

KANSAS PERFORMANCE TESTS WITH WINTER WHEAT VARIETIES

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2017 WHEAT CROP REVIEW

Weather and Crop Development

Two words describe the 2017 wheat growing in Kansas: variability and resilience. Variability in growing conditions, weather adversities, and disease incidence levels that led to highly variable yields across the state. Resilience of the wheat crop that, despite all the adversities faced across the growing season, was still able to thrive and produce, for the most part, decent yields. The weather during March, April and May, when most of the yield potential and grain filling occurs for much of the state, was near optimal for wheat yield formation. Statewide, precipitation during this period averaged 12.34 inches, which is 3.5 inches (140%) above normal; and temperatures averaged 54.8°F, about 0.8 degrees below normal. Consequently, above-average yields were measured throughout the state. Still, the crop faced several challenges that led to high field-to-field variability. It was not uncommon for producers to report a yield of 70 bushels per acre on one field and 20 bushels per acre on a neighboring one. Some of the challenges leading to such variability are described below.

Western Kansas

The challenges of the 2017 growing season started even before the wheat was sown in the fall. The summer of 2016 was relatively moist for the majority of Kansas, with total precipitation ranging between 8.43 inches in the Southwest Division and 19.62 inches in the Southeast Division. That corresponds to 116 and 169 % of normal, respectively. The moist summer created the first challenge of the 2017 growing season: several flushes of volunteer wheat. Growers in particular regions of the state had to control volunteer wheat as many as four times during the summer, which became very expensive and challenging given the current farm economy. Volunteer wheat acted as a green bridge for the wheat curl mite, vector of wheat streak mosaic and other viral diseases. In addition to the summer moisture, above-average fall temperatures and delayed occurrence of the first freeze favored wheat curl mite populations. As a result, reports of wheat streak mosaic virus infections started to come in during the fall. Later in the season, the disease became likely the greatest challenge of the 2017 wheat growing season in western Kansas. Hot spots of the disease occurred in large portions of west-central Kansas. In many cases the crop was severely damaged and no or very limited harvestable grain yield occurred. Where the grain was harvested from wheat infected with wheat streak mosaic, low test weights were reported and likely many smaller grains were blown away from the combine back into the fields, which might set the stage for another summer with above-average volunteer wheat populations. For more details on the severity of the wheat streak mosaic virus, please see the disease section below. The above-average summer rainfall provided ample subsoil moisture at wheat sowing. However, portions of

northwest Kansas and the majority of the region southwest of Ford County had virtually no rain after early September, leading to dry topsoil conditions toward the latter portion of the planting window. As a result, producers who planted earlier within the optimal window were able to achieve decent stands; however, fields planted late September and into October in western Kansas had poor emergence during the fall and very scattered wheat stands. The lack of measurable precipitation after early September also challenged early emerged crops, as it reduced root system development. Many fields were showing lack of secondary roots as late as January. The next measurable precipitation in southwest Kansas was in the form of a snowstorm during January, which led viable non-germinated seeds still lying in the fields to germinate and emerge during the spring. The result was high variability within fields, with a combination of fall-emerged plants already at later tillering stages, and spring-emerged plants considerably behind in development. This developmental difference was generally sustained through the growing season, often exposing later-emerged plants to warmer conditions during grain fill. Long-term K-State research indicates that the yield potential of winter wheat that emerges during the spring is approximately half that of a fall-emerged crop. As a consequence, producers whose fields were in this situation faced difficult decisions due to the uncertain yield potential, worsened by low wheat prices. Herbicide application decisions were considerably more challenging as product timing restrictions by growth stage are more difficult in a variable field. Also, it is difficult to determine the amount and timing of nitrogen, fungicides, and other inputs to be applied to a crop with limited yield potential. The final outcome of the majority of these late-emerged fields was not as bad as initially anticipated due to optimum moisture and below-average temperatures during most of April and May.

The next challenge the wheat crop faced in western Kansas was the April 29 – May 1 blizzard that brought as much as 22 inches of snowfall very late in the wheat growing season. Major concerns with the late snow were cold damage and physical damage to the stems due to the weight of the snow. Fall-emerged wheat fields in southwest Kansas were anywhere from heading to the flowering stages of growth when the blizzard occurred, while spring-emerged plants were approximately at boot stage. In northwest Kansas, the majority of the fields were at pre-boot to boot stages of growth at the time of the blizzard. Although snow-covered plants were exposed to several hours of freezing temperatures, the damage to grain yields was relatively minor. Stem breakage was the major consequence of the blizzard. The typical symptoms observed a few weeks following the blizzard in the majority of the fields affected by it were a bend on the stems close to the first node, followed by a “gooseneck”

shape towards the next two nodes. This caused the plants to grow toward sunlight, which resulted from the plant hormone auxin produced in response to the stem breakage. Level of stem breakage and yield loss depended on wheat variety, snowfall pattern, and growth stage at time of the snow event. Preliminary observations indicated that early-maturing varieties, varieties with a stronger straw, and irrigated fields suffered greater penalties from the heavy snow than varieties that are later-maturing or have poorer straw strength, or fields that emerged later. While the cool and moist weather pattern during May helped these broken stems produce decent yields, many stems were aborted in late May and early June due to the late heat.

As the crop approached the end of the growing season in western Kansas, challenging weather conditions continued to test its resilience. The first two weeks of June had more than 80 hours of temperatures above 93°F, which can severely decrease starch accumulation in the grain, reducing grain yields. Fields that were later in maturity, such as the majority of west-central and northwestern Kansas, likely suffered different levels of yield penalty resulting from the late-season heat. Continuous rainfall events delayed harvest in parts of the state, and brought extensive hail damage and crop termination to many fields in western Kansas. It is imperative that producers control their volunteer wheat in fields affected by hail, as the occurrence of volunteer wheat will be greater under these conditions.

Central and Eastern Kansas

The moisture scenario at planting for south central and southeast Kansas was the opposite of that observed in western Kansas during the same period. Too many precipitation events caused a delay in sowing for many farmers east of Sumner County. Despite the delayed planting in some cases, most fields were still planted before the end of October, within the optimal window for the region. Any possible decreased tillering potential due to the delayed planting was offset by a long and warm fall and a warmer-than-average winter. During the months of January and February, for instance, average temperatures in central and eastern Kansas ranged from 5.2 to 9.6°F above normal. Above-average temperatures also favored populations of bird cherry-oat aphids, which transmit barley yellow dwarf virus. As a consequence, reports of the disease started in early spring. Its incidence was consistent across the eastern and central wheat-growing regions of Kansas. Likewise, the warm winter also increased the rate of crop development, especially in southeast Kansas. Some early-planted fields of early-maturing varieties were headed before the end of April. Despite the early spike in developmental rate, cooler-than-average April and May weather held the crop back and restored it to a normal developmental schedule.

From approximately March 1 until May 31, total precipitation in eastern and central Kansas ranged from 12.6 to 16.9 inches, which characterizes an excessive water

supply to the crop. As a consequence, waterlogging was a common theme in parts of the central corridor of the state, mainly between Stafford and Cowley counties. The amount of waterlogging in a given field depended on field slope and drainage capacity, but the majority of the fields in these counties were characterized by large drowned-out portions. The excessive moisture might also have increased nitrogen losses via leaching and especially denitrification, rendering many fields in central Kansas nitrogen deficient. Typical symptoms included shortened pale-green canopy with limited head size accompanied by contrasting cow pocks of higher fertility. Another factor in the widespread nitrogen deficiency observed during the 2017 growing seasons was low wheat prices, which led producers to decrease their typical rate of fertilizer. Starting the season with a depleted nitrate-N profile due to excellent crop yields during 2016 also led to some of the nitrogen deficiency observed in 2017.

Another challenge during the 2017 growing season was spring freeze damage. The mornings of April 23 and April 27 had below-freezing temperatures for extended periods of time, with temperatures reaching as low as 24°F. In many parts of the state, this cold spell matched sensitive phases of the crop development. For instance, the wheat in Saline County was mostly headed, and temperatures were below freezing for more than 4 hours. In Republic County, the wheat was still at boot but temperatures reached 24°F and held below freezing for over 7 hours. In general, early-maturing varieties planted in central, north central, and into northwest Kansas (from Saline through Rooks counties) were the most affected by the spring freeze.

Despite all the adversities mentioned above, weather conditions during April and May favored grain development, and grain yields across the majority of central Kansas were above average. The weather also favored the development of stripe and to a greater extent leaf rusts, which are discussed in the disease section below. Above-average yields combined with nitrogen deficiency observed in large portions of central Kansas resulted in below-average protein content in the wheat crop. (Romulo Lollato, Kansas State University Extension Wheat Specialist, and Mary Knapp, Kansas State University Climatologist.)

Diseases

Wheat diseases were a major factor for wheat production in 2017. Wheat streak mosaic virus was severe in many parts of the western production regions and at above-normal levels in central Kansas. The west central region of the state was hit especially hard by wheat streak mosaic.

Stripe rust was severe in most areas of the state, and many growers elected to use fungicides to reduce the risk of severe yield loss.

Leaf rust also reemerged as a production problem in Kansas after more than 8 years of relatively low severity. Leaf rust was present in most areas of the state, and the disease likely caused moderate yield losses in fields

planted with susceptible varieties. The greatest yield losses to leaf rust occurred in the south-central crop reporting district.

Barley yellow dwarf was also present in most regions of the state, with severe disease reported in the south-central and southeast crop reporting districts. (Erick DeWolf, Kansas State University Department of Plant Pathology.)

Insects

Wheat pests were abundant during the 2016-2017 growing season. Aphids, both bird cherry oat and English grain, were not as numerous statewide as in some years. However, there were pockets in south-central and north-central parts of the state that did have significant infestations.

Hessian fly infestations caused several fields in north central, south-central, and southwestern parts of the state to be plowed under in late winter due to the extent of damage by the flies.

This past growing season experienced serious infestations of wheat curl mites throughout the western 1/3 of the state with a resultant infection of wheat streak mosaic virus. This virus seemed particularly devastating and also caused many fields to lose significant yield and/or have to be sacrificed by plowing all infested/infected plants. (Jeff Whitworth, Kansas State University Department of Entomology.)

Harvest Statistics

The Kansas Agricultural Statistics' July 12 estimate of the 2017 crop was 324 million bushels from 6.9 million acres, down 31% from last year's crop. Yield per harvested acre is expected to average 47 bushels, down 10 bushels from last year's final yield. (July 12, 2017, *Crops Report*, Kansas Agricultural Statistics.)

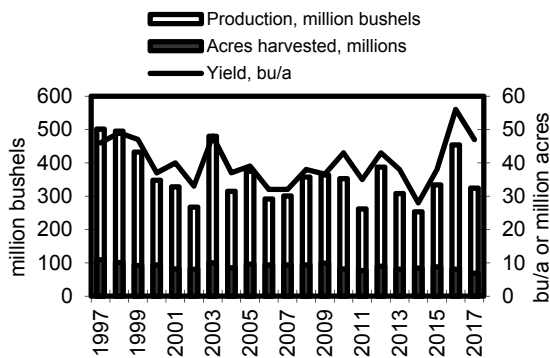


Figure 1. Historical Kansas wheat production

Everest remained the leading variety of wheat seeded in Kansas for the fifth consecutive year. It accounted for 9.6% of the state's wheat and remained the most popular variety in the eastern two-thirds of the state. T158 likewise retained its place at second with 5.9% of acreage.

Winterhawk moved up to the third spot with 4.8%, and LCS Mint continued its upward trajectory to fourth place with 4.3%. WB-Grainfield rounded out the top five with 3.9%. The 2017 production year marks the first year since 2003 that no single variety has accounted for ten percent or more of the statewide acreage. (March 2017, *Wheat Variety*, Kansas Agricultural Statistics.)

Acreage Distribution

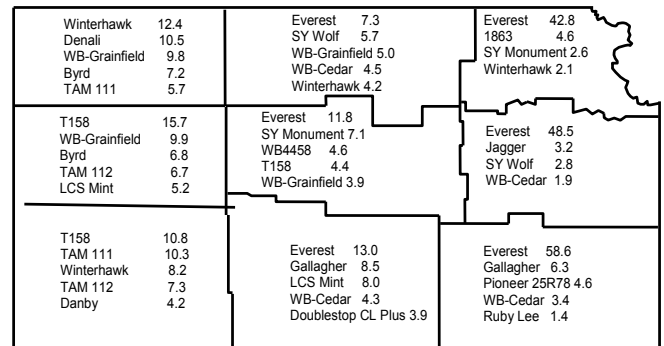


Figure 2. Leading wheat varieties in Kansas; percentage of seeded acreage for 2017 crop

2017 Performance Tests

The Kansas Agricultural Experiment Station annually compares both new and currently grown varieties in the state's major crop-producing areas. These performance tests generate unbiased performance information designed to help Kansas growers select wheat varieties suited for their area and conditions.

Site descriptions and management practices for each site are summarized in Table 3. One-year or one-location results can be misleading because of the possibility of unusual weather or pest conditions. **Be sure to keep extenuating environmental conditions in mind when examining test results.** For more information please visit: agronomy.ksu.edu/services/crop-performance-tests/index.html.

Varieties

Public varieties are selected for inclusion in the tests on the basis of several criteria. Most represent new or established varieties from Nebraska, Oklahoma, and Colorado with potential for successful use in Kansas. Some are included as long-term checks. Others are entered at the request of the originating institution.

Originators or marketers enter privately developed varieties voluntarily. Entrants choose both the entries and test sites. The 2017 private entrants are listed in Table 1.

Results and Variety Characterization

Results from Kansas tests are presented in Tables 4 through 12. Yields are reported as bushels per acre (60 lb/bu) and are adjusted to a moisture content of 13% where moistures

were reported at harvest. Yields also are converted to percentages of the test average to speed recognition of the highest-yielding entries. Multi-year averages are presented for those varieties entered more than 1 year.

Additional information such as test weight, heading date, and plant height is helpful for fine-tuning variety comparisons. Planting varieties with a range of maturities helps minimize weather risks.

At the bottom of each table is the (0.05) least significant difference (LSD) for each column of replicated data. One can think of the LSD as a “margin of error” that shows how big the difference between two varieties must be for one to be 95% confident that the difference is real. The use of the LSD is intended to reduce the chance of overemphasizing small differences. Small variations in soil structure, fertility, water-holding characteristics, and other test-site characteristics can cause considerable yield variation among plots of one variety.

Table 1. Private entrants in the 2017 Kansas wheat performance tests

AgriMAXX Wheat Company 7167 Highbanks Road Mascoutah, IL 62258 855-629-9432	Dyna-Gro Seed 117 East Laurel St. Garden City, KS 620-214-9024	MFA Incorporated 201 Ray Young Dr. Columbia, MO 65201 573-876-5363	Scott Seed Company Box 1732, 114 East New York Hereford, TX 79045 806-364-3484
AGSECO P.O. Box 7 Girard, KS 66743 620-724-6223	Kansas Wheat Alliance 1900 Kimball Avenue Manhattan, KS 66502 785-320-4080	Monsanto Company-WestBred 800 North Lindbergh Boulevard St. Louis, MO 63167 314-694-1000	Syngenta AgriPro Wheat, Inc. 11783 Ascher Rd. Junction City, KS 66441 620-532-6283
DuPont Pioneer 8100 South 15th Lincoln, NE 68512 800-228-4050	Limagrain Cereal Seeds 2040 SE Frontage Road Fort Collins, CO 80525 970-498-2200	Polansky Seed, Inc 2729 M Street Belleville, KS 66935 785-527-2271	

Table 2. Comparisons of leading winter wheat varieties - agronomy and quality

Variety ¹	% of Kansas seeded ^e 2017	Relative ²									Relative milling and baking quality ⁴	Resistance or tolerance to: ⁵												
		Test weight	Straw strength	Maturity	Coleoptile			Winter hardiness	Acid tolerance	Protein content ³		Soil-borne mosaic	Spindle streak mosaic	Wheat streak mosaic	Barley yellow dwarf	Septoria				Powdery mildew	Head scab	Hessian fly	Russ. wheat aphid ⁶	
					Height ³	tile length	Shattering									Leaf rust	Stem rust	Stripe rust	tritici blotch					Tan spot
Everest	9.6	2	5	1	6	5	3	3	T	5	LD	1	1	7	4	3	3	8	4	7	3	4	6	9
T158	5.9	1	1	3	5	--	1	3	S	--	AC	2	2	5	5	8	8	2	7	4	2	8	4	9
Winterhawk	4.8	3	5	5	8	5	5	3	I	5	AC	1	1	7	5	7	8	6	7	6	6	7	3	9
LCS Mint	4.3	1	5	5	7	5	2	1	T	5	AC	1	--	6	7	7	4	5	5	5	6	8	9	9
WB-Grainfield	3.9	2	3	6	7	--	2	--	--	--	AC	1	1	8	7	4	2	6	6	6	6	7	8	9
TAM 111	3.9	3	2	4	6	2	2	7	MS	7	AC	8	8	7	7	8	3	8	5	6	6	7	6	9
Gallagher	2.8	5	2	4	5	4	1	2	T	5	AC	1	1	7	6	3	3	3	5	7	6	7	1	9
TAM 112	2.7	2	4	2	5	2	2	5	T	3	AC	8	8	5	7	8	3	8	5	6	1	8	8	9
SY Monument	2.6	2	5	8	6	--	--	--	--	--	AC	1	1	7	6	2	2	2	4	5	5	7	7	9
Denali	2.5	1	2	7	7	7	1	5	MT	5	AC	8	8	6	7	7	3	8	--	8	5	7	2	9
WB-Cedar	2.4	2	1	1	1	5	2	1	MT	5	AC	1	1	7	6	5	3	3	4	5	2	7	9	9
Byrd	2.1	5	1	5	5	7	--	--	MT	--	AC	2	2	5	7	8	8	8	--	7	3	7	9	9
SY Wolf	1.5	2	1	5	5	5	2	2	I	5	AC	2	--	6	6	2	2	6	3	3	5	7	7	9
WB 4458	1.4	2	2	4	5	--	--	--	T	--	AC	1	1	6	6	7	1	4	7	5	7	9	9	9
Doublestop CL Plus	1.3	1	2	9	7	9	2	1	T	6	AC	1	1	6	6	3	2	5	6	6	5	8	9	9
Danby+	1.0	3	4	3	6	5	2	2	MS	5	AC	7	--	5	8	8	2	5	6	8	7	7	9	9
Jagger	0.9	4	4	1	5	6	5	6	T	3	EX	2	4	5	7	9	3	5	3	4	7	7	8	9
1863	0.8	2	7	5	7	5	2	2	T	6	AC	2	1	5	6	7	1	3	6	6	6	7	9	9
TAM 114	0.8	--	4	6	6	--	--	--	--	--	EX	8	8	7	6	4	7	2	5	7	5	7	7	9
Antero+	0.6	1	4	6	6	--	--	--	--	--	AC	4	4	7	7	7	2	4	--	5	--	6	4	9
Endurance	0.6	5	5	5	7	5	5	5	T	7	AC	2	8	7	5	5	7	5	5	7	5	6	9	9
TAM 113	0.6	2	7	5	5	--	1	7	MT	5	AC	8	8	7	7	3	2	4	--	7	4	7	9	9
Fuller	0.6	5	4	2	5	5	2	3	I	3	AC	1	1	5	7	6	2	5	6	6	6	6	8	9
PostRock	0.5	2	2	3	5	5	3	3	T	6	AC	2	5	6	7	7	3	5	8	5	8	7	8	9
Armour	0.5	3	3	1	2	7	1	5	T	5	AC	1	1	7	6	5	3	7	6	5	2	7	9	9
AP503 CL2	0.5	1	1	5	5	5	1	1	S	6	AC	2	5	6	7	8	2	5	4	7	7	7	6	9
KanMark	0.5	--	1	5	3	--	--	--	--	--	AC	1	1	6	6	2	3	6	6	6	7	8	9	9
LCS Pistol	0.4	--	7	4	6	--	--	--	--	--	LD	1	1	7	7	6	8	7	--	7	3	8	9	9
Santa Fe	0.4	3	3	2	6	2	3	3	MT	5	AC	1	--	7	6	3	4	7	3	5	6	7	9	9
T154	0.4	5	2	1	3	5	1	1	MT	5	AC	1	1	7	7	7	6	3	5	7	2	7	5	9
Thunderbird	0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TAM 103	0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Blends	14.3																							
Other White	1.3																							
Other Red	22.3																							
Other Soft	0.7																							

⁴Hard white variety Scale: 1=Best 1=Best 1=Early 1=Short 1=Long 1=Best 1=Best T=Toler 1=Best Scale: 1=Most resistant/tolerant 9=Poor 9=Poor 9=Late 9=Tall 9=Short 9=Poor 9=Poor S=Susc 9=Poor 9=Least resistant/tolerant

¹ Varieties and percentage seeded acreage from the March 2016 wheat variety survey, Kansas Agricultural Statistics, Topeka, KS.

² Most ratings are estimates based on information and observations from many sources over several years. Agronomic information by Romulo Lollato- K-State Agronomy.

³ Summary of crop performance test results from recent years.

⁴ Ratings from Rebecca Miller - K-State Wheat Quality Laboratory.

EX = Exceptional; large kernels; high protein content; very good milling, mixing, and commercial bread-baking.

LD = Less Desirable; one or more serious quality defects.

AC = Acceptable; milling and baking attributes acceptable, but not outstanding, for all properties; may have minor defects.

⁵ Ratings by Erick DeWolf et al. - K-State Plant Pathology. Final ratings and descriptions of disease and insect pests are available in "Wheat Variety Disease and Insect Ratings 2017" Publication MF991 from Kansas State University.

⁶ New Russian wheat aphid biotype is thought to be virulent on all currently available commercial varieties.

Table 3. Wheat performance test site descriptions and management in 2017

Region location	Soil type previous crop	N	P₂O₅	K₂O		Plant-harvest seed rate	Conditions
<u>Northeast Dryland</u>							
Ashland Agronomy Farm Manhattan (MA)	Reading silt loam Soybean	70	0	0	Fall	10/18/2016-6/21/2017 75 lb/a	Fungicide applied.
<u>Southeast Dryland</u>							
East Central KS Experiment Field Ottawa (OT)	Woodson silt loam Soybean	78	46	15	Fall	10/20/2016-6/21/2017 60 lb/a	Freezing temperatures 5/24/17 followed by a hailstorm 5/30/17.
Southeast Agricultural Research Center Parsons (PA)	Parsons silt loam Corn	110	30	30	Fall	10/27/2016-6/15/2017 90 lb/a	Dry early then turned wet later in the growing season. Powdery mildew, BYDV, and stripe rust present. No fungicide.
<u>Soft Wheat</u>							
Southeast Agricultural Research Center Parsons (PA)	Parsons silt loam Corn	100	20	20	Fall	10/27/2016-6/15/2017 90 lb/a	Dry early then turned wet later in the growing season. Powdery mildew, BYDV, and stripe rust present. No fungicide.
<u>North Central Dryland</u>							
North Central KS Experiment Field Belleville (BE)	Crete silt loam Fallow	80	30	0	Fall	10/3/2016-6/27/2017 90 lb/a	No fungicide applied. Wet conditions at planting.
North Central KS Farmer's Field Beloit (BL)	Harney silt loam Wheat	90	25	0	Fall	10/14/2016-6/26/2017 80 lb/a	Very wet conditions at planting. No fungicide applied.
<u>Central Dryland</u>							
Central KS Farmer's Field Gypsum (GY)	Silty clay loam Fallow	50	0	0	Fall	--	Abandoned: Freeze damage in late April.
Central KS Farmer's Field Lorraine (LR)	McCook silt loam Wheat	60	0	0	Fall	10/7/2016-6/27/2017 60 lb/a	Lodging occurred from late April snow cover. Intensive management comparison for this trial.
<u>South Central Dryland</u>							
South Central KS Farmer's Field McPherson (MC)	Crete silt loam Wheat	60	0	0	Fall	10/11/2016-6/20/2017 60 lb/a	Lodging occurred from late April snow cover. Intensive management comparison for this trial.
South Central KS Experiment Field Hutchinson (HU)	Funmar-Taver loam Canola	100	0	0	Fall	10/13/2016-6/24/2017 75 lb/a	Excellent growing season. Fungicide applied.
South Central KS Farmer's Field Conway Springs (CW)	Sandy loam Fallow	40	0	0	Fall	10/11/2016-6/22/2017 60 lb/a	Substantial disease pressure. Intensive management comparison for this trial.
<u>Northwest Dryland</u>							
Agricultural Research Center Hays (HA)	Harney silt loam Wheat	80	0	0	Fall	-- 60 lb/a	Abandoned: High winds and hail on 6/15/17.
Northwest Research-Extension Center Colby (CO)	Keith silt loam Fallow	60	0	0	Fall	9/22/2016-7/11/2017 60 lb/a	No fungicide applied. Dry fall months led to stand issues for some plots.
Northwest Research-Extension Center Tribune (TR)	Richfield silt loam Fallow	85	16	0	Fall	9/30/2016-6/29/2017 60 lb/a	Heavy snowfall in late April led to extensive stem breakage and lodging.
Northwest KS Farmer's Field Decatur (DC)	Harney clay loam Grain Sorghum	40	0	0	Fall	50 lb/a	Abandoned: dry conditions at planting caused uneven stands.
<u>Southwest Dryland</u>							
Southwest KS Farmer's Field Lamed (LA)	Harney clay loam Grain sorghum	70	0	0	Fall	10/3/2016-6/28/2017 90 lb/a	Minimum tillage; good soil moisture throughout growing season.
Southwest KS Farmer's Field Mullinville (MV)	Harney clay loam Grain Sorghum	75	0	0	Fall	10/3/2016-6/21/2017 90 lb/a	No till; good establishment and soil moisture throughout growing season.
Southwest Research-Extension Center Garden City (GC)	Keith silt loam Wheat	60	0	0	Fall	-- 65 lb/a	Abandoned: trial did not germinate until late February, followed by heavy snow cover in April.
<u>Western Irrigated</u>							
Northwest Research-Extension Center Colby (CO)	Keith silt loam Fallow	100	0	0	Fall	9/22/2016-7/11/2017 90 lb/a	Fungicide applied. Heavy snow in April caused the plants to be kinked.
Southwest Research-Extension Center Garden City (GC)	Keith silt loam Corn	100	0	0	Fall	9/28/2016-6/29/2017 90 lb/a	No fungicide applied. Heavy snow in April caused the plants to be kinked with severe lodging in most plots.
Western KS Farmer's Field Healy, Lane County (LN)	Scott silt loam Fallow	90	0	0	Fall	-- 80 lb/a	Abandoned: differential freeze damage.

Table 4. 2017 Northeast Kansas dryland winter wheat performance test

Brand / Name	MA ¹	MA	MA	-Manhattan-	
	yield (bu/a)	% of test average	test weight (lb/bu)	2 yr	3 yr
	multi-year av. (bu/a)				
AGSECO					
AG Gallant	102	116	56	76	--
AG Icon	72	82	53	--	--
AG Robust	86	98	54	65	--
Hot Rod	89	101	50	69	67
OGI					
Ruby Lee	89	101	57	67	61
Iba	98	111	57	75	66
Gallagher	105	119	55	71	68
Doublestop CL Plus	79	89	56	66	62
Bentley	87	99	53	70	--
Polansky					
Paradise	105	119	56	--	--
Syngenta					
Bob Dole	75	85	56	--	--
SY Wolf	86	97	55	65	--
SY Monument	84	95	55	--	--
SY Flint	94	106	54	--	--
SY Grit	83	94	55	--	--
SY Benefit	88	100	51	--	--
WestBred					
WB-Grainfield	89	101	55	68	--
WB4269	84	95	55	--	--
WB4515	78	88	56	--	--
Wildcat Genetics					
Everest	96	109	57	75	68
1863	88	100	52	68	67
Zenda	79	90	54	65	--
Experimentals					
OK12716 OGI	93	105	57	--	--
Averages					
Averages	88	100	55	--	--
CV (%)	6	6	4	--	--
LSD (0.05)*	7	8	3	--	--

¹ MA=Manhattan, KS, Ashland Bottoms Research Farm, Riley County. Fungicide applied.

*Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 5. 2017 Southeast Kansas dryland winter wheat performance test

Brand / Name	OT ¹	PA ²	Av.	OT	PA	Av.	-Ottawa-		-Parsons-		OT	PA	Av.	OT	PA	Av.	
							2 yr	3 yr	2 yr	3 yr							
	yield (bu/a)			% of test average			multi-year av. (bu/a)				test weight (lb/bu)			head (+/- Everest)			
AgriMAXX																	
Eastwood	47	47	47	107	83	95	--	--	--	--	64	56	60	2	2	2	
AGSECO																	
AG Gallant	46	70	58	105	122	113	--	--	64	--	61	58	59	1	2	1	
AG Icon	42	52	47	97	92	94	--	--	--	--	62	58	60	4	4	4	
AG Robust	47	53	50	107	92	100	--	--	55	--	66	58	62	-1	1	0	
Hot Rod	44	70	57	100	122	111	--	--	74	--	62	57	59	2	2	2	
Dyna-Gro Seed																	
Long Branch	57	56	56	130	97	114	--	--	57	--	61	56	58	15	11	13	
Limagrain																	
LCS Chrome	50	55	53	115	97	106	--	--	64	--	65	59	62	14	11	12	
OGI																	
OK13209	36	54	45	82	95	89	--	--	--	--	59	57	58	3	5	4	
Ruby Lee	47	58	53	106	102	104	--	56	61	58	63	58	61	1	1	1	
Scott Seed																	
TAM 304	41	58	50	94	102	98	--	--	64	--	60	57	59	1	1	1	
TAM 305	59	63	61	135	110	122	--	--	70	--	66	57	61	5	4	5	
Syngenta																	
Bob Dole	38	64	51	87	112	99	--	--	--	--	60	57	59	4	6	5	
SY Benefit	49	57	53	111	100	105	--	--	--	--	62	58	60	3	2	2	
SY Llano	--	36	36	--	64	64	--	--	49	53	--	58	58	--	0	0	
WestBred																	
WB4269	46	55	51	106	96	101	--	--	--	--	62	57	59	4	7	5	
WB4515	39	61	50	89	106	97	--	--	--	--	63	58	61	7	6	7	
WB-Cedar	41	58	49	95	101	98	--	55	62	62	62	58	60	-1	0	-1	
Wildcat Genetics																	
Everest	41	61	51	93	106	100	--	53	66	63	65	58	61	0	0	0	
Larry	47	54	50	108	94	101	--	--	60	--	61	57	59	4	6	5	
Zenda	49	61	55	113	106	110	--	--	64	--	62	58	60	7	6	6	
Averages	46	57	51	44	57	50	--	--	--	--	63	57	60	4	4	4	
CV (%)	9	10	9	9	10	9	--	--	--	--	2	2	2	1	--	--	
LSD (0.05)*	6	8	7	13	14	13	--	--	--	--	2	2	2	1	--	--	

¹ OT=Ottawa, KS, East Central Experiment Field, Franklin County. No fungicide applied.

² PA=Parsons, KS, Southeast Agricultural Research Center, Labette County. No fungicide applied.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 6. 2017 Southeast Kansas Soft winter wheat performance test

Brand / Name	PA ¹	PA	Parsons		PA	PA	PA
			2 yr	3 yr			
	yield (bu/a)	% of test average	multi-year av. (bu/a)		tw (lb/bu)	head (+/- Everest)	height (in.)
AgriMAXX							
415	92	118	88	--	57	6	30
444	78	100	78	--	58	7	33
463	82	104	--	--	58	2	30
473	83	106	--	--	58	7	31
DuPont Pioneer							
25R40	80	102	81	--	57	6	30
25R46	70	90	63	--	57	6	30
25R61	71	91	--	--	58	7	30
25R74	81	103	--	--	58	2	29
25R77	84	108	82	--	58	2	30
MFA							
2250	61	78	71	--	56	2	29
2449	65	83	73	--	57	6	31
XP 2538	76	97	--	--	58	2	30
XP 2539	85	108	--	--	58	2	32
XP 2542	81	104	--	--	58	6	30
Wildcat Genetics							
Everest HRW check	84	108	76	--	58	0	30
Averages	78	100	--	--	58	4	30
CV (%)	9	9	--	--	2	0	4
LSD (0.05)*	11	14	--	--	1	0	2

¹PA=Parsons, KS, Southeast Agricultural Research Center, Labette County. No fungicide applied.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 7. 2017 North Central Kansas dryland winter wheat performance test

Brand / Name	BE ¹	BL ²	Av.	BE	BL	Av.	-Belleville-		-Beloit-		BE	BL	Av.
							2 yr	3 yr	2 yr	3 yr			
	yield (bu/a)			% of test average			multi-year av. (bu/a)				test weight (lb/bu)		
AgriMAXX													
Eastwood	84	78	81	95	106	101	--	--	--	--	64	63	63
AGSECO													
AG Gallant	88	77	83	100	104	102	101	--	--	--	63	62	63
AG Icon	86	80	83	98	109	103	--	--	--	--	62	62	62
AG Robust	104	71	88	118	97	108	108	--	--	--	62	62	62
Hot Rod	78	75	76	88	102	95	101	--	--	--	62	62	62
Dyna-Gro Seed													
Long Branch	95	74	84	107	100	104	83	--	--	--	62	63	62
Husker Genetics													
Robidoux	92	79	85	104	107	106	69	60	--	79	62	63	62
Ruth	84	71	77	95	97	96	82	--	--	--	62	63	63
Limagrain													
LCS Chrome	94	71	83	107	97	102	84	--	--	--	62	64	63
LCS Mint	81	67	74	91	91	91	64	54	--	71	63	64	63
T158	104	71	87	117	97	107	93	77	--	78	62	63	62
OGI													
Bentley	93	77	85	105	104	105	82	--	--	--	61	63	62
Doublestop CL Plus	81	67	74	91	91	91	73	61	--	66	63	64	63
Polansky													
Paradise	99	89	94	112	121	117	--	--	--	--	63	63	63
Syngenta													
Bob Dole	88	71	80	100	97	98	--	--	--	--	61	63	62
SY 517 CL2	89	81	85	101	111	106	--	--	--	--	63	64	64
SY Benefit	93	80	86	105	108	106	--	--	--	--	63	63	63
SY Flint	79	69	74	90	94	92	81	67	--	72	64	62	63
SY Grit	91	72	81	102	98	100	91	--	--	--	61	63	62
SY Monument	86	71	78	97	97	97	84	75	--	79	62	64	63
SY Rugged	71	66	68	80	89	85	--	--	--	--	63	62	62
SY Wolf	81	60	71	92	82	87	80	66	--	62	62	63	62
WestBred													
WB4269	79	78	79	90	106	98	--	--	--	--	62	62	62
WB4303	78	79	78	88	108	98	85	--	--	--	60	62	61
WB4458	89	79	84	101	107	104	89	71	--	76	63	64	63
WB4721	90	76	83	102	103	102	89	--	--	--	63	64	63
WB-Cedar	104	76	90	117	103	110	109	90	--	75	63	64	63
WB-Grainfield	93	71	82	105	97	101	80	75	--	79	62	63	63
Winterhawk	91	77	84	102	105	104	84	69	--	69	63	63	63
Wildcat Genetics													
1863	84	66	75	95	89	92	77	69	--	74	63	63	63
Everest	84	80	82	95	109	102	79	64	--	71	62	64	63
KanMark	88	71	80	100	97	98	79	66	--	63	63	64	63
Larry	83	69	76	94	94	94	87	--	--	--	62	62	62
Tatanka	84	81	83	95	110	103	85	--	--	--	62	66	64
Zenda	83	70	76	94	95	94	100	--	--	--	63	63	63
Experimentals													
LCH13NEDH-12-27 Limagrain	81	68	75	92	93	92	--	--	--	--	63	65	64
LCH13NEDH-14-71* Limagrain	90	73	81	102	99	100	--	--	--	--	62	64	63
LCH14-51 Limagrain	91	69	80	103	94	99	--	--	--	--	63	63	63
LCH14-89 Limagrain	103	70	87	117	95	106	--	--	--	--	62	62	62
LCH14-91 Limagrain	100	72	86	113	98	105	--	--	--	--	62	63	62
Averages	88	73	81	88	73	81	--	--	--	--	62	63	63
CV (%)	8	12	10	8	12	10	--	--	--	--	1	2	2
LSD (0.05)*	10	12	11	11	17	14	--	--	--	--	1	2	1

¹BE=Belleville, KS, North Central Experiment Field, Republic County. No fungicide applied.

²BL=Beloit, KS, farmer's field, Mitchell County. No fungicide applied.

*Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 8. 2017 Central Kansas dryland winter wheat performance test

Brand / Name	GY ¹	LR ²	Av.	GY	LR	Av.	-Gypsum-		-Lorraine-		LR	Intensive Management		
	yield (bu/a)			% of test average			2 yr	3 yr	2 yr	3 yr		LRim ³	LRim	Diff.
							multi-year av. (bu/a)				tw (lb/bu)	(bu/a)	% of average	(bu/a)
AgriMAXX														
Eastwood	--	104	104	--	119	119	--	--	--	--	60	111	114	7
AGSECO														
AG Gallant	--	99	99	--	113	113	--	--	84	--	60	113	116	14
AG Icon	--	90	90	--	103	103	--	--	--	--	62	96	99	6
AG Robust	--	80	80	--	92	92	--	--	68	--	59	95	98	15
Hot Rod	--	90	90	--	102	102	--	--	77	--	59	100	103	10
Dyna-Gro Seed														
Long Branch	--	86	86	--	99	99	--	--	70	--	60	91	93	4
Limagrain														
LCS Chrome	--	95	95	--	109	109	--	--	76	--	61	93	95	-2
LCS Mint	--	86	86	--	98	98	--	65	63	59	62	95	97	9
LCS Pistol	--	83	83	--	95	95	--	67	60	55	58	90	93	7
T158	--	85	85	--	97	97	--	65	67	65	59	98	101	13
OGI														
Bentley	--	96	96	--	110	110	--	--	76	--	60	94	96	-3
Doublestop CL Plus	--	83	83	--	95	95	--	65	64	62	60	90	93	7
Syngenta														
Bob Dole	--	80	80	--	91	91	--	--	--	--	58	79	81	-1
SY 517 CL2	--	64	64	--	73	73	--	--	--	--	61	91	94	27
SY Achieve CL2	--	86	86	--	98	98	--	--	--	--	60	96	98	10
SY Benefit	--	89	89	--	102	102	--	--	--	--	56	94	96	5
SY Flint	--	73	73	--	83	83	--	--	63	--	59	101	103	28
SY Grit	--	96	96	--	109	109	--	--	80	--	62	108	111	13
SY Monument	--	92	92	--	106	106	--	78	73	70	61	97	99	4
SY Rugged	--	86	86	--	99	99	--	--	--	--	58	90	92	3
SY Wolf	--	88	88	--	101	101	--	72	69	69	59	101	103	13
WestBred														
WB4269	--	78	78	--	89	89	--	--	--	--	58	101	104	23
WB4303	--	103	103	--	118	118	--	--	78	--	55	124	128	21
WB4458	--	94	94	--	108	108	--	68	73	72	61	114	117	20
WB-Cedar	--	78	78	--	89	89	--	67	65	66	59	92	95	14
WB-Grainfield	--	97	97	--	111	111	--	81	72	70	62	108	111	11
Winterhawk	--	93	93	--	107	107	--	66	71	67	60	105	108	12
Wildcat Genetics														
1863	--	79	79	--	91	91	--	62	76	65	60	73	75	-7
Everest	--	89	89	--	102	102	--	54	61	62	58	106	108	17
KanMark	--	104	104	--	119	119	--	67	71	66	62	114	117	10
Larry	--	90	90	--	103	103	--	--	72	--	60	98	100	8
Tatanka	--	79	79	--	90	90	--	--	73	--	59	80	82	1
Zenda	--	95	95	--	109	109	--	--	78	--	63	98	101	3
Experimentals														
LCH13NEDH-12-27 Limagrain	--	87	87	--	100	100	--	--	--	--	60	105	108	18
LCH14-51 Limagrain	--	75	75	--	85	85	--	--	--	--	61	95	97	20
LCH14-89 Limagrain	--	74	74	--	85	85	--	--	--	--	60	83	85	8
LCH14-91 Limagrain	--	83	83	--	95	95	--	--	--	--	61	79	81	-5
OK12716 OGI	--	93	93	--	106	106	--	--	--	--	60	106	108	13
Averages	--	87	87	--	87	87	--	--	--	--	60	97	97	10
CV (%)	--	10	10	--	10	10	--	--	--	--	4	10	10	--
LSD (0.05)*	--	14	14	--	16	16	--	--	--	--	4	16	16	--

¹GY=Gypsum, KS, farmer's field, Saline County. Abandoned: differential freeze damage.

²LR=Lorraine, KS, farmer's field, Ellsworth County. No fungicide applied.

³LRim= Lorraine, KS, farmer's field, Ellsworth County. Intensive management: + 40 lbs N/a; 2 fl oz/a Priaxor fungicide; 9 fl oz/a Twinline fungicide.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 9. 2017 South Central Kansas dryland winter wheat performance test

Brand / Name	MC ¹	HU ²	CW ³	Av.	MC	HU	CW	Av.	-MC-		-HU-		-CW-		HU	Intensive Management				
									2 yr	3 yr	2 yr	3 yr	2 yr	3 yr		MCim ⁴	MCim diff.	CWim ⁵	CWim diff.	
	yield (bu/a)				% of test average				multi-year av. (bu/a)						tw (lb/bu)	yield (bu/a)				
AgriMAXX																				
Eastwood	70	93	63	75	104	96	97	99	--	--	--	--	--	--	58	79	8	73	11	
AGSECO																				
AG Icon	71	105	71	82	104	108	110	107	--	--	--	--	--	--	58	76	5	69	-2	
AG Robust	74	97	69	80	109	101	108	106	70	--	76	--	68	--	59	74	0	70	0	
Hot Rod	73	96	67	79	108	100	104	104	71	--	75	--	69	--	57	80	7	69	2	
Dyna-Gro Seed																				
Long Branch	63	91	69	74	92	95	106	98	60	--	75	--	64	--	57	75	12	80	11	
Limagrain																				
LCS Chrome	56	97	57	70	82	101	88	90	63	--	76	--	65	--	61	66	11	62	5	
LCS Mint	63	90	55	69	93	93	85	90	61	58	77	63	60	52	61	68	5	63	9	
LCS Pistol	65	95	73	78	96	99	113	103	58	55	79	60	70	57	57	81	16	78	5	
LCS Wizard	67	103	73	81	99	107	113	106	69	65	78	58	68	57	59	76	9	80	7	
T158	52	92	58	67	76	95	90	87	54	55	70	55	67	56	56	70	18	78	20	
OGI																				
Bentley	72	84	64	73	105	87	99	97	67	--	71	61	65	--	56	71	-1	76	12	
Doublestop CL Plus	72	88	66	75	106	91	102	100	71	69	72	62	67	58	60	78	6	70	5	
Gallagher	80	103	78	87	118	107	120	115	75	74	81	65	69	57	57	88	8	77	-1	
Iba	84	103	67	85	124	107	104	111	77	72	77	59	71	60	60	85	1	79	12	
Ruby Lee	65	94	68	76	96	97	105	99	61	63	76	64	59	50	57	75	9	71	4	
Smith's Gold	72	108	62	80	106	111	96	104	--	--	--	--	--	--	59	86	14	63	1	
Spirit Rider	77	98	63	79	113	102	97	104	--	--	--	--	--	--	60	88	12	75	13	
(W) Stardust	63	100	56	73	92	104	87	94	--	--	--	65	--	--	59	81	18	72	16	
Polansky																				
Paradise	81	105	68	85	120	109	106	112	--	--	--	--	--	--	59	76	-6	74	5	
Scott Seed																				
TAM 304	68	98	61	76	100	102	95	99	66	--	80	--	63	--	55	73	5	65	4	
TAM 305	63	96	72	77	93	100	111	101	61	--	74	--	71	--	59	78	15	69	-3	
Syngenta																				
Bob Dole	68	104	60	77	100	108	93	100	--	--	--	--	--	--	58	83	15	58	-2	
SY Achieve CL2	66	97	64	76	97	100	100	99	--	--	--	--	--	--	60	64	-2	70	6	
SY Benefit	61	94	67	74	90	97	104	97	--	--	--	--	--	--	56	67	6	77	10	
SY Flint	70	87	69	75	103	90	107	100	69	70	73	60	73	62	56	80	10	76	7	
SY Grit	63	102	61	76	93	106	95	98	66	--	76	--	66	--	58	77	13	67	6	
SY Llano	61	92	54	69	89	95	85	90	59	57	74	60	58	49	58	68	7	66	12	
SY Monument	65	103	69	79	95	107	108	103	62	61	81	71	72	63	59	72	7	67	-2	
SY Rugged	72	91	48	70	105	94	74	91	--	--	--	--	--	--	53	73	1	69	21	
WestBred																				
WB4269	74	92	71	79	109	95	111	105	--	--	--	--	--	--	58	80	6	76	5	
WB4303	72	100	62	78	106	103	96	102	72	--	78	--	63	--	54	94	22	68	6	
WB4458	71	99	61	77	104	102	94	100	70	73	79	65	62	54	57	86	15	67	6	
WB4515	69	94	57	73	102	97	89	96	--	--	--	--	--	--	60	72	2	62	5	
WB-Cedar	76	105	60	80	112	109	93	104	73	69	78	60	63	54	56	81	5	72	13	
WB-Grainfield	65	102	71	80	96	106	110	104	65	--	80	--	65	--	59	71	5	72	1	
Winterhawk	65	107	60	77	96	111	93	100	65	--	84	--	67	--	58	78	13	68	8	
Wildcat Genetics																				
1863	69	98	53	73	101	102	83	95	59	61	80	66	58	51	59	76	7	59	6	
Everest	63	95	66	75	93	98	102	98	61	62	76	58	67	56	57	78	15	80	14	
KanMark	72	94	63	76	106	97	97	100	59	60	78	59	64	53	60	89	17	61	-2	
Larry	79	93	66	79	116	96	102	105	77	--	77	--	72	--	58	83	4	69	3	
Tatanka	47	89	62	66	69	92	97	86	56	--	69	--	69	--	56	57	10	85	23	
Zenda	67	91	81	80	99	94	125	106	68	--	75	--	79	--	58	77	10	81	1	
Experimentals																				
LCH13NEDH-12-27 Limagrain	62	97	66	75	92	100	103	98	--	--	--	--	--	--	59	77	15	71	5	
LCH14-51 Limagrain	70	95	63	76	103	98	98	100	--	--	--	--	--	--	59	75	5	59	-4	

Table 10. 2017 Northwest Kansas dryland winter wheat performance test

Brand / Name	HA ¹	CO ²	TR ³	DC ⁴	Av.	HA	CO	TR	DC	Av.	-Colby-		-Tribune-		HA	CO	TR	DC	Av.	TR	TR	
											2 yr	3 yr	2 yr	3 yr								
	yield (bu/a)				% of test average				multi-year av. (bu/a)				test weight (lb/bu)				head (+-Everest)	height (in.)				
AgriMAXX																						
Eastwood	--	73	71	--	72	--	96	160	--	128	--	--	--	--	--	59	56	--	58	2	35	
AGSECO																						
AG Gallant	--	86	57	--	72	--	113	130	--	121	--	--	--	--	--	60	58	--	59	0	30	
AG Icon	--	64	30	--	47	--	84	67	--	76	--	--	--	--	--	57	54	--	56	4	36	
TAM 114	--	79	43	--	61	--	104	96	--	100	87	--	57	68	--	59	58	--	58	3	27	
Dyna-Gro Seed																						
Long Branch	--	87	53	--	70	--	113	119	--	116	87	--	61	--	--	60	57	--	58	3	35	
Limagrain																						
LCS Chrome	--	79	34	--	56	--	103	76	--	90	82	--	48	--	--	58	53	--	56	3	37	
LCS Mint	--	72	47	--	60	--	94	106	--	100	70	--	60	60	--	56	56	--	56	4	35	
LCS Pistol	--	85	53	--	69	--	111	120	--	115	77	--	65	68	--	59	56	--	57	1	32	
T158	--	83	44	--	63	--	108	99	--	103	73	--	54	63	--	61	58	--	60	-1	29	
OGI																						
Lonerider	--	85	57	--	71	--	111	129	--	120	--	--	--	--	--	59	57	--	58	0	33	
PlainsGold																						
Avery	--	69	47	--	58	--	90	105	--	98	65	--	61	--	--	55	56	--	56	4	34	
Brawl CL Plus	--	66	36	--	51	--	86	82	--	84	69	--	53	59	--	57	56	--	57	2	34	
Byrd	--	69	49	--	59	--	90	112	--	101	67	--	60	61	--	57	56	--	56	3	35	
Denali	--	68	27	--	47	--	89	61	--	75	70	--	43	46	--	55	50	--	52	4	37	
Langin	--	86	45	--	66	--	113	102	--	107	90	--	63	--	--	60	58	--	59	0	30	
Syngenta																						
Bob Dole	--	75	--	--	75	--	98	--	--	98	--	--	--	--	--	57	--	--	57	--	--	
SY Grit	--	63	36	--	50	--	83	81	--	82	66	--	49	--	--	58	54	--	56	3	32	
SY Monument	--	67	31	--	49	--	87	70	--	79	75	--	51	61	--	59	54	--	56	4	34	
SY Rugged	--	81	41	--	61	--	106	92	--	99	--	--	--	--	--	60	55	--	58	3	31	
SY Sunrise	--	70	41	--	56	--	92	93	--	92	75	--	51	64	--	60	55	--	57	4	33	
SY Wolf	--	70	28	--	49	--	91	62	--	77	73	--	46	54	--	58	55	--	57	4	36	
TAM 111	--	58	46	--	52	--	76	103	--	89	66	--	56	54	--	56	55	--	55	3	35	
WestBred																						
WB4458	--	63	34	--	48	--	82	77	--	80	73	--	44	50	--	58	56	--	57	1	34	
WB4462	--	81	53	--	67	--	106	120	--	113	--	--	--	--	--	60	59	--	60	3	36	
WB4721	--	83	40	--	62	--	109	90	--	100	86	--	55	--	--	62	57	--	59	3	36	
WB-Grainfield	--	88	50	--	69	--	115	114	--	115	88	--	60	72	--	61	57	--	59	3	35	
Winterhawk	--	75	40	--	57	--	98	90	--	94	78	--	51	58	--	59	54	--	56	4	35	
Wildcat Genetics																						
Everest	--	68	32	--	50	--	89	72	--	80	72	--	47	55	--	57	60	--	59	0	36	
(W) Joe	--	81	56	--	68	--	106	125	--	116	88	--	67	81	--	62	58	--	60	3	37	
KanMark	--	68	43	--	55	--	89	96	--	93	73	--	54	60	--	59	56	--	57	2	32	
Larry	--	75	28	--	51	--	98	63	--	80	84	--	49	--	--	57	55	--	56	4	36	
Oakley CL	--	90	64	--	77	--	117	144	--	131	88	--	67	77	--	62	58	--	60	5	37	
Tatanka	--	90	67	--	78	--	117	151	--	134	88	--	70	--	--	62	57	--	59	3	29	
Experimentals																						
KS13H20-5 Kansas	--	75	--	--	75	--	98	--	--	98	--	--	--	--	--	58	--	--	58	--	--	
KS13H9-1 Kansas	--	84	46	--	65	--	109	103	--	106	--	--	--	--	--	61	59	--	60	1	34	
LCH13NEDH-14-71* Limagrain	--	80	48	--	64	--	105	109	--	107	--	--	--	--	--	59	57	--	58	4	35	
LCH14-77 Limagrain	--	79	47	--	63	--	104	106	--	105	--	--	--	--	--	60	56	--	58	4	35	
LCH14-89 Limagrain	--	76	54	--	65	--	99	121	--	110	--	--	--	--	--	60	57	--	59	1	30	
Averages	--	77	45	--	61	--	100	100	--	100	--	--	--	--	--	59	56	--	58	2	34	
CV (%)	--	9	12	--	10	--	9	12	--	10	--	--	--	--	--	3	3	--	3	1	5	
LSD (0.05)	--	9	7	--	8	--	9	17	--	13	--	--	--	--	--	3	2	--	3	1	2	

¹HA=Hays, KS, K-State Agricultural Research Center, Ellis County. Test abandoned; hail and high wind.

²CO=Colby, KS, Northwest Agricultural Research Center, Thomas County. No fungicide applied.

³TR=Tribune, KS, Southwest Agricultural Research Center, Greeley County. Fungicide applied.

⁴DC=Decatur, KS, farmer's field, Decatur County. Test abandoned; uneven and late emergence.

(W) indicates hard white wheat variety.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 11. 2017 Southwest Kansas dryland winter wheat performance test

Brand / Name	LA ¹	MV ²	GC ³	Av.	LA	MV	GC	Av.	-LA-		-MV-		LA	MV	GC	Av.
									2 yr	3 yr	2 yr	3 yr				
	yield (bu/a)				% of test average				multi-year av. (bu/a)				test weight (lb/bu)			
AgriMAXX																
Eastwood	85	97	--	91	110	100	--	105	--	--	--	--	57	62	--	60
AGSECO																
AG Icon	81	93	--	87	105	97	--	101	--	--	--	--	56	61	--	59
TAM 113	67	94	--	80	87	97	--	92	--	59	--	--	51	63	--	57
TAM 114	68	109	--	89	89	109	--	99	83	78	108	--	52	64	--	58
Dyna-Gro Seed																
Long Branch	89	104	--	96	116	105	--	110	85	--	105	--	54	63	--	58
Limagrain																
LCS Chrome	66	84	--	75	86	90	--	88	81	--	94	--	50	64	--	57
LCS Mint	72	91	--	81	93	95	--	94	76	76	98	--	53	62	--	57
LCS Pistol	70	101	--	85	91	103	--	97	75	74	103	--	54	63	--	59
LCS Wizard	75	85	--	80	97	90	--	94	81	68	88	--	56	62	--	59
T158	82	102	--	92	107	104	--	105	93	90	104	--	59	64	--	61
OGI																
Bentley	65	99	--	82	84	101	--	93	79	--	104	--	50	62	--	56
Doublestop CL Plus	72	93	--	82	93	96	--	95	--	--	--	--	55	64	--	59
Gallagher	85	97	--	91	110	100	--	105	89	82	90	--	59	64	--	61
Iba	74	84	--	79	95	90	--	93	78	73	95	--	58	62	--	60
Lonerider	83	104	--	94	108	105	--	107	--	--	--	--	57	62	--	59
(W) Stardust	66	87	--	76	86	92	--	89	--	--	--	--	52	63	--	57
PlainsGold																
Avery	77	100	--	88	100	102	--	101	71	--	100	--	55	64	--	59
Brawl CL Plus	86	90	--	88	111	94	--	103	87	79	97	--	58	64	--	61
Byrd	80	103	--	92	103	105	--	104	75	76	104	--	56	63	--	60
Denali	78	99	--	89	101	101	--	101	85	76	101	--	54	62	--	58
Langin	69	110	--	90	90	110	--	100	83	--	111	--	54	60	--	57
Syngenta																
Bob Dole	75	91	--	83	97	95	--	96	--	--	--	--	56	60	--	58
SY Grit	72	86	--	79	93	91	--	92	85	--	81	--	53	65	--	59
SY Monument	73	97	--	85	94	100	--	97	89	89	104	--	55	63	--	59
SY Rugged	62	96	--	79	80	99	--	89	--	--	--	--	53	63	--	58
TAM 111	76	92	--	84	98	96	--	97	74	71	93	--	58	63	--	61
WestBred																
WB4458	79	95	--	87	102	98	--	100	101	90	93	--	58	64	--	61
WB4462	88	99	--	94	114	102	--	108	--	--	--	--	58	66	--	62
WB4721	72	93	--	82	93	96	--	95	--	--	--	--	55	62	--	58
WB-Grainfield	85	113	--	99	111	113	--	112	99	95	110	--	55	63	--	59
Winterhawk	78	100	--	89	101	102	--	102	95	86	98	--	58	63	--	61
Wildcat Genetics																
Everest	67	93	--	80	87	97	--	92	77	74	91	--	58	65	--	62
(W) Joe	97	105	--	101	126	106	--	116	97	95	119	--	59	65	--	62
KanMark	82	93	--	87	106	96	--	101	89	84	97	--	59	66	--	62
Larry	84	99	--	92	109	102	--	105	96	--	107	--	54	63	--	58
Oakley CL	78	104	--	91	101	105	--	103	86	86	108	--	57	65	--	61
Tatanka	82	111	--	96	106	111	--	108	100	--	114	--	58	64	--	61
Experimentals																
KS13H9-1 Kansas	97	103	--	100	125	105	--	115	--	--	--	--	60	65	--	62
KS13HW92-3 Kansas	74	101	--	87	96	103	--	99	--	--	--	--	57	63	--	60
LCH14-77 Limagrain	75	94	--	85	97	97	--	97	--	--	--	--	55	63	--	59
LCH14-89 Limagrain	76	95	--	86	99	98	--	99	--	--	--	--	56	65	--	61
OK12716 OGI	79	100	--	89	102	102	--	102	--	--	--	--	56	61	--	58
Averages	77	97	--	87	100	100	--	100	--	--	--	--	56	63	--	59
CV (%)	6	4	--	5	6	4	--	5	--	--	--	--	4	4	--	4
LSD (0.05)*	10	8	--	9	10	8	--	9	--	--	--	--	5	5	--	5

¹LA=Larned, KS, Farmer's Field, Pawnee County. Fungicide applied.

²MV=Mullinville, KS, Farmer's Field, Kiowa County. Fungicide applied.

³GC=Garden City, KS, Southwest Agricultural Research Center, Finney County. Abandoned: emergence issues followed by heavy snow cover in April.

(W) denotes hard white wheat variety.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

Table 12. 2017 Western Kansas irrigated winter wheat performance test

Brand / Name	CO ¹	GC ²	LN ³	Av.	CO	GC	LN	Av.	-CO-		-GC-		-LN-		CO	GC	LN	Av.
									2 yr	3 yr	2 yr	3 yr	2 yr	3 yr				
	yield (bu/a)				% of test average				multi-year av. (bu/a)						test weight (lb/bu)			
AgriMAXX																		
Eastwood	91	100	--	95	113	104	--	109	--	--	--	--	--	--	59	59	--	59
AGSECO																		
AG Icon	78	89	--	84	97	93	--	95	--	--	--	--	--	--	58	61	--	59
TAM 114	76	98	--	87	95	102	--	99	96	92	108	111	--	75	58	62	--	60
Dyna-Gro Seed																		
Long Branch	79	96	--	87	98	100	--	99	101	--	113	--	--	--	59	59	--	59
Underwood	86	97	--	91	107	101	--	104	103	77	102	92	--	69	59	60	--	59
Limagrain																		
LCS Chrome	82	81	--	82	102	84	--	93	102	--	103	--	--	--	58	56	--	57
LCS Mint	66	86	--	76	82	89	--	85	92	80	98	91	--	72	57	59	--	58
LCS Wizard	69	87	--	78	86	90	--	88	94	73	98	78	--	69	55	60	--	57
T158	74	98	--	86	92	102	--	97	95	93	104	105	--	75	60	61	--	60
OGI																		
Lonerider	102	119	--	111	127	124	--	126	--	--	--	--	--	--	59	60	--	59
Spirit Rider	85	94	--	90	105	99	--	102	--	--	--	--	--	--	58	62	--	60
PlainsGold																		
Avery	69	80	--	74	86	83	--	84	93	--	102	--	--	--	55	55	--	55
Brawl CL Plus	71	90	--	81	89	94	--	91	92	81	101	101	--	84	59	61	--	60
Byrd	64	82	--	73	79	86	--	83	96	78	98	84	--	70	55	56	--	55
Denali	61	93	--	77	76	97	--	87	--	--	--	--	--	--	55	59	--	57
Langin	83	96	--	89	103	100	--	102	--	--	--	--	--	--	59	59	--	59
Scott Seed																		
TAM 304	86	94	--	90	107	99	--	103	113	97	106	99	--	92	57	60	--	58
TAM 305	87	93	--	90	108	98	--	103	104	85	106	100	--	70	60	59	--	59
Syngenta																		
Bob Dole	68	96	--	82	84	100	--	92	--	--	--	--	--	--	55	61	--	58
SY Flint	86	93	--	89	107	97	--	102	104	89	103	105	--	79	57	60	--	58
SY Grit	57	93	--	75	71	97	--	84	94	--	102	--	--	--	54	59	--	56
SY Monument	77	95	--	86	96	99	--	98	100	--	106	--	--	--	55	59	--	57
SY Sunrise	82	95	--	88	101	99	--	100	103	104	106	108	--	90	61	59	--	60
SY Wolf	61	83	--	72	75	87	--	81	88	84	99	99	--	81	55	58	--	57
TAM 111	59	97	--	78	74	101	--	87	91	74	112	100	--	72	54	61	--	58
WestBred																		
WB4303	77	100	--	88	95	104	--	100	100	--	105	--	--	--	49	58	--	54
WB4458	81	98	--	90	101	103	--	102	104	91	101	95	--	93	60	60	--	60
WB4721	110	94	--	102	137	98	--	117	--	--	--	--	--	--	62	60	--	61
WB-Cedar	86	106	--	96	107	111	--	109	--	85	--	97	--	--	61	64	--	63
WB-Grainfield	93	98	--	95	115	103	--	109	106	--	110	--	--	--	58	62	--	60
Wildcat Genetics																		
Everest	77	99	--	88	96	104	--	100	96	85	103	92	--	76	58	62	--	60
(W) Joe	75	97	--	86	93	101	--	97	102	--	107	--	--	--	54	61	--	57
KanMark	76	98	--	87	95	103	--	99	99	88	103	93	--	81	56	59	--	58
Larry	112	99	--	106	140	103	--	121	125	--	104	--	--	--	61	60	--	61
Experimentals																		
KS13H20-5 Kansas	102	117	--	109	126	122	--	124	--	--	--	--	--	--	58	64	--	61
KS13H9-1 Kansas	117	106	--	112	146	111	--	129	--	--	--	--	--	--	61	60	--	61
KS13HW92-3 Kansas	81	97	--	89	100	101	--	101	--	--	--	--	--	--	57	60	--	59
LCH14-77 Limagrain	77	98	--	87	95	102	--	99	--	--	--	--	--	--	60	61	--	61
LCH14-89 Limagrain	81	108	--	95	101	113	--	107	--	--	--	--	--	--	59	62	--	61
Averages	80	96	--	88	100	100	--	100	--	--	--	--	--	--	57	60	--	59
CV (%)	10	8	--	9	10	8	--	9	--	--	--	--	--	--	4	4	--	4
LSD (0.05)*	17	11	--	14	17	11	--	14	--	--	--	--	--	--	5	4	--	4

¹CO=Colby, KS, Northwest Agricultural Research Center, Thomas County. Fungicide applied.

²GC=Garden City, KS, Southwest Agricultural Research Center, Finney County. Fungicide applied.

³LN=Healy, KS, farmer's field, Lane County. Abandoned; freeze damage.

⁴(W) indicates hard white wheat.

* Yields must differ by more than the LSD value to be considered statistically different. LSD=Least significant difference.

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www.agronomy.k-state.edu/services/crop-performance-tests/index.html

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