

Winter Wheat Crop Tours – 2017

South Dakota State University

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Variety Characteristics

Table 1. List of winter wheat varieties being tested in 2017 along with origin, agronomic, and grain quality characteristics											
Variety	Origin-Year	Agronomic Characteristics				Disease Ratings					
		Rel. Hdg days	Lodging Score	Winter Hardiness	2016 Protein %	2016 Stripe Rust	Stem Rust	Leaf Rust	Leaf Spot	WSMV	2016 FHB (Scab)
Alice (White)	SD-06	3	1.8	G	Good	MS-S	MR	MS	MS-S	MS	MS
Antero (White)	PG-12	0	2.1	G	Low	MR	(MR)¶	(S)	MS-S	(MS)	S
Avery	PG-15	3	2.5	-	Low	S	-	-	-	-	MS
LCS Compass	LCS-15	0	2.1	G	Average	S	(R)	MS-MR	S	(S)	MR
Cowboy	WY-12	5	2.1	(G)	Average	S	(MS)	(MS-S)	-	(MS)	S
Denali	CO-11	4	1.5	G	Average	S	(MS)	MS-S	S	(MS)	MR
<u>Expedition</u>	SD-02	0	2.0	G	Average	S	R	MS-S	MS-S	S	MR
Freeman	NE-13	2	2.4	F	Average	S	MR	MS-S	S	S	MS
WB-Grainfield	WB-12	1	1.9	F	Average	MR-MS	MR	MR	S	MR	S
Ideal	SD-11	6	1.9	G-E	Average	S	MR	MR-MS	S	S	MS
Keldin	WB-13	-	-	(E)	-	-	-	-	-	-	-
Langin	PG-16	-	-	-	-	-	-	-	-	-	-
Long Branch	DG-16	-	-	(E)	-	-	-	-	-	-	-
Lyman	SD-08	3	2.4	G-E	Good	S	R	MR ?	S	S	MR
LCS Mint	LCS-12	1	1.9	G	Average	MS-S	MS	MS-S	S	MR	S
SY Monument	AP-14	5	1.8	G-E	Average	MR-R	(R)	MR	S	(R)	MR
Oahe	SD-16	4	2.0	G-E	Average	MR	MS	MR	MS	MR	MR
Overland	NE-06	4	1.9	G-E	Good	S	MR	MR	S	MS	MR
Redfield	SD-13	5	1.5	G	Good	MR-MS	MR	MS-MR	MS-S	S	MR
Ruth	NE-16	3	1.5	G	Good	MS-S	(MR)	MS-S	S	(S)	MS
SY Sunrise	AP-15	4	1.5	(E)	Average	MR-R	-	-	-	-	MR
Sunshine	PG-14	-	-	-	-	-	-	-	-	-	-
WB4614	WB-14	7	1.3	G	Good	MS	-	MS	MS-S	(S)	S
WB4721	WB-15	-	-	-	-	-	-	-	-	-	-
Wesley ^{no PVP}	NE-99	3	1.4	G	Good	S	R	MS	S	S	S
SY Wolf	AP-11	4	1.3	G	Average	S	MR	MR	MS	MR	S
07CL039-7	AP-exp	-	-	(G)	-	-	-	-	-	-	-
PSB13NEDH-7-140	LCS-exp	6	1.2	(G)	Good	MS-S	-	(MR-MS)	-	-	MR
PSB13NEDH-7-45	LCS-exp	-	-	(G)	-	-	-	-	-	-	-

¶ Estimated ratings (X), based on information provided by entity that submitted the variety.

Variety Descriptions

- Alice White (South Dakota, 2006):** Developed from the cross Abilene/Karl, is a semi-dwarf, medium-maturity (similar to Arapahoe) hard white winter wheat with good winterhardness. High test weight, average protein, very short coleoptile, very good sprouting resistance, moderately resistant to stem and moderately susceptible to leaf rust. It has become moderately susceptible to WSMV. Yields are right around average both in 2016 and over 3 years in the CPT.
- Antero White (PlainsGold, 2012):** Developed from the cross KS01HW152-1/TAM111, Antero is a white-chaffed, hard white winter wheat. Early maturity and medium-short in height. Moderate pre-harvest sprouting resistance. Moderately resistant to stripe rust and stem rust but susceptible to leaf rust. Susceptible to FHB. Excellent milling and good baking qualities. Has been one of the top performers in 2015 and 2016 CPT trials.
- Avery (PlainsGold 2015):** Avery is a double haploid line developed using wheat-maize hybridization from the cross TAM 112/Byrd. It was tested in the SD CPT last year as CO11D174. Colorado State claims it is very drought tolerant. Susceptible to stripe rust and moderately susceptible to FHB. Yielded in the top 1/3 of the trial for all west river locations in 2016. East river yields were around the trial average.
- LCS Compass (Limagrain, 2015):** Third year in the CPT. Company data shows this variety being well adapted to Kansas, Oklahoma, and southern Nebraska. Has a fairly good disease package but is susceptible to stripe rust. Moderately resistant to FHB. The 2-year average yield is below the trial average for both east and west river testing locations.
- Cowboy (Wyoming, 2012):** Joint release from Wyoming and Colorado. Moderately susceptible to stripe rust and stem rust, and susceptible to leaf rust and FHB. Second year of testing in SD. Performed right at the trial average east river but was in the top 1/3 of the trial in the west river testing locations in 2016.
- Denali (PlainsGold 2011):** Developed from the cross CP980929/TAM 111. Denali is medium-tall and medium maturing. Good straw strength and good winterhardness. Susceptible to stripe rust and leaf rust, and moderately susceptible to stem rust and WSMV. Moderately resistant to FHB. Good to average baking and milling characteristics. Has been a solid performer over the last 3 years, yielding in the top 1/3 throughout the state. Despite MR rating for FHB, seems to respond well to fungicide.
- Expedition (South Dakota, 2002):** Developed from the cross Tomahawk/Bennet, was released for its excellent winter survival ability, earliness, and high yield potential. Moderately resistant to stem rust and moderately susceptible to tan spot, leaf rust, and WSMV. Moderately resistant to scab in South Dakota. Very good milling and baking quality. Has the lowest 3-year yield average in the CPT trials both east and west river.
- Freeman (Nebraska, 2013):** Developed from the cross KS92-946-B-15-1/Alliance, it is medium in height and maturity. It is moderately resistant to stem rust, but is moderately susceptible/susceptible to everything else. Seems to have a little trouble with lodging. Adequate milling and baking characteristics. Has been a solid performer, yielding in the top 1/3 of CPT trials throughout South Dakota. Slightly better east river.
- WB-Grainfield (Westbred, 2012):** Developed and tested as HV9W06-509 by Monsanto Technology, LLC. Medium-tall in height and medium-late in maturity. Very good winterhardness and straw strength. Moderately resistant to all the rusts but susceptible to FHB. Has yielded in the top 1/3 of the SD CPT over the last 3 years. Probably the best HRWW in the Westbred portfolio.
- Ideal (South Dakota, 2011):** Developed from the cross Brule//Bennett/Chisholm/3/Arapahoe, is medium-height and medium-late maturity wheat with very good winterhardness, a long coleoptile, good test weight and quality characteristics. Moderately resistant to stem and leaf rust, moderately susceptible to FHB, and susceptible to stripe rust and WSMV. One of the best multi-year performers in the west river trials. Just out of the top 1/3 in the east river trials. Yields seem to be dropping off a bit.
- Keldin (Westbred, 2013):** New to the SD trials. Westbred claims it to be best adapted to Montana and have a good disease package. TBD.
- Langin (PlainsGold, 2016):** New entry from Colorado State. Double haploid line developed from the cross CO05270/Byrd. CSU material claims it is a high yielder despite being susceptible to most pathogens except stripe rust. TBD.
- Long Branch (Dyna-Gro, 2016):** New entry from Dyna-Gro Seed. Company material claims excellent winterhardness and drought/heat tolerance along with good resistance to stripe rust. TBD.
- Lyman (South Dakota, 2008):** Developed from the cross KS93U134/Arapahoe, it is a medium maturity and medium height variety, and has good to excellent winter hardiness. Lyman has excellent disease resistance, including leaf and stem rust resistance. It is also moderately resistant to FHB, but it has a tendency to lodge under high moisture conditions. Excellent milling and satisfactory baking quality. Three-year yields are slightly above average east river and right at average west river.
- LCS Mint (Limagrain, 2012):** LCS Mint has a striking dark green color and is medium height and maturity. Very photoperiod sensitive. Tolerant to acid soils. Moderately susceptible to stem rust, leaf rust, stripe rust, and leaf spot but resistant to WSMV. Excellent baking and milling properties. Average protein and good test weight. Has done fairly well in the CPT trials, especially west river, where it ranks #2 overall for 3-year average yield.
- SY-Monument (AgriPro, 2014):** Second year of testing for this variety from AgriPro designated for western production areas. Good disease package with moderate resistance to all rusts and WSMV. Moderately susceptible to Leaf spot and powdery mildew. Medium-late maturity. Excellent test weight and tolerance to acid soils. Two-year yield performance is similar to SY Wolf, although it is slightly better west river.

- Oahe (South Dakota, 2016):** Developed from the cross Ransom/SD96240-3-1. It is a tall variety with good winter hardiness. Moderately resistant to stripe rust, leaf rust (*Lr16*), WSMV, and FHB however, moderately susceptible to stem rust. It has good test weight, protein content and milling quality and baking quality is comparable to Overland. Strong 3-year yield performance both east and west river.
- Overland (Nebraska, 2006):** Developed from the cross NE94482(=Arapahoe/Abilene//NE86488)/ND8974. Excellent adaptation to South Dakota. Co-released with Nebraska. Resistant to stem and leaf rusts. Fair resistance to WSMV and good resistance to BYDV. Susceptible to stripe rust. Relatively poor end-use quality wheat. Yields in the CPT are slightly about average despite the age of this variety.
- Redfield (South Dakota, 2013):** Developed from the cross Wesley/ CDC Falcon, it is a medium to late maturity variety with good winter hardiness. Named in part for its distinctive red chaff. It tall semi dwarf with very stiff straw. It is moderately resistant to FHB but is moderately susceptible to leaf and stem rust. Moderate susceptibility to stripe rust. Three-year yields in the top 1/3 east river but only about average west river.
- Ruth (Nebraska, 2016):** Derived from the cross OK98697/Jagalene//Camelot. It has good test weight and end-use quality, is a taller semi-dwarf with medium late maturity. It is resistant to susceptible to Hessian fly, moderately resistant to stem, leaf, and stripe rust and bacterial streak. Considering yield and test weight, in head-to-head comparisons, it is the best yielding line in the Nebraska program of those lines near release. Two-year yield performance has been slightly above average across South Dakota. However, it yielded in the top 1/3 for west river CPT trials in 2016.
- SY Sunrise (AgriPro, 2015):** Second year of testing for this entry from AgriPro. Company website says this is a good candidate for irrigation. Good disease package, SD tests in 2016 show resistance to strip rust and FHB. This was the top-yielding variety in the 2016 east river CPT and #6 overall in the west river CPT.
- Sunshine (PlainsGold, 2014):** New entry from Colorado State. CSU material claims medium/early maturity, good yield potential, and drought tolerance. Also appears to be susceptible to strip rust and leaf rust. TBD.
- WB4614 (Westbred, 2014):** Third year in the CPT. Medium-late maturity, similar to Ideal. Moderately susceptible to susceptible to all diseases rated by the CPT. Poor performer in east river testing locations and about average west river.
- WB4721(Westbred, 2015):** New entry from Westbred. Company material claims excellent 'western' adaptation and a very good overall disease package. TBD.
- Wesley (Nebraska, 1999):** Developed from the cross KS87G325-2-1//Colt/Cody, it is a medium-early maturity semi-dwarf. Excellent straw strength. Good yield potential for its age. Good resistance to stem rust but moderately susceptible/susceptible to all other pathogens rated by the CPT. Average winterhardiness and very short coleoptile. Multi-year yields are toward the bottom end of the trials across the state.
- SY-Wolf (AgriPro, 2011):** Developed from the cross W99-331/97x0906-8, it has a relatively early maturity. It has good straw strength and winter hardiness. The variety is resistant to leaf rust and tan spot and is moderately resistant to stem rust, and WSMV. It is rated as susceptible to FHB and showed susceptibility to stripe rust in the 2016 CPT. The top yielder over 3 years across the state in the SD CPT trials.
- 07CL039-7 (AgriPro experimental):** TBD.
- PSB13NEDH-7-140 (Limagrain experimental):** Second year in the CPT for this experimental. Moderately susceptible to stripe rust and leaf rust and moderately resistant to FHB. Medium-late maturity, similar to Ideal. Yielded in the top 1/3 of varieties in the 2016 east river CPT trials and was about average west river.
- PSB13NEDH-7-45 (Limagrain experimental):** Was tested in 2015, where it performed rather well across the state, but not in 2016. TBD in 2017.
- SD09227 (SDSU experimental):** Developed from the cross SD97088/KS920709-B-5-2//Jagalene/Wendy. Tall with medium to late maturity with good winter hardiness. Moderately resistant to WSM, Scab, stripe, leaf rust. Above average protein content and test weight. Third year in CPT, in 2015-ranked 8th in CPT and ranked 6th in NRPN trials. In 2016, SD9227 was an average performer.
- SD110060-7 (SDSU experimental):** Developed from the cross 98X0435-15/Overland. Medium height and medium maturity (2 days earlier than Redfield) with good winter hardiness. Resistant to stem rust and moderately resistant to stripe rust and leaf rust (*Lr24*, +). Third year in CPT, ranked 6th in 2015 CPT and ranked 7th and 4th in NRPN trials in 2015 and 2016, respectively. It has an average protein content and test weight and baking quality similar to Overland.
- SD10W153 (SDSU experimental):** White wheat developed from the cross Wesley/OK00611W. Taller semi-dwarf with early maturity Good test weight with average protein. Moderately susceptible to leaf and stripe rust. Marker data shows presence of 3AS PHS resistance gene. Higher yield than Alice in 2015 and 2016. Third year in CPT.
- SD12008-2 (SDSU experimental):** Developed from the cross BC98334-10W-8W/SD05W030. Medium height and medium maturity (2 days earlier than Redfield) with good winter hardiness. SD12008-2 is moderately resistant to stripe, leaf and stem rust with an average scab resistance. High yielding line with average test weight and protein content and excellent baking quality. Ranked 13th and 5th in AYT in 2015 and 2016 respectively. First year in CPT.
- SD13062-2 (SDSU experimental):** Developed from the cross Redfield/Lyman. Tall medium height with medium to late maturity. Excellent yield potential with average test weight and protein content. Ranked 2nd and 4th in AYT in 2015 and 2016, respectively. Moderately resistant to moderately susceptible to stripe and leaf rust. Scab resistance is better than Redfield and similar to Lyman. First year in CPT.

SD13117-1 (SDSU experimental): Developed from the cross Lyman/Overland. Medium height with medium maturity. Good yield potential, average test weight, and protein content, however, baking quality similar to Overland. It is moderately resistant moderately susceptible to stripe, leaf, and stem rust but has above average scab resistance. Ranked 9th and 3rd in AYT in 2015 and 2016, respectively. First year in CPT.

Yield data (East River) (full publication is online at: <http://igrow.org/agronomy/wheat/winter-wheat-variety-trial-results/>)

Table 2. 2014-2016 East River Yield Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.											
Variety	Beresford	Brookings	Brookings w/fung.	Onida	Selby	East River Ave.		2016 East River Average			
	3 year	3 year	3 year	3 year	2 year	2 year	3 year	Top 1/3%	Yield	Test Wt	Protein
SY Wolf	75.2	65.4	66.8	76.6	95.6	75.4	78.1	75	80.5	56.9	12.7
Oahe	71.4	61.4	68.0	71.3	98.6	73.5	75.8	38	75.0	58.5	12.8
Freeman	75.8	61.7	62.1	72.0	96.7	72.8	75.5	50	77.2	55.2	13.9
WB-Grainfield	73.4	59.3	62.2	72.7	99.2	72.9	74.5	63	78.5	57.1	13.1
Redfield	69.5	54.0	62.9	74.5	99.3	72.4	73.8	38	75.4	57.8	12.7
Denali	73.5	55.2	66.4	70.4	83.7	73.5	73.6	63	79.0	56.9	13.0
LCS Mint	69.3	56.8	63.6	74.6	90.7	72.2	73.4	75	80.0	58.4	13.4
Ideal	72.6	56.2	63.1	69.8	84.5	68.8	73.3	13	70.5	57.1	13.3
Overland	68.4	55.4	64.0	70.6	98.9	71.7	73.3	13	73.9	58.2	13.4
Lyman	67.1	59.2	61.6	72.5	91.1	70.8	72.9	13	71.3	57.5	13.9
Wesley	69.0	55.1	58.2	65.3	88.8	67.4	69.6	0	72.9	55.8	13.9
Alice	62.4	47.3	53.0	67.1	96.8	68.5	67.7	50	73.2	57.2	13.2
Expedition	68.9	49.1	53.5	66.0	80.2	66.5	66.7	13	68.8	56.7	13.4
Antero	-	-	-	-	94.4	75.6	-	88	81.1	57.2	12.9
SY Monument	-	-	-	-	94.7	74.1	-	63	79.6	55.4	13.0
Ruth	-	-	-	-	95.8	71.8	-	75	78.8	57.9	13.2
LCS Compass	-	-	-	-	81.9	67.8	-	0	69.3	58.3	13.1
WB4614	-	-	-	-	73.9	64.9	-	38	70.7	56.0	13.6
SY Sunrise	-	-	-	-	-	-	-	88	82.9	57.7	13.6
PSB13NEDH-7-140	-	-	-	-	-	-	-	50	76.9	58.9	13.3
Cowboy	-	-	-	-	-	-	-	25	74.8	55.7	13.3
Avery	-	-	-	-	-	-	-	38	74.6	56.9	13.4
Trial Average	68.3	54.5	60.0	70.2	90.9	69.2	69.8	-	74.1	57	13.3
LSD(0.05)	4.7	3.9	4.1	4.1	7.0	8.6	6.0	-	5.6	1.2	0.4

Yield data (West River)

Table 3. 2014-2016 West River Yield Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Bison	Faith	Hayes	Kennebec	Martin	Sturgis	Wall	Winner	West River Ave.		2016 West River Average			
	3 year	3 year	2 year	3 year	3 year	3 year	3 year	3 year	2 year	3 year	Top 1/3%	Yield	Test Wt	Protein %
SY Wolf	48.3	66.3	62.5	75.1	61.1	65.6	60.9	77.9	66.2	65.8	44	67.1	57.9	11.9
LCS Mint	44.5	58.5	61.5	67.6	64.4	69.9	63.9	75.2	66.9	65.0	89	73.3	59.5	11.6
Denali	47.4	55.9	63.5	66.0	65.0	64.8	72.0	66.1	65.1	63.9	56	68.6	58.0	11.5
Ideal	44.4	60.3	58.4	68.5	61.1	62.7	69.2	72.0	61.8	63.7	22	63.5	58.7	11.8
Oahe	46.2	54.2	58.0	67.8	64.2	65.2	66.1	69.8	63.9	62.9	33	63.9	59.6	11.8
Freeman	40.8	57.9	60.4	67.4	65.3	64.4	62.8	72.4	63.7	62.8	44	66.2	55.3	11.8
WB-Grainfield	41.8	59.8	62.6	69.3	61.9	65.5	60.6	69.2	66.0	62.6	89	69.9	57.2	11.8
Overland	41.5	59.3	59.9	66.2	64.2	61.6	59.0	71.5	62.6	62.0	56	66.6	58.7	11.5
Redfield	41.2	55.2	62.6	65.5	62.1	61.5	67.2	66.6	62.0	61.6	0	63.9	58.5	12.2
Lyman	42.4	61.0	58.3	65.2	57.3	58.6	59.8	70.9	60.8	61.4	22	64.7	57.9	11.9
Wesley	47.9	54.5	58.7	61.7	56.5	59.5	57.7	65.9	59.5	59.5	33	65.8	56.7	12.3
Alice	35.5	58.6	67.3	62.2	54.7	57.7	53.5	64.7	59.8	57.7	22	65.6	58.0	12.0
Expedition	39.4	56.7	59.5	63.1	52.5	57.8	56.5	64.1	58.6	57.3	11	61.7	56.9	11.8
Antero	-	-	57.1	-	-	-	-	-	68.5	-	78	74.9	57.5	11.1
SY Monument	-	-	64.0	-	-	-	-	-	67.5	-	67	70.7	56.5	11.6
Ruth	-	-	70.2	-	-	-	-	-	63.5	-	33	65.6	58.3	12.2
WB4614	-	-	55.8	-	-	-	-	-	62.3	-	67	67.7	58.1	11.9
LCS Compass	-	-	56.3	-	-	-	-	-	56.3	-	0	61.1	58.8	12.0
SY Sunrise	-	-	-	-	-	-	-	-	-	-	44	68.0	58.2	12.0
Cowboy	-	-	-	-	-	-	-	-	-	-	44	67.9	56.2	11.5
Avery	-	-	-	-	-	-	-	-	-	-	56	67.8	57.1	11.2
PSB13NEDH-7-140	-	-	-	-	-	-	-	-	-	-	44	66.0	60.0	12.2
Trial Average	42.5	58.0	59.4	67.4	59.8	62.1	61.7	69.9	61.7	61.1	-	65.0	57.7	12.0
LSD(0.05)	6.1	6.1	8.2	6.3	6.2	3.3	5.1	4.6	8.2	6.3	-	3.2	0.8	0.5