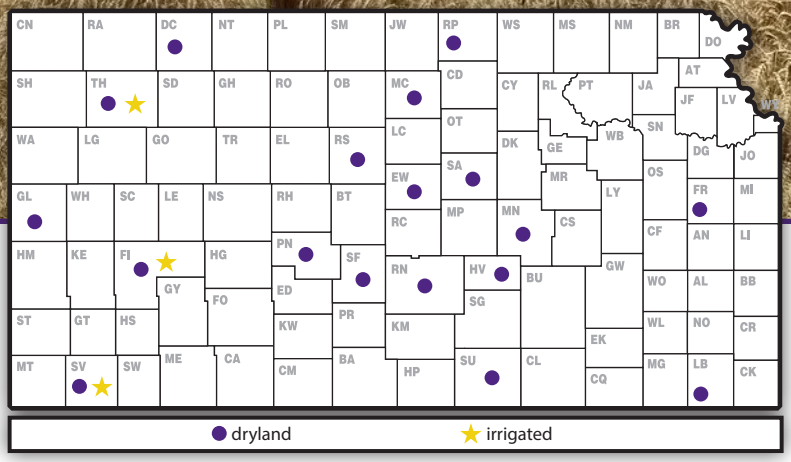
2021 Kansas Performance Tests with

Winter Wheat Varieties



Report of Progress 1165

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

CONTENTS

2021 WHEAT CROP REVIEW

Weather and Crop Development

Fall growing conditions: A tale of two crops

The month of September 2020 had good moisture conditions across the state of Kansas, with rainfall totals ranging between 0.75 and 6 inches. This moisture ensured that fields planted between early September until the very early part of October had good emergence and a decent stand establishment in the fall. However, the month of October was dry for the majority of the state, with precipitation totals ranging from 0 to 0.5 inches – with the exception of the southernmost tier of Kansas counties that received up to 5.6 inches of rainfall. In many cases, these dry October conditions had two main consequences: first, they did not allow fields planted mid- to late-October to emerge until the next precipitation event, which did not happen until November or, in some cases, December. Second, the dry October reduced the amount of forage biomass produced by early planted wheat crops. The month of November brought anywhere from 0.5 to 7.6 inches of precipitation to the different Kansas wheat growing regions. The far southwest portion of the state missed some of these rains, and severe drought started to develop.

The weather conditions described above resulted in two very distinct wheat crops going into the winter: one emerged in September or early October, and another emerged after November, and many times as late as December.

Arctic temperatures during the winter and the potential for winterkill

The winter started on the warm side with December and January averaging 3.5 degrees warmer than normal. However, the month of February was much cooler than normal, averaging 11.0 degrees below normal. Much of this occurred during a two-day period where air temperatures reached close to negative 30°F, with as many as 230 hours of air temperatures below the 12°F-threshold that can induce winterkill in winter wheat. The potential for winterkill was worsened by a very limited snow cover accompanying these cold temperatures. The majority of the state received between one and two inches of snow, with portions of central Kansas receiving no snow whatsoever. This compared to neighboring states receiving as much as 10-20 inches. However, the soil temperatures during this period of extremely cold temperatures provided a positive outlook, as soils never reached below 12-14°F. In years with widespread winterkill, soil temperatures often reach single digits. Soil temperatures are important because during the winter, the growing point of the wheat plant is still below ground and protected by the soil. There were a few fields in the central portion of the state (Ottawa County and surrounding region) that showed severe tiller dieback due to these artic temperatures, but overall the mild soil temperatures helped the crop buffer any potential injury.

The prolonged winter maintained the wheat crop dormant for a relatively long time. Most of the varieties evaluated in Hutchinson by K-State Research and Extension did not reach the first hollow stem stage of development until March 30, which compare to as early as March 6 in years with a warm winter.

Early spring growing conditions

The spring started with some freezing temperatures on April 20-22, which caused low levels of freeze damage to early planted wheat fields in south central and southwest Kansas. The entire region between Sedgwick-Sumner counties and Meade County seemed to have lost a few spikelets due to these freezing temperatures, although this caused hardly more than 1-2% loss in individual fields.

The departure from normal precipitation during September 1, 2020, until May 1, 2021, ranged from negative 5.6 to positive 0.6 inches in the wheat growing region in Kansas; thus, different levels of drought stress had started to develop around the state by May 1. Parts of central and south central Kansas had more advanced crops showing symptoms such as rolled up leaves, blue discoloration to the canopy, and lower canopy starting to turn yellow. The far southwest corner of the state, where drought stress started as early as the fall, had many fields nearing complete loss due to soil water deficit.

Grain filling period

The months of May and June had precipitation totals well above normal, with parts of the state receiving anywhere from 2.2 to 15.3 inches of precipitation between May 1 and June 21, 2021. These above-normal precipitation amounts were accompanied by below-normal temperatures during the month of May, with departure from normal ranging from negative 5 to positive 0.5°F. These were near ideal conditions for grain yield development, which not only benefited the early emerged crops, but more importantly ensured good growing conditions and potential for recovery for the late emerged crops. Likewise, these conditions favored the development of stripe rust and Fusarium head blight across the state (see the disease section below). Some excessive precipitation caused fields in the central Kansas region (Saline County area) to become water logged

and lose test weight and productivity starting in the first week of June.

The first three weeks of June had temperatures well above normal (positive 1.5 to 6.6°F departure from normal), which accelerated the end of the season for much of the wheat crop that was relatively behind in development due to a combination of late emergence and a long winter. At the time of wheat harvest for the majority of the state (June 20 to July 10), consecutive rainfall events delayed wheat harvest, and in many cases, decreased the test weight of the crop. (Romulo Lollato. Kansas State University Extension Wheat Specialist and Mary Knapp, Kansas State University Climatologist)

Diseases

Diseases were a major factor in wheat production in 2021. The frequent rainfall and cooler-than-average temperatures in the spring favored the production of stripe rust, particularly in the southeast and central areas of the state. Fusarium head blight (head scab) was also problematic in the central and eastern regions of the state. Head scab reduced test weights and grain quality in many wheat fields, though producers are doing a good job including seed treatments at planting and spraying fungicides before flowering to mitigate the effects of diseases.

Insects

The 2020-2021 wheat production season seemed to have relatively fewer arthropod pests throughout the state than usual. However, the past few years have not produced a really large scale pest event, probably for several reasons. The pest management practices that help the most are as follows: 1. Timely eradication of volunteer wheat. This is really important as the volunteer wheat that exists from harvest until the fall crop germinates is necessary by most wheat pests for their existence during that timeframe. Managing the volunteer wheat problem is not easy but does impact the wheat crop.
2. Second-planting as late into the fall as is agronomically-feasible in your area. The less time wheat pests have to find and infest your planted crop, the less pests there usually are to damage that crop. 3. Utilizing varieties resistant to pest attack and/or those that have performed best in your area. Thus, Kansas wheat producers do seem to be getting better at mitigating damage due to wheat pests.

The pests that did cause some concern in 2020-2021 were not new or different. Armyworms were worrisome in the fall of 2020 as were army cutworms. Armyworm infestations stopped in the fall with the advent of freezing temperatures, and army cutworm infestations did not develop on the large scale basis as they did in the 2019-2020 growing season. There were a few scattered reports of fields replanted due to Hessian fly infestations, but this seems to happen somewhere around the state in localized areas every year.

Wheat Streak Mosaic was reported, and verified from counties as far into north central Kansas as Saline and Dickinson. This is not unusual, but seems to be getting a little more common so far east. Viruses that cause Wheat Streak Mosaic are vectored by wheat curl mites. These seem to be mainly transported to new hosts by wind, however, they do seem to be on a slow but steady progression eastward in Kansas. (Jeff Whitworth, Kansas State University Department of Entomology)

Harvest Statistics

The Kansas Agricultural Statistics' July estimate of the 2021 crop was 380 million bushels from 6.9 million acres, up 35% from last year's crop. Yield per harvested acre is expected to average 55 bushels, up 10 bushels from last year's final yield. (July 2021, *Crops Report*, Kansas Agricultural Statistics)

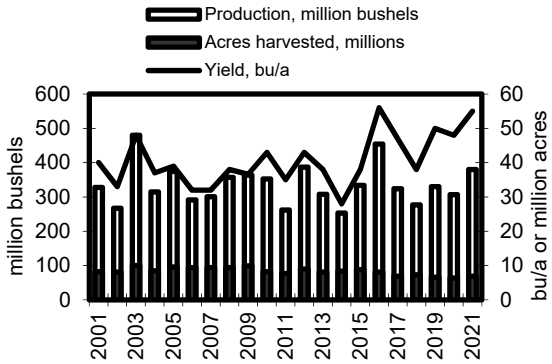


Figure 1. Historical Kansas wheat production

SY Monument remained the top-seeded variety in Kansas for the third consecutive year, accounting for 9.4% of the state's planted acres. WB Grainfield remained in second place at 5.5%. Zenda moved up a spot into third with 4.7%. The fourth most popular variety in Kansas was T158 at 3.1%. Joe moved up to fifth place at 2.8% and was the only hard white variety in the top ten. (March 2021, *Wheat Variety*, Kansas Agricultural Statistics)

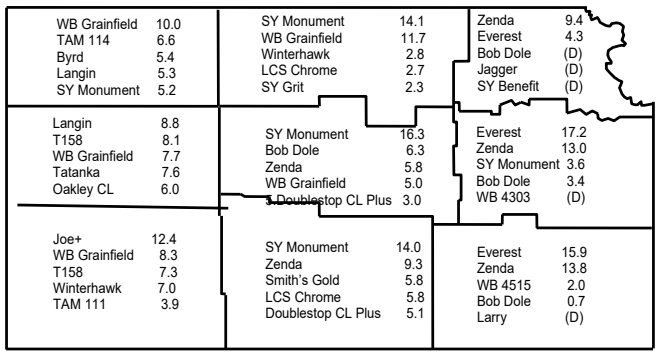


Figure 2. Leading wheat varieties in Kansas; percentage of seeded acreage for 2021 crop

2021 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 Oklahoma, Texas, 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 2021 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.

Research and Duplication Policy

When companies submit entries, permission is given to Kansas State University to test varieties and/or hybrids designated on the entry forms in the manner indicated in the test announcements. Seed submitted for testing should be a true sample of the seed being offered for sale.

All results from Kansas Crop Performance Tests belong to the University and the public and shall be controlled by the University to produce the greatest benefit to the public. Performance data may be used in the following ways: 1) Tables may be reproduced in their entirety, provided the source is referenced and data are not manipulated or reinterpreted; and 2) advertising statements by an individual company about the performance of its entries may be made as long as they are accurate statements about the data as published, with no reference to other companies' names or cultivars. In both cases, the following must be included with the reprint or ad citing the appropriate publication number and title: "See the official Kansas State University Agricultural Experiment Station and Cooperative Extension Service Report of Progress 1165 '2021 Kansas Performance Tests with Winter Wheat Varieties,' or the Kansas Crop Performance Test website, *agronomy.ksu.edu/services/crop-performance-tests* for details. Endorsement or recommendation by Kansas State University is not implied."

Table 1. Entrants in the 2021 Kansas wheat performance tests

AgriMAXX Wheat Company
7167 Highbanks Road
Mascoutah, IL 62258
855-629-9432

AgriPro Wheat, Inc.
11783 Ascher Rd.
Junction City, KS 66441
620-532-6283

Agricultural Research Center-Hays
1232 240th Ave.
Hays, KS 67601
785-625-3425

AGSECO
P.O. Box 7
Girard, KS 66743
620-724-6223

Croplan- Winfield United
4001 Lexington Ave N
Arden Hills, MN 55126
651-481-2222

Dyna-Gro Seed
117 East Laurel St.
Garden City, KS
620-214-9024

Kansas Wheat Alliance
1900 Kimball Avenue
Manhattan, KS 66502
785-320-4080

Limagrain Cereal Seeds
2040 SE Frontage Road
Fort Collins, CO 80525
970-231-8875

Meridian
16553 37th St SE, Suite 3
Mapleton, ND 58059
866-282-7333

Northern Star Int. Services, LLC
114 S. Earl Ave
Lafayette, IN 47901
765-491-8855

Oklahoma Genetics, Inc
P.O. Box 2113
Stillwater, OK 74076-2113
405-744-7741

PlainsGold
4026 S. Timberline Road
Fort Collins, CO 80525
970-702-1460

Polansky Seed, Inc
2729 M Street
Belleville, KS 66935
785-527-2271

WestBred-Bayer Crop Sci.
800 North Lindbergh Boulevard
St. Louis, MO 63167
314-694-1000

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

Variety[1]	% of Kansas acres 2021[1]	Agronomic ratings[2]			Relative milling and baking quality[3]	Resistance or tolerance to:[2]											
		Straw strength[2]	Maturity	Height		Soil-borne mosaic	Spindle streak mosaic	Wheat streak mosaic	Barley yellow dwarf	Leaf rust	Stem rust	Septoria Stripe rust	Septoria tritici blotch	Tan spot	Powdery mildew	Head scab	Hessian fly
SY Monument	9.4	5	8	6	AC	1	1	7	6	4	5	5	4	5	5	7	7
WB Grainfield	5.5	3	6	7	AC	1	1	8	7	6	7	7	6	6	6	7	8
Zenda	4.7	2	4	6	AC	1	1	7	5	3	4	4	4	5	5	4	5
T158	3.1	1	3	5	AC	2	2	5	5	8	8	3	7	4	2	8	4
Joe+	2.8	2	7	7	AC	8	8	6	7	7	3	8	3	8	5	7	2
Winterhawk	2.7	5	5	8	AC	1	1	7	5	7	6	6	7	6	6	7	3
Bob Dole	2.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LCS Chrome	2.4	3	8	7	AC	1	1	7	7	2	2	4	4	4	6	7	1
TAM 114	2.4	4	6	6	EX	8	8	7	6	4	7	3	5	7	5	7	7
Everest	1.9	5	1	6	LD	1	1	7	4	3	8	8	4	7	3	4	6
Doublestop CL Plus	1.9	2	9	7	AC	1	1	6	6	3	2	4	6	6	5	8	9
Langin	1.9	6	5	3	EX	1	1	7	--	7	8	3	7	8	7	8	8
Smith's Gold	1.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gallagher	1.6	2	4	5	AC	1	1	7	6	3	3	3	5	7	6	7	1
Tatanka	1.4	6	5	5	AC	1	1	7	5	6	2	2	7	7	7	7	9
Byrd	1.4	1	5	5	AC	2	2	5	7	8	8	8	--	7	3	7	9
Oakley CL	1.1	6	7	7	AC	7	7	3	6	5	2	4	5	6	2	5	9
LCS Mint	1.0	5	5	7	AC	1	1	6	7	7	4	5	5	5	6	8	9
Larry	1.0	3	6	6	AC	1	1	6	7	7	2	2	6	5	5	6	9
SY Wolverine	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TAM 111	0.9	2	4	6	AC	8	8	7	7	8	3	8	5	6	6	7	6
TAM 112	0.9	4	2	5	AC	8	8	5	7	8	3	8	5	6	1	8	8
SY Grit	0.8	1	5	7	AC	1	1	7	7	6	2	7	5	4	7	7	9
SY Rugged	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WB 4515	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Denali	0.6	2	7	7	AC	8	8	6	7	7	3	8	--	8	5	7	2
WB 4792	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WB 4699	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Paradise	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Avery	0.4	5	7	7	AC	1	1	5	7	8	8	8	--	7	3	7	9
Green Hammer	0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SY Wolf	0.3	1	5	5	AC	2	1	6	6	2	2	6	3	3	5	7	7
Blends	9.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other White	2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other Red	27.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other Soft	1.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
*Hard white variety	Scale:	1=Best 9=Poor	1=Early 9=Late	1=Short 9=Tall		Scale:	1=Most resistant/tolerant 9=Least resistant/tolerant										

[1] Varieties and percentage seeded acreage from the March 2019 wheat variety survey, Kansas Agricultural Statistics, Topeka, KS.

[2] Ratings by Kelsey Andersen et al., K-State Plant Pathology. Final ratings and descriptions of disease and insect pests are available in "Wheat Variety Disease and Insect Ratings 2021" Publication MF991 from Kansas State University.

[3] Ratings from K-State Wheat Quality Laboratory and USDA-ARS Hard Winter Wheat Quality Laboratory. EX=excellent baking quality; AC=acceptable baking quality; LD= least desirable baking quality.

Table 3. Wheat performance test site descriptions and management in 2021

Region location	Soil type previous crop	Fungicide	Tillage	Plant-harvest	Conditions
Southeast Dryland					
East Central KS Experiment Field Ottawa (OT)	Woodson silt loam Soybean	No	Strip	10/22/20-7/14/21	Wet conditions throughout most of the growing season. Soils became waterlogged when 24 inches of rain fell between April and harvest. Fusarium head blight (scab) and stripe rust were prevalent and reduced test weights and grain quality.
Southeast Agricultural Research Center Parsons (PA)	Parsons silt loam Corn	No	Conv.	9/29/20-6/23/21	
Soft Wheat					
Southeast Agricultural Research Center Parsons (PA)	Parsons silt loam Corn	No	Conv.	9/29/20-6/23/21	
North Central Dryland					
North Central KS Experiment Field Belleville (BE)	Crete silt loam Soybean	Yes	Conv.	10/5/20-7/1/21	Timely precipitation and the cooler-than-normal temperatures during grain fill benefitted the wheat crop. Some varieties showed minimal tiller dieback from arctic temperatures during the winter months.
North Central KS Farmer's Field Beloit (BL)	Harney silt loam Soybean	Yes	No	10/21/20-7/7/21	
Central Dryland					
Central KS Farmer's Field Ellsworth (EL)	Silty clay loam Wheat	Yes	Min.	10/5/20-7/3/21	Evidence of some freeze damage in mid April. Head scab and stripe rust was prevalent in the region. Resistant varieties recovered nicely with support from fungicide application. Harvest was slightly delayed by rains, which further affected test weights.
Central KS Farmer's Field Hillsboro (HL)	McCook silt loam Soybean	Yes	No	10/16/20-6/22/21	
Central KS Farmer's Field Assaria (AS)	Silty clay loam Wheat	Yes	Conv.	10/16/20-6/23/21	
South Central Dryland					
South Central KS Farmer's Field Newton (NW)	Silty clay loam Soybean	Yes	No	10/20-6/25/21	Good emergence and stands in the fall set up tests for decent performance despite pressure from disease and adverse winter and spring weather. Test weights were also affected by scab and harvest delays.
South Central KS Experiment Field Hutchinson (HU)	Funmar-Taver loam Soybean	Yes	Conv.	10/20/20-6/24/21	
South Central KS Farmer's Field St. John (SJ)	Sandy clay loam Wheat	Yes	Conv.	10/31/20-7/7/21	
South Central Non-treated					
South Central KS Farmer's Field Wellington (WL)	Silty clay loam Wheat	No	Conv.	10/21/20-6/16/21	Test was not treated with a fungicide for variety evaluation under stressed conditions.
Northwest Dryland					
Central KS Farmer's Field Russell (RS)	Silty clay loam Fallow	Yes	Con.	10/6/20-7/2/21	Beneficial growing conditons trhoughout most of the growing season led to near-ideal conditions for grain fill and high yields. A hail and wind storm caused lodging, sometimes extensive, at Tribune and Colby.
Northwest Research-Extension Center Colby (CO)	Keith silt loam Fallow	Yes	Min.	10/1/20-7/14/21	
Northwest Research-Extension Center Tribune (TR)	Richfield silt loam Grain Sorghum	Yes	Conv.	9/30/20-7/9/21	
Northwest KS Farmer's Field Decatur (DC)	Harney clay loam Fallow	Yes	No	10/19/20-7/17/21	
Southwest Dryland					
Southwest KS Farmer's Field Larned (LA)	Harney clay loam Grain sorghum	Yes	Conv.	10/5/20-6/25/21	The region missed some of the rains in the fall that benefitted the northwest region, but overall the growing season was conducive to higher yields and better grain quality.
Southwest KS Farmer's Field Hugoton (HG)	Sandy clay loam Grain Sorghum	Yes	Min.	9/26/20-7/9/21	
Southwest Research-Extension Center Garden City (GC)	Clay loam Fallow	Yes	Min.	9/30/20-7/7/21	
Western Irrigated					
Northwest Research-Extension Center Colby (CO)	Keith silt loam Fallow	Yes	Min.	10/1/20-7/14/21	Very good year as most varieties yielded greater than 100 bushels per acre. Scab was prevalent at Colby and Garden City, affecting test weights and grain quality.
Southwest Research-Extension Center Garden City (GC)	Keith silt loam Fallow	Yes	Min.	9/30/20-7/9/21	
Western KS Farmer's Field Hugoton (HG)	Sandy clay loam Potatoes	Yes	Conv.	9/29/20-7/16/21	

Table 4. 2021 SOUTHEAST Kansas dryland winter wheat performance test

Brand / Name	OT[1]	PA[2]	Av.	OT	PA	Av.	-OT- 2 yr	-PA- 2 yr	OT	PA	Av.	OT	PA	PA
	yield (bu/a)			% of test average			multiyear av. (bu/a)		test weight (lb/bu)			heading (date)		ht (in)
AgriMAXX														
AM Cartwright	22	71	46	92	127	110	40	77	48	55	52	5/20	4/26	34
AM Eastwood	17	34	25	71	61	66	27	51	48	52	50	5/18	4/27	37
AgriPro														
SY Benefit	22	38	30	95	68	81	39	58	49	50	49	5/20	4/28	36
AGSECO														
AG Icon	17	42	30	72	76	74	34	61	49	52	50	5/18	4/28	36
AG Radical	19	28	23	79	50	65	36	52	40	50	45	5/22	4/25	36
KWA														
Everest	25	50	38	107	90	98	36	65	52	54	53	5/15	4/28	37
Zenda	25	66	46	108	119	113	38	76	51	55	53	5/18	4/25	36
Polansky														
High Country	27	54	40	114	97	106	--	--	52	53	52	5/13	4/26	36
Paradise	19	79	49	82	143	112	--	--	47	54	51	5/13	4/29	35
Rock Star	**31**	67	49	131	121	126	44	73	50	55	52	5/21	4/26	27
WestBred														
WB4269	**31**	62	46	132	111	122	46	75	51	54	53	5/18	4/26	37
WB4401	22	**92**	**57**	94	166	130	41	101	45	58	52	5/15	4/28	34
WB4699	**29**	39	34	123	71	97	45	67	47	51	49	5/22	4/26	35
AVERAGE	24	56	40	100	100	100	--	--	48	53	51	5/18	4/27	37
CV (%)	11	9	--	11	9	--	--	--	--	2	--	--	--	3
LSD (0.05)	3	10	--	13	21	--	--	--	--	1	--	--	--	3

[1] OT=Ottawa, Kansas, East Central Experiment Field, Franklin County. No fungicide applied.

[2] PA=Parsons, Kansas, Southeast Research-Extension Center, Labette County. No fungcide applied.

* Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 5. 2021 SOUTHEAST Kansas SOFT winter wheat performance test, Parsons[1]

Brand / Name	yield (bu/a)	% test average	2 yr multiyear av. (bu/a)	3 yr multiyear av. (bu/a)	test weight (/lb/bu)	heading (date)	height (in)	lodging (%)
AgriMAXX								
492	**100**	111	102	--	56	4/29	38	8
513	**99**	110	--	--	55	4/29	36	0
514	93	103	--	--	54	4/28	38	0
AM 473	94	104	100	--	55	4/27	38	19
AM 503	102	113	108	--	56	4/29	38	11
AM 505	100	111	106	--	57	4/29	37	23
Beachner								
GB0206	96	107	--	--	54	4/29	36	19
GB0208	90	99	--	--	55	4/29	37	0
Roane	72	79	--	--	56	4/27	38	8
Becks								
726	**101**	112	--	--	55	4/29	37	0
727	95	105	--	--	56	4/30	37	0
730	76	84	--	--	54	4/28	35	0
Dyna-Gro								
9002	76	85	--	--	53	4/29	40	0
9120	**101**	112	--	--	57	4/29	36	3
9151	96	106	--	--	57	4/29	36	0
9172	98	108	--	--	56	4/27	35	0
9701	90	100	--	--	55	4/29	39	4
9811	92	101	--	--	54	4/29	38	11
9941	95	105	--	--	55	4/30	37	0
WX21741	85	95	--	--	55	4/29	37	0
Northern Star								
EXP1410	98	108	--	--	55	4/27	35	0
EXP1415	85	94	--	--	55	4/29	37	0
EXP1419	89	98	--	--	54	4/29	38	0
EXP1425	**104**	115	--	--	54	4/30	38	0
EXP1450	79	87	--	--	54	4/29	37	0
EXP1472	96	106	--	--	57	4/28	37	0
OGI								
OCW03S580S-8WF	38	42	61	--	49	4/29	38	15
AVERAGE	90	100	--	--	55	4/28	37	4
CV (%)	6	6	--	--	2	--	3	--
LSD (0.05)	5	9	--	--	2	--	3	--

[1]PA=Parsons, Kansas, Southeast Research-Extension Center, Labette County.

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

Top LSD group in bold.

Table 6. 2021 NORTH CENTRAL Kansas dryland winter wheat performance test

Brand / Name	BE[1]	BL[2]	Av.	BE	BL	Av.	-BE- 2 yr	-BE- 3 yr	-BL- 2 yr	-BL- 3 yr	BE	BL	Av.
	yield (bu/a)			% of test average			multiyear av. (bu/a)				tw (lb/bu)		
AgriMAXX													
AM Cartwright	81	63	72	94	89	92	61	64	58	69	60	55	58
AM Eastwood	81	59	70	94	84	89	62	53	55	59	61	56	58
AgriPro													
AP Bigfoot	69	75	72	81	106	93	--	--	--	--	59	57	58
AP EverRock	90	67	79	104	96	100	65	--	56	--	61	56	58
AP Roadrunner	88	73	80	102	103	103	--	--	--	--	60	55	58
Bob Dole	91	70	81	106	99	103	67	68	57	71	61	56	59
SY Monument	79	73	76	92	104	98	63	58	61	68	60	56	58
SY Wolverine	81	**81**	81	94	115	105	59	56	60	67	60	55	57
AGSECO													
AG Golden	95	**81**	88	110	115	113	--	--	--	--	60	54	57
AG Icon	84	**81**	83	98	115	107	64	61	65	71	62	56	59
AG Radical	83	**80**	82	97	113	105	65	--	64	--	60	56	58
TAM 205	86	73	80	100	104	102	62	--	58	--	61	57	59
Dyna-Gro													
Long Branch	97	71	84	112	101	107	71	64	57	66	61	56	59
KWA													
Everest	77	55	66	90	78	84	--	69	--	68	61	57	59
KS Hatchett	83	72	78	97	102	99	--	--	--	--	60	57	59
KS Western Star	87	68	77	101	96	99	65	--	58	--	63	58	60
KS Ahearn	92	73	82	107	103	105	--	--	--	--	60	56	58
Larry	89	74	81	103	104	104	66	56	63	67	62	56	59
Zenda	78	54	66	91	77	84	58	61	51	61	61	56	58
Limagrain													
LCS Chrome	77	56	67	89	80	85	64	62	54	66	61	57	59
LCS Helix AX	91	73	82	106	104	105	--	--	--	--	61	58	60
LCS Link	89	65	77	103	93	98	72	67	54	68	62	57	59
LCS Photon AX	76	65	71	88	92	90	--	--	--	--	62	58	60
LCS Revere	87	68	78	101	96	99	--	--	--	--	64	57	60
LCS Valiant	93	69	81	108	99	103	68	64	60	72	62	57	59
Meridian													
MS Maverick	86	70	78	100	99	99	--	--	--	--	62	56	59
PlainsGold													
Canvas	91	**78**	84	105	111	108	67	62	62	67	61	57	59
Guardian	93	74	84	108	106	107	72	--	62	--	61	59	60
Whistler	94	70	82	109	99	104	--	64	--	71	60	56	58
Polansky													
High Country	76	73	75	89	103	96	--	--	--	--	61	58	59
Paradise	85	66	76	99	94	97	56	51	52	60	61	58	59
Rock Star	88	67	77	102	94	98	66	62	57	67	62	56	59
WestBred													
WB4269	81	73	77	94	103	99	62	60	64	72	61	56	59
WB4303	85	69	77	99	98	98	66	--	59	--	59	55	57
WB4401	**104**	**83**	94	121	118	119	79	--	65	--	61	57	59
WB4699	88	75	82	102	106	104	66	63	63	70	62	55	59
AVERAGE	86	70	78	100	100	100	--	--	--	--	61	56	59
CV (%)	7	8	--	7	8	--	--	--	--	--	1	3	--
LSD (0.05)	7	8	--	8	11	--	--	--	--	--	1	3	--

[1]BE=Belleville, KS, North Central Experiment Field, Republic County. Fungicide applied.

[2]BL=Beloit, KS. farmer's field, Mitchell County. Fungicide applied.

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 7. 2021 CENTRAL Kansas dryland winter wheat performance test

Brand / Name	EL[1]	HL[2]	AS[3]	Av.	EL	HL	AS	Av.	-EL- 2 yr	EL	HL	AS	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)	test weight (lb/bu)			
AgriMAXX													
AM Cartwright	82	64	81	76	92	100	107	100	73	56	59	58	58
AM Eastwood	88	50	69	69	100	79	92	90	80	56	57	57	57
AgriPro													
AP Bigfoot	91	41	66	66	103	64	88	85	--	58	52	55	55
AP EverRock	95	66	73	78	108	102	97	102	83	56	59	54	56
Bob Dole	79	72	**91**	81	89	113	121	108	67	57	61	60	59
SY Monument	87	60	67	71	98	94	89	93	75	57	58	57	57
SY Wolverine	**97**	62	68	76	110	97	90	99	88	54	58	55	56
AGSECO													
AG Icon	67	56	71	65	76	88	95	86	67	56	57	55	56
AG Radical	93	57	76	75	105	89	100	98	82	57	57	56	57
TAM 205	76	57	83	72	86	89	110	95	67	55	56	55	55
Croplan													
CP7017 AX	97	64	71	77	109	99	95	101	83	57	58	57	57
CP7050 AX	83	69	75	76	93	108	99	100	69	59	62	59	60
CP7909	**98**	58	72	76	110	90	96	99	78	57	57	58	58
Dyna-Gro													
Buckhorn AX	80	56	71	69	90	87	94	90	--	59	60	60	60
Long Branch	96	**80**	78	85	108	124	104	112	81	58	58	55	57
KWA													
Everest	80	62	67	70	91	96	90	92	--	58	61	59	59
KS Hatchett	86	55	66	69	97	86	88	90	--	56	55	55	56
KS Silverado	84	37	67	62	94	58	88	80	72	58	57	59	58
KS Western Star	81	68	75	75	92	106	100	99	71	59	57	59	58
KS Ahearn	86	65	67	72	96	101	89	95	--	56	57	53	55
Larry	91	**80**	**90**	87	103	124	120	116	82	57	60	58	58
Zenda	84	70	84	80	95	110	112	105	76	58	61	60	60
Limagrain													
LCS Atomic AX	**104**	**79**	74	86	117	123	99	113	--	59	59	57	58
LCS Chrome	89	68	86	81	100	105	115	107	72	58	57	60	58
LCS Helix AX	96	73	73	80	108	113	97	106	--	58	61	59	59
LCS Photon AX	80	65	73	72	90	101	97	96	--	61	62	61	61
LCS Revere	**101**	70	77	83	114	109	102	108	--	57	60	57	58
LCS Valiant	81	70	79	77	91	110	105	102	72	58	60	57	58
Meridian													
MS Maverick	79	68	67	71	89	106	89	95	--	58	57	55	57
OGI													
Showdown	**98**	72	84	85	110	112	112	111	82	58	58	58	58
Smith's Gold	88	65	79	77	99	101	105	102	75	58	59	56	58
PlainsGold													
Canvas	75	64	65	68	85	100	86	90	76	56	58	56	57
Crescent AX	92	57	77	75	103	88	102	98	79	57	60	59	59
Whistler	**103**	58	68	76	116	90	91	99	95	57	56	53	55
Polansky													
High Country	**99**	67	60	75	111	105	80	99	--	57	59	56	57
Paradise	94	71	**91**	85	106	111	120	112	77	58	61	58	59
Rock Star	87	**81**	88	85	98	126	117	114	82	57	59	56	57
WestBred													
WB4269	89	69	75	78	100	108	100	103	81	56	59	59	58
WB4303	92	51	64	69	103	80	85	89	82	55	52	50	52
WB4401	95	63	**96**	85	106	99	128	111	--	59	60	58	59
WB4699	**97**	71	80	83	110	110	106	109	86	56	57	56	56
AVERAGE	89	64	75	76	100	100	100	100	78	57	58	57	58
CV (%)	9	6	5	--	9	6	5	--	--	2	2	6	--
LSD (0.05)	7	5	6	--	10	13	11	--	--	2	1	3	--

[1]EL=Ellsworth, KS, farmer's field, Ellsworth County. Fungicide applied.

[2]HL=Hillsboro, KS, farmer's field, Marion County. Fungicide applied.

[3]AS=Assaria, KS, farmer's field, Saline County. Fungicide applied.

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 8. 2021 SOUTH CENTRAL Kansas dryland winter wheat performance test

Brand / Name	NW[1]	HU[2]	SJ[3]	Av.	NW	HU	SJ	Av.	-NW- 2 yr	-HU- 2 yr	-HU- 3 yr	NW	HU	SJ	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)			test weight (lb/bu)			
AgriMAXX															
AM Cartwright	57	73	70	66	92	91	98	94	74	77	79	59	60	57	59
AM Eastwood	64	74	67	68	104	93	94	97	73	76	70	61	62	58	60
AgriPro															
AP Bigfoot	**69**	83	74	75	112	104	104	106	--	--	--	62	63	58	61
AP 18AX	**71**	86	**80**	79	115	108	111	112	75	86	--	61	61	55	59
AP EverRock	63	76	72	70	103	95	101	100	72	78	--	60	60	58	60
Bob Dole	64	86	79	77	105	108	110	108	74	84	89	61	61	59	60
SY 517 CL2	64	76	78	73	105	95	109	103	67	76	--	63	63	61	62
SY Achieve CL2	60	68	74	67	97	85	103	95	66	74	72	60	61	60	61
SY Benefit	59	65	73	66	95	82	102	93	70	70	71	60	61	59	60
SY Monument	63	83	**81**	76	103	104	113	107	75	82	82	58	60	58	59
SY Wolverine	65	85	71	74	106	107	99	104	77	81	83	61	63	57	60
AGSECO															
AG Icon	60	70	63	64	97	88	87	91	76	78	81	62	62	57	60
AG Radical	**69**	84	79	77	112	105	110	109	77	83	--	60	61	57	59
TAM 205	63	76	65	68	103	96	91	97	65	75	--	63	63	59	62
Croplan															
CP7017 AX	55	82	73	70	90	103	101	98	64	82	--	60	62	59	60
CP7050 AX	56	78	55	63	91	98	77	88	64	80	--	62	62	59	61
CP7909	**67**	84	**81**	77	109	106	113	109	70	82	80	61	61	59	60
Dyna-Gro															
Buckhorn AX	59	77	59	65	97	96	83	92	65	76	--	62	63	59	61
Long Branch	57	84	**83**	75	93	105	116	105	63	84	76	60	61	58	59
KWA															
Everest	61	76	62	66	99	95	87	94	--	70	--	62	63	59	61
KS Hatchett	65	86	76	76	106	107	106	106	--	--	--	60	63	58	60
KS Silverado	53	67	68	62	86	84	94	88	70	75	74	61	62	59	61
KS Western Star	59	83	78	73	97	104	109	103	70	--	--	61	62	59	61
KS Ahearn	**67**	**94**	72	78	110	118	100	109	--	--	--	60	61	57	59
Larry	66	81	**80**	76	107	102	112	107	76	78	71	59	62	56	59
Limagrain															
LCS Atomic AX	**66**	**90**	66	74	108	113	93	105	--	--	--	61	62	58	60
LCS Chrome	62	78	66	69	101	98	92	97	--	--	--	60	62	59	60
LCS Helix AX	62	80	74	72	100	100	104	101	--	--	--	59	61	58	59
LCS Julep	57	79	76	70	92	99	106	99	--	--	--	62	62	59	61
LCS Photon AX	55	80	67	67	89	100	93	94	--	--	--	62	62	60	62
LCS Revere	56	72	63	64	92	90	88	90	--	--	--	61	61	56	59
LCS Valiant	59	85	76	73	96	106	106	103	69	82	81	60	61	58	60
Meridian															
MS Maverick	57	73	64	65	93	92	90	91	--	--	--	61	62	59	61
OGI															
Doublestop CL Plus	59	79	63	67	97	99	87	94	72	77	81	62	63	57	61
Gallagher	55	82	68	68	90	102	95	96	67	77	82	60	62	60	60
OK Corral	64	82	63	70	105	102	88	98	--	--	--	59	60	56	58
Strad CL Plus	65	77	62	68	105	97	87	96	77	81	--	62	62	57	60
Showdown	**67**	81	**83**	77	109	101	116	109	76	84	79	60	61	58	60
Smith's Gold	57	76	68	67	93	96	95	94	68	79	79	60	62	58	60
PlainsGold															
Canvas	59	79	70	69	96	100	97	98	71	82	74	60	61	60	61
Crescent AX	59	87	78	75	95	109	109	105	67	82	78	61	62	58	60
Whistler	**66**	82	78	75	108	103	109	107	67	80	69	61	61	58	60
Polansky															
High Country	61	78	67	69	100	98	93	97	--	--	--	61	61	58	60
Paradise	59	83	66	69	96	104	92	97	67	78	79	60	62	59	61
Rock Star	63	83	73	73	102	104	102	103	80	83	78	60	61	57	59
WestBred															
WB4269	62	78	68	69	100	98	94	98	80	85	83	62	62	58	61
WB4303	57	77	**82**	72	92	96	115	101	74	73	72	57	59	57	58
WB4401	**67**	**92**	**80**	80	110	116	112	113	--	--	--	62	62	58	61
WB4699	59	77	77	71	96	97	107	100	82	81	81	59	60	57	59

Table 8 continued. 2021 SOUTH CENTRAL Kansas dryland winter wheat performance test

Brand / Name	NW[1]	HU[2]	SJ[3]	Av.	NW	HU	SJ	Av.	-NW- 2 yr	-HU- 2 yr	-HU- 3 yr	NW	HU	SJ	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)			test weight (lb/bu)			
AVERAGE	61	80	72	71	100	100	100	100	72	80	78	61	62	58	60
CV (%)	8	4	8	--	8	4	8	--	--	--	--	1	1	2	--
LSD (0.05)	5	5	4	--	9	10	6	--	--	--	--	2	1	1	--

[1]NW=Newton, KS. farmer's field, Harvey County.

[2]HU= Hutchinson, KS, South Central Experiment Field, Reno County.

[3]SJ=St. John, KS, farmer's field, Stafford County.

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 9. 2021 SOUTH CENTRAL NON-TREATED dryland winter wheat performance test, Wellington[1]

Brand / Name			2 yr[2]	
	yield (bu/a)	% of test average	multiyear av. (bu/a)	test weight (lb/bu)
AgriMAXX				
AM Cartwright	**74**	125	69	55
AM Eastwood	49	83	58	54
AgriPro				
AP Bigfoot	57	97	--	56
AP 18AX	**72**	122	73	57
AP EverRock	45	76	59	53
Bob Dole	**70**	119	70	57
SY 517 CL2	51	86	62	53
SY Achieve CL2	56	95	65	56
AGSECO				
AG Icon	55	93	61	57
AG Radical	48	81	66	50
TAM 205	55	94	62	57
Dyna-Gro				
Buckhorn AX	58	98	64	59
Long Branch	59	100	66	52
KWA				
Everest	58	98	--	57
KS Hatchett	60	101	--	55
KS Silverado	25	42	48	52
KS Western Star	45	76	58	55
KS Ahearn	53	89	--	50
Larry	60	102	69	55
Zenda	55	94	62	58
Limagrain				
LCS Atomic AX	**75**	126	--	59
LCS Chrome	59	101	64	54
LCS Helix AX	**67**	113	--	57
LCS Julep	47	79	--	53
LCS Photon AX	62	105	--	58
LCS Revere	48	82	--	53
LCS Valiant	64	108	72	57
Meridian				
MS Maverick	58	99	--	58
OGI				
Baker's Ann	61	104	--	57
Doublestop CL Plus	**75**	127	68	61
Gallagher	60	102	69	53
Green Hammer	**74**	125	69	58
Big Country	**72**	123	--	57
OK Corral	59	99	--	52
Strad CL Plus	**70**	119	70	58
Uncharted	63	107	--	57
Showdown	58	98	66	54
Skydance	**69**	117	--	61
Smith's Gold	54	92	61	55
PlainsGold				
Canvas	55	93	68	52
Crescent AX	62	105	71	57
Whistler	38	64	55	52
Polansky				
High Country	55	93	--	56
Paradise	**73**	124	76	59
Rock Star	**68**	115	69	54
WestBred				
WB4269	58	98	67	56
WB4401	**74**	125	--	58
WB4699	53	90	69	50
AVERAGE	59	100	66	55
CV (%)	10	10	--	4
LSD (0.05)	10	17	--	2

[1]WL=Wellington, KS, farmer's field, Sumner County. No fungicide applied.

[2]multiyear average calculated from non-treated (2021) and treated (2020) bushels per acre

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 10. 2021 NORTHWEST Kansas dryland winter wheat performance test

Brand / Name	RS[1]	CO[2]	TR[3]	DC[4]	Av.	RS	CO	TR	DC	Av.	-RS- 2 yr	-RS- 3 yr	-CO- 2 yr	-CO- 3 yr	-TR- 2 yr	-TR- 3 yr	-DC- 2 yr	-DC- 3 yr	RS	CO	TR	DC	Av.
	yield (bu/a)					% of test average					multiyear av. (bu/a)								test weight (lb/bu)				
AgriMAXX																							
AM Cartwright	88	50	78	76	73	100	89	98	83	93	91	85	55	73	62	68	68	81	54	56	55	56	55
AM Eastwood	80	56	75	86	74	91	100	95	94	95	87	78	55	68	60	78	73	82	53	56	55	57	55
AgriPro																							
AP Bigfoot	77	56	71	87	73	88	99	89	95	93	--	--	--	--	--	--	--	--	53	56	55	58	56
AP Roadrunner	**93**	59	78	**95**	81	107	105	98	104	103	--	--	--	--	--	--	--	--	53	56	54	56	55
SY Wolverine	68	55	90	88	75	78	98	114	96	96	88	79	58	80	72	85	77	88	50	57	56	56	55
AGSECO																							
AG Golden	84	**68**	**91**	**99**	86	96	122	115	108	110	96	--	69	--	69	--	85	--	53	54	55	56	54
AG Icon	**96**	53	61	94	76	110	95	77	103	96	100	71	60	76	56	72	76	84	53	57	55	57	55
TAM 114	78	50	86	**99**	78	89	90	108	109	99	79	71	51	69	66	81	77	91	52	57	58	57	56
Dyna-Gro																							
Long Branch	90	56	87	**96**	82	102	99	110	104	104	94	86	53	69	66	83	80	94	54	56	55	57	55
KWA																							
(W) Joe	**99**	55	82	85	80	113	98	103	92	102	98	86	61	78	60	76	80	89	54	56	55	57	56
KS Dallas	81	59	**96**	**101**	85	93	106	121	111	108	88	84	64	80	73	88	65	93	54	56	56	57	56
KS Hamilton	81	61	77	86	76	93	108	96	94	98									53	57	54	57	55
KS Silverado	76	56	74	88	73	87	99	92	96	94	84	80	57	71	60	78	76	86	54	58	57	58	57
KS Western Star	89	54	**90**	**99**	83	101	97	113	108	105	95	88	56	73	68	80	80	92	56	58	56	58	57
Oakley CL	88	50	**93**	89	80	101	90	116	97	101	76	--	75	--	104	--	91	--	56	57	56	57	57
Tatanka	**99**	60	88	91	84	113	106	110	99	107	103	90	58	74	70	86	78	90	54	56	57	58	56
Limagrain																							
LCS Atomic AX	**100**	48	81	93	80	114	85	102	101	101	--	--	--	--	--	--	--	--	55	57	57	58	57
LCS Helix AX	**101**	55	73	85	79	115	97	92	93	100	--	--	--	--	--	--	--	--	56	57	56	58	57
LCS Julep	63	**64**	68	89	71	72	113	85	97	92	--	--	--	--	--	--	--	--	50	59	55	57	55
LCS Photon AX	86	53	54	**100**	73	98	94	68	109	92	--	--	--	--	--	--	--	--	56	58	58	58	58
LCS Revere	**93**	55	85	**95**	82	106	98	106	103	103	--	--	--	--	--	--	--	--	55	57	58	58	57
LCS Valiant	**94**	54	77	93	79	107	95	97	102	100	96	86	56	75	61	75	79	92	55	56	56	58	56
T158	**96**	51	76	86	78	110	92	96	94	98	93	--	53	--	63	--	74	--	55	57	56	58	56
Meridian																							
MS Maverick	80	50	**89**	89	77	91	90	112	97	97	--	--	--	--	--	--	--	--	53	58	55	59	56
OGI																							
Lonerider	**93**	47	71	80	73	106	84	90	88	92	101	88	52	72	61	76	66	82	55	58	57	58	57
Byrd CL Plus	82	55	74	**98**	77	94	98	93	107	98	88	--	55	--	57	--	80	--	53	54	54	55	54
Canvas	92	50	73	92	76	105	88	91	100	96	102	90	57	71	61	75	82	90	55	55	54	57	55
Guardian	89	57	76	**98**	80	101	101	95	107	101	96	--	59	--	60	--	84	--	55	57	56	58	56
Langin	85	59	87	**97**	82	97	106	110	105	104	91	65	57	75	66	82	82	88	52	56	56	57	55
Whistler	83	**71**	76	**95**	81	95	126	96	104	105	98	89	60	73	58	76	84	93	52	56	54	54	54
Polansky																							
High Country	77	62	83	88	78	88	110	104	96	100	--	--	--	--	--	--	--	--	52	57	56	58	56
Paradise	**93**	51	**89**	80	78	107	91	112	87	99	74	--	80	--	97	--	90	--	56	55	57	58	56
Rock Star	**100**	59	84	89	83	114	105	106	97	105	82	--	76	--	91	--	99	--	54	56	55	56	55
WestBred																							
WB4462	89	**63**	85	**100**	84	101	112	106	110	107	91	81	61	73	62	72	85	95	55	56	57	58	56
WB4595	**99**	59	72	94	81	113	106	91	102	103	99	--	58	--	63	--	81	--	55	60	57	60	58
WB4792	**93**	59	72	**96**	80	106	106	91	105	102	97	87	58	75	62	81	82	91	55	57	55	58	56
AVERAGE	88	56	80	92	79	100	100	100	100	100	93	83	57	72	62	77	77	88	54	57	56	57	56
CV (%)	10	6	11	10	--	10	6	11	10	--	--	--	--	--	--	--	--	--	13	3	2	1	--
LSD (0.05)	9	9	7	7	--	15	15	10	7	--	--	--	--	--	--	--	--	--	3	2	2	1	--

[1]RS=Russell, KS, farmer's field, Russell County. Fungicide applied.

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

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

[4]DC=Decatur, KS, farmer's field, Decatur County. Fungicide applied.

[5](W) indicates hard white wheat.

* Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 11. 2021 SOUTHWEST Kansas dryland winter wheat performance test

Brand / Name	LA[1]	HG[2]	GC[3]	Av.	LA	HG	GC	Av.	-LA- 2 yr	-HG- 2 yr	-GC- 2 yr	LA	HG	GC	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)			test weight (lb/bu)			
AgriMAXX															
AM Cartwright	89	99	98	96	92	99	99	97	89	88	64	57	57	52	55
AM Eastwood	88	90	**108**	95	91	90	109	97	82	80	71	58	58	54	57
AgriPro															
AP Bigfoot	93	90	**114**	99	96	90	115	100	--	--	--	59	58	54	57
AP Roadrunner	98	106	102	102	101	106	103	103	--	--	--	57	57	52	55
SY Wolverine	**115**	106	100	107	119	105	101	109	100	90	67	58	55	53	55
AGSECO															
AG Golden	101	101	102	101	105	101	103	103	99	87	68	57	57	54	56
TAM 114	89	92	98	93	91	92	99	94	91	83	65	58	59	54	57
TAM 205	105	100	92	99	108	100	93	100	90	85	58	58	59	53	57
Dyna-Gro															
Long Branch	**114**	92	97	101	118	92	98	102	103	86	67	59	58	55	57
KWA															
(W) Joe	**114**	97	100	103	117	96	101	105	105	92	68	59	57	53	56
KS Dallas	94	97	90	94	97	97	91	95	97	84	61	59	58	54	57
KS Hamilton	107	**109**	101	106	111	109	102	107	--	--	--	59	57	52	56
KS Silverado	94	**110**	103	102	97	110	104	103	95	89	68	60	58	55	58
KS Western Star	**116**	108	94	106	120	108	95	107	101	88	61	60	59	56	58
Oakley CL	99	99	**114**	104	102	99	115	105	--	--	--	60	58	52	57
Tatanka	92	95	94	94	95	95	95	95	96	82	65	60	58	55	58
Limagrain															
LCS Atomic AX	**116**	97	103	105	120	97	104	107	--	--	--	59	60	53	57
LCS Helix AX	102	**110**	98	103	105	109	99	104	--	--	--	61	60	53	58
LCS Julep	95	102	91	96	98	102	92	97	--	--	--	60	57	54	57
LCS Mint	89	96	90	92	92	96	91	93	--	--	--	59	58	54	57
LCS Photon AX	88	90	100	93	90	90	102	94	--	--	--	60	59	55	58
LCS Revere	99	106	**109**	105	102	106	111	106	--	--	--	58	58	55	57
LCS Valiant	96	84	100	93	99	84	101	95	--	--	--	59	58	52	56
T158	101	99	94	98	104	99	95	99	93	87	63	59	58	54	57
Meridian															
MS Maverick	97	100	93	97	100	99	95	98	--	--	--	59	58	53	57
OGI															
Lonerider	92	104	95	97	95	104	96	98	88	83	63	59	59	54	57
OK Corral	93	**109**	88	97	96	109	89	98	--	--	--	58	55	54	56
Breakthrough	95	90	**104**	96	98	89	105	98	90	77	67	61	58	52	57
Showdown	100	100	100	100	103	100	101	101	91	87	67	58	58	53	56
PlainsGold															
Canvas	**111**	**115**	104	110	115	114	105	111	106	96	69	58	59	53	57
Crescent AX	99	107	**110**	105	103	107	111	107	--	--	--	60	58	55	58
Guardian	107	107	92	102	110	107	93	103	103	93	61	59	59	53	57
Whistler	120	**109**	**108**	112	124	108	110	114	110	90	72	59	57	53	56
Polansky															
High Country	97	84	**106**	96	100	84	107	97	--	--	--	58	58	55	57
Paradise	92	97	91	94	96	97	92	95	--	--	--	59	58	54	57
Rock Star	94	107	**107**	102	97	106	108	104	--	--	--	58	57	55	56
WestBred															
WB4462	106	97	87	96	109	97	88	98				59	59	54	57
WB4595	99	94	84	93	103	94	85	94	99	80	59	59	59	54	58
WB4792	105	**109**	95	103	108	109	96	104	103	88	64	58	59	54	57
AVERAGE	97	100	99	99	100	100	100	100	93	85	66	59	58	54	57
CV (%)	8	7	7	--	8	7	7	--	--	--	--	2	2	10	--
LSD (0.05)	10	6	10	--	11	10	10	--	--	--	--	1	1	8	--

[1]LA=Larned, KS, farmer's Field, Pawnee County. Fungicide applied.

[2]HG=Hugoton, KS, farmer's Field, Stevens County. Fungicide applied.

[3]GC=Garden City, KS, Southwest Agricultural Research Center, Finney County. No fungicide applied.

[4](W) indicates hard white wheat.

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

Table 12. 2021 WESTERN Kansas irrigated winter wheat performance test

Brand / Name	CO[1]	GC[2]	HG[3]	Av.	CO	GC	HG	Av.	-CO- 2 yr	-GC- 2 yr	CO	GC	HG	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)		tw (lb/bu)			
AgriMAXX														
AM Cartwright	**121**	**110**	145	125	104	109	108	107	101	92	56	55	58	56
AM Eastwood	**121**	**107**	140	123	104	106	104	105	97	92	57	56	56	57
AgriPro														
AP EverRock	**117**	93	**141**	117	100	93	104	99	--	--	56	57	56	56
AP Roadrunner	**117**	**104**	**138**	120	100	104	103	102	--	--	57	55	56	56
SY Wolverine	**125**	**110**	**133**	123	108	110	99	105	109	95	58	52	55	55
AGSECO														
AG Golden	**127**	101	**134**	120	109	101	99	103	109	91	56	56	55	56
TAM 114	106	100	130	112	91	100	97	96	90	89	58	55	59	57
Croplan														
CP7017 AX	**121**	98	130	116	104	98	96	99	103	88	58	57	57	57
CP7050 AX	108	89	121	106	93	89	89	90	97	80	59	58	58	59
CP7909	115	96	**135**	115	99	95	100	98	102	87	57	57	58	58
Dyna-Gro														
Long Branch	103	**103**	111	106	88	103	82	91	89	87	56	56	55	56
KWA														
(W) Joe	110	98	**144**	117	94	97	106	99	93	89	56	58	56	57
KS Dallas	**121**	**114**	**136**	124	103	114	100	106	104	97	56	55	57	56
KS Hamilton	110	88	127	108	94	88	94	92	--	--	56	56	57	56
KS Silverado	**117**	93	**147**	119	100	93	109	101	108	79	58	59	57	58
KS Western Star	113	89	**133**	112	97	89	99	95	99	80	57	59	58	58
Limagrain														
LCS Atomic AX	**119**	93	129	113	102	93	95	97	--	--	58	59	59	59
LCS Helix AX	**118**	**104**	**136**	119	101	104	101	102	--	--	59	59	58	58
LCS Julep	**122**	**110**	**143**	125	104	109	106	106	--	--	57	57	56	57
LCS Mint	**116**	**113**	**138**	123	100	113	102	105	--	--	57	57	56	57
T158	114	**103**	115	111	98	102	85	95	--	--	57	59	57	58
OGI														
Lonerider	111	**104**	**140**	119	95	104	104	101	96	91	58	58	58	58
Breakthrough	112	88	131	111	96	88	97	94	--	--	59	57	57	58
Showdown	**128**	99	**144**	124	110	99	107	105	92	89	57	58	56	57
PlainsGold														
Breck	**116**	95	**134**	115	99	94	99	98	98	85	58	57	58	58
Canvas	115	**109**	**142**	122	99	109	105	104	100	93	55	56	57	56
Guardian	110	**105**	129	114	94	105	95	98	89	85	58	58	57	58
Langin	111	101	**135**	115	95	100	100	98	99	87	56	56	57	56
Monarch	**121**	**107**	**136**	121	104	106	101	104	104	95	55	56	55	56
Polansky														
High Country	**118**	83	127	109	101	82	94	93	--	--	58	55	57	57
Paradise	110	97	**136**	114	94	96	100	97	--	--	57	59	59	59
Rock Star	110	**105**	**141**	119	94	105	105	101	--	--	57	56	56	56
WestBred														
WB4303	**127**	84	**146**	119	109	84	108	100	99	82	55	55	56	55
WB4595	**124**	**108**	**143**	125	106	108	106	107	103	93	59	58	58	58
WB4699	**129**	**109**	**133**	124	111	109	99	106	109	94	56	53	54	54

Table 12 continued. 2021 WESTERN Kansas irrigated winter wheat performance test

Brand / Name	CO[1]	GC[2]	HG[3]	Av.	CO	GC	HG	Av.	-CO- 2 yr	-GC- 2 yr	CO	GC	HG	Av.
	yield (bu/a)				% of test average				multiyear av. (bu/a)		tw (lb/bu)			
WB4792	115	99	**140**	118	99	98	103	100	99	86	58	57	57	57
AVERAGE	117	100	135	117	100	100	100	100	98	88	57	57	57	57
CV (%)	9	9	7	--	9	9	7	--	--	--	2	3	4	3
LSD (0.05)	14	12	15	--	12	12	13	--	--	--	2	2	3	2

[1]CO=Colby, KS, Northwest Agricultural Research Center, Thomas County. No fungicide applied.

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

[3]HG=Hugoton, KS, farmer's field, Stevens County. Fungicide applied.

[4](W) indicates hard white wheat.

*Yields must differ by more than the LSD value to be considered statistically different. **Top LSD group in bold.**

To access crop performance testing information electronically, visit our website. The information contained in this publication, plus more, is available for viewing or downloading at:

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

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Contributors

Main Station, Manhattan
Jane Lingenfelser, Assistant Agronomist (Senior Author)
Kelsey Andersen, Extension Plant Pathology
Mary Knapp, Extension State Climatology
Romulo Lollato, Extension Agronomy
Jeff Whitworth, Extension Entomology

Experiment Fields
Eric Adee, Ottawa
Scott Dooley, Scandia
James Kimball, Ottawa
Michael Larson, Scandia
Doug Stensaas, Scandia
Keith Thompson, Hutchinson

Research Centers
Amanda Burnett, Tribune
Lucas Haag, Colby
Lonnie Mengarelli, Parsons
Gretchen Sassenrath, Parsons
Alan Schlegel, Tribune

Cooperators
Calvin Bohnert, Mankato
Steve Bremenkamp, Colby
Cooperative Grain Supply, Hillsboro
Delange Seed, Newton
Brian Dunn, St. John
Gayle and Denton Haag, Decatur
Kramer Seed Farm, Hugoton
Jeff Ochampaugh, Russell
Kevin Peterson, Larned
Nick Schroeder, Colby
Clayton Short, Assaria
Luke Theurer, Wellington
David Wesseler, Ellsworth
Brian Yutzy, Hutchinson

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