana State Univ.	MTF1435	W	1.3	73	10.3	21.5	54.2	15	32	178	17.5	88.2	50	72	64	65	41	3322
Oklahoma Genetics, Inc	Big Country	W	1.3	71	10.5	16.8	52.9	16	28	198	15.6	90.1	47	70	66	68	44	3493
PlainsGold	Amplify SF	W	1.2	72	10.5	31.7	**58.5**	14	28	167	13.6	89.9	50	61	65	67	41	3185
Montana State Univ.	MT Cash	W	1.2	74	10.1	25.5	55.5	17	38	170	16.9	89.4	48	68	64	66	42	3241
Montana State Univ.	Willow Creek	W	0.9	74	9	24.6	54.1	16	35	154	20.6	88.1	45	64	63	65	42	3068
		Average	1.3	72	10.2	27.7	55.8	15	31	178	16.4	89	48	68	65	67	42	3300
		LSD (0.30)[d]	0.2			2.8	1.0											
		LSD (0.05)[d]	0.5			5.5	1.9											
		Coefficient of Variation (CV)	13.7			9.7	1.6											

[a]All forage quality analyses results are dry basis values. CP=crude protein; RFQ=relative feed quality; aNDFom=ash free neutral detergent fiber; NDFD30=neutral detergent fiber digestibility at 30 hours; TDN=total digestible nutrients using OARDC; NEL=net energy for lactation using OARDC; NEG=net energy gain using OARDC; and Milk/ton=predicted amount of milk produced per ton of dry matter calculated using MILK2013.

[b]Forage Species: H. Rye=Hybrid Rye and W=Wheat

[c]The harvest dates at Akron were targeted for the early heading growth stage of each entry. The harvest growth stages at Burlington and Orchard were the stage of each entry on the single harvest date of June 16. The Feekes scale rates the flag leaf fully emerged as stage 9, and boot to early heading as stages as 10.1 (boot) through 10.5 (head fully emerged).

[d]If the difference between two variety yields equals or exceeds the LSD value, the difference is significant. Farmers selecting a variety based on yield should use the LSD (0.30) to protect from false negative decisions. Companies or researchers may be interested in the LSD (0.05) to avoid false positive conclusions.

Trials were harvested for grain on July 9 (Burlington), July 10 (Akron), and July 17 (Orchard).

Saving Seed of PVP Protected Varieties

Laura Pottorff

The advantages of choosing certified seed varieties are numerous, especially for growers who battle increased levels of:

- Insects and mites that cannot be adequately controlled with insecticides like wheat stem sawfly, wheat curl mite and other virus vectors
- Disease pressures with no available chemical control or seed treatment solutions like plant pathogenic viruses
- Grassy weeds or other inseparable seed crop contaminants in wheat fields without herbicide selectivity such as volunteer rye and jointed goatgrass in wheat

Plant breeders continue to develop varieties with new traits; they provide new solutions to developing pest, disease, environmental, weed and other yield-reducing issues. What's the cost? Many of these high-quality seed varieties come with a slightly higher price. Many also come with restrictions on the ability to save seed and certainly prohibitions on selling saved seed. The owner of a plant variety has exclusive rights to control the production and distribution of the varieties they develop. This is like a patent and the Plant Variety Protection Act (PVP) is a law established to protect the investment made by plant breeders and to facilitate future research and development. What benefits the plant breeder, benefits the farmer.

There are three types of protection to be aware of prior to purchasing Certified Seed:

PVP[1]

- All varieties must be sold by variety name.
- Sales of farmer-saved seed are prohibited.
- Seed conditioners may be held liable if they clean PVP protected seed that gets illegally sold.
- Grain may be saved for planting by the grower only.

PVP[2] Title V Option

- Same requirements as PVP, above, and:
  - If this option is elected by the owner, then the seed may only be sold as a class of Certified Seed.
  - Sales of non-certified seed are illegal under Title V of the Federal Seed Act.

Single Use[3] Seed Agreements/Certified Seed Only (CSO)

- Same requirements as PVP and Title V above, and:
  - An additional contractual agreement between the company and the grower where the grower agrees that the seed they purchase is used solely for planting and production of a SINGLE CROP.
  - The grower agrees not to save any grain produced from seed for planting for their own use or for use by any other person or entity.

To help discern which varieties can be saved and which varieties need to be purchased each year, refer to the table below.

[1]**PVP-** Unauthorized propagation is prohibited**. Grain may be saved for planting by the grower only.** Seed must be sold by variety name. Sale of farmer-saved seed is prohibited.			
	WB4418	WB4483	
[2]**PVP + Title V option -** Unauthorized propagation is prohibited**. Grain may be saved for planting by the grower only.** Sale of farmer-saved seed is prohibited. Seed must be sold by variety name. **Seed may only be sold as a class of Certified Seed.**			
Antero	AP BigFoot	AP Everrock	AP Roadrunner
AP Solid	Avery	Breck	Byrd
Canvas	Fortify SF	Guardian	KS Dallas
KS Hamilton	KS Providence	Langin	LCS Julep
LCS Mint	LCS Radar	Monarch	NuGrain
Ray	SY Assure	SY Legend	SY Ovation
SY Wolverine	Whistler		
[3]**Single Use** – All the provisions of PVP and Title V apply**.** In addition**, Seed of these wheat varieties must be purchased every yea**r due to stewardship agreements or exclusive contracts.			
Amplify SF	AP18 AX	Brawl CL+	Byrd CL+
Crescent AX	Kivari AX	KS Bill Synder	KS Homesteader CL+
KS Territory	LCS Atomic AX	LCS Helix AX	NE Prism CLP
Settler CL	Snowmass	Snowmass 2.0	SY Sunrise
WB4347	WB 4422	WB4444	WB4595
WB4733CLP	WB4792	Windom SF	

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