PR-831

Agricultural Experiment Station

2023 Kentucky Small Grain

VARIETY PERFORMANCE TRIAL

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varietytesting.ca.uky.edu/wheat

The 2023 soft red winter wheat growing season ended with Kentucky farmers harvesting approximately 460,000 acres of the 610,000 acres planted, for a total production of 40 million bushels of grain. An average yield of 87 bushels per acre was estimated by NASS (Table 1). The acreage not harvested for grain was primarily used for forage production and cover cropping.

The objective of the Kentucky small grain variety performance trial is to evaluate varieties of wheat, oat, barley, triticale, and cereal rye that are commercially available or may soon be available to Kentucky farmers. New varieties continually are being developed by agricultural experiment stations and commercial firms. Annual evaluation of small grain varieties and selections provides farmers, seed producers, and other agricultural workers with current information to help them select the varieties best adapted to their locality and individual requirements.

Eight wheat performance trials were conducted in six of the seven agroclimatic regions of Kentucky (Table 2). Agricultural areas within each region are considered to have similar soil types and climatic conditions. Barley, oat, triticale, cereal rye, and spelt varietal performance was evaluated at one location. In addition, wheat trials for varietal differences in forage yield and straw yield were conducted at one location.

Experimental Methods

A total of 76 wheat entries were evaluated under either conventional or no-till cultural practices. No-till trials were grown at two locations, and conventional trials were grown at four locations. The experimental design was a randomized complete block. The trials had four replications per entry, and the data presented are the average response from the four replications.

The plots were planted with specially built multi-row conventional and no-till cone seeders. Conventional trial plots consisted of six rows to form a plot 4 feet wide and 15 feet long, which was later trimmed to 12 feet in length. No-till plots consisted of seven rows to form a plot 5 feet wide and 25 feet long, which was later trimmed to 22 feet in length. Plots were harvested with a small-plot combine. The preceding crop for all trials was corn.

Trials were conducted using intensive management practices. Typical herbicide applications included a spring application for broadleaf control and a fall preplanting burn-down (no-till trials only) application. Fungicides were applied in the spring on all but two (disease rating) trials. An insecticide for aphid control was typically applied in the spring. Nitrogen was applied in a February/March split application at a rate of approximately 40/60 pounds per acre (conventional trials) or 40/70 pounds per acre (no-till).

The forage trial was planted using conventional tillage and was harvested using a small plot forage combine at the milk stage in the Bluegrass region. Straw yield was measured using a small plot forage combine following grain harvest in the Bluegrass region trial.

Table 1. Wheat Acreage Harvested and Yields (bu/ac) in Kentucky, 2021-23.*

2023		2022		2021	
Harvested	**Yield**	**Harvested**	**Yield**	**Harvested**	**Yield**
460,000	87	365,000	80	370,000	87

*July 12, 2023, National Agricultural Statistics Service.

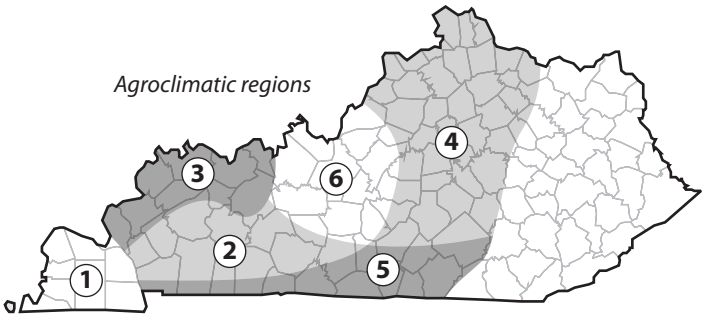

Table 2. Agroclimatic Regions of Kentucky Small Grain Variety Trials.

Region		Location	Cooperator	Crop Tested
1	Purchase	Fulton Co.	Henry Sanger	No-till wheat
2	Western Coal Field	Caldwell Co.	Princeton Research and Education Ctr. Scott Peek	Wheat*, Barley, Small Grains
3	Ohio Valley	Webster Co.	Bruce and Jeremy Benson	No-till wheat
4	Bluegrass	Fayette Co.	Kentucky Ag. Exp. Station; Matt Peake	Wheat*
5	Southern Tier	Logan Co.	Walnut Grove Farm; Sam Halcomb	Wheat*
6	North Central	Woodford Co.	UK Woodford Farm Shannon Rudd	Wheat*

* Conventional tillage.

Characteristics Evaluated

Grain yields were calculated from the weight of grain from each plot and reported in bushels per acre (bu/ac) based on 60-pound, 56-pound, 48-pound, and 32-pound standard bushel weights for wheat, cereal rye, barley, and oats, respectively, at 13.5 percent moisture content. Test weights (lb/bu) were determined using a HarvestMaster Classic GrainGage and adjusted to 13.5 percent moisture. Lodging was reported as the percentage of plant lodging at maturity; winter survival was reported as the percentage of survival after spring green-up. Winter survival was 100 percent for all trials. Plant height was measured in inches from the soil surface to the top of the grain head. Heading dates were reported as the day an estimated 50 percent of the heads had extended above the flag leaf collar. Disease ratings: Leaf rust, leaf blotch, glume blotch, stripe rust and head scab were rated at the Logan Co, KY trial.

Forage and straw yields are expressed as dry matter in tons per acre. Winter cover crop ground cover/biomass values were measured using the Canopeo app at the Lexington wheat trial on 1-10-2023.

Results and Interpretation

Since genetic expression of a variety is greatly influenced by environmental conditions, it is best to have several years' data at multiple locations from which to draw conclusions. Performance of a variety tested for only one year should not be compared with a multi-year average of another variety because it is possible that results in one of the other years were extremely good or poor and thus not comparable.

The yield of a variety is relative and should be compared with the yields of the other varieties in the same trial and at the same location or within the same analysis across locations. Small differences in yield of only a few bushels per acre between two varieties from an individual trial should not be interpreted to indicate the superiority of one variety over another. However, if one variety consistently out yields another over a period of several years or across locations, the chances are that the differences are real. LSD (least significant difference) values are listed at the bottom of table columns to indicate whether differences are statistically significant.

Lodging data are difficult to interpret. A high-yielding variety should not necessarily be downgraded because of a high percentage of lodging for a given year at a given location. Local weather conditions, such as wind and rain, may cause a variety to lodge much more than it normally does. Variety trials normally have a greater degree of lodging than do farmer fields. It also should be emphasized that a variety reported to be 50 percent lodged does not imply that only 50 percent of the grain could be harvested. With good equipment, most of the grain can often be saved.

Kentucky's climate and soils are well-suited for the production of high-quality soft red winter wheat. No single variety has all the desirable characteristics, but each has certain advantages. Grain yield potential, straw strength and yield, height, heading date, grain quality, cover cropping potential, disease resistance, and forage potential are all important in choosing a variety.

Winter barley is less winter-hardy than winter wheat but more hardy than winter oats. The degree of winter-hardiness, straw strength, and maturity are important characteristics when choosing a variety. Barley (hulless, malting, and traditional hulled) variety performance data is presented in table 7. Triticale, cereal rye, oat, and spelt variety performance data are presented in tables 8, 9, 10, and 11 respectively.

Trial Conditions

Below normal temperature and precipitation in October favored timely planting of the wheat variety trials, but drought conditions may have delayed some planting due to hard-dry soil conditions. The 2023 Kentucky small grain variety tests were planted from October 8 to November 14. Dry and warmer conditions in November were followed by above-average temperatures and below-normal precipitation levels in December, which, pending adequate soil moisture, promoted vegetative growth and development. January had normal temperatures and much above-normal precipitation. February had above normal temperatures and much above-normal precipitation. March brought above-average temperatures and below-average precipitation. April and May had normal temperatures and below-average precipitation, which limited disease pressure. Cool nights in May and June extended the seed fill period and delayed maturity in some regions. June was warm and dry, which favored a timely harvest period for most of southwest Kentucky. Higher levels of precipitation in mid-June delayed harvest in other areas, particularly Central Kentucky.

Acknowledgments

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Wheat Varieties Tested in 2023

AgriMAXX Wheat Co.

AgriMAXX 454
AgriMAXX 503
AgriMAXX 505
AgriMAXX 511
AgriMAXX 513
AgriMAXX 514
AgriMAXX 516
AgriMAXX 525
AgriMAXX 531
AgriMAXX 535
AgriMAXX EXP 2301
AgriMAXX EXP 2302

Winfield United

CROPLAN CP8022
CROPLAN CP8045
CROPLAN CP8081
CROPLAN CP8224
CROPLAN CPX92394

Dyna-Gro/Nutrien Ag Solutions

Dyna-Gro 9120
Dyna-Gro 9151
Dyna-Gro 9172
Dyna-Gro 9231
Dyna-Gro 9290
Dyna-Gro 9393
Dyna-Gro 9422
Dyna-Gro 9481
Dyna-Gro WX23444

Growmark, Inc.

GROWMARK FS 597
GROWMARK FS 600
GROWMARK FS 603
GROWMARK FS 606
GROWMARK FS 617
GROWMARK FS 623
GROWMARK FS 624
GROWMARK FS 745
GROWMARK FS WX23A
GROWMARK FS WX23B

Kentucky American Seed, Inc.

KAS 23X01
KAS 23X02
KAS Monroe
KAS Reagan
KAS Washington

Kentucky Foundation Seed Project

X11-0039-1-17-5
X11-0120-12-4-3
X14-1008-92-13-3
X14-1009-84-4-3
X14-1031-103-4-1
X14-1049-27-10-1
X14-1107-182-13-3
X14-1141-172-14-5
X14-1147-131-6-3
X14-1147-158-14-5
X14-1209-141-18-3
X14-1205-147-13-5

Kentucky Small Grain Growers Association

PEMBROKE 2014
PEMBROKE 2016
PEMBROKE 2021

KWS Cereals

KWS369
KWS397
KWS453
KWS459
KWS472
KWS477
KWS482
KWS490
KWS495

LOCAL SEED

Revere 2169

Stratton Seed

Go Wheat 4059S
Go Wheat 6056

University of Missouri

Truman

UniSouth Genetics

USG 3234
USG 3352
USG 3463
USG 3472
USG 3783
USG EXP 3354
USG EXP 3574

List of Tables

Table 3. 2023 Kentucky Wheat Variety Trial - State Summary.*

Variety	State Average*		Test Weight* (lb/bu)	Logan	Fulton	Webster	Fayette	Woodford	Caldwell	Late Planted	Low Input**	Height* (In)	Heading Date* > April 1	Lodging* (%)
	2023	2022-23								Caldwell				
KAS Washington	116.5		61.4	110.7	95.2	125.7	131.9	134.1	111.5	106.7	99.5	37	30	1
KWS369	116.4		60.5	105.1	104.0	126.5	130.4	126.9	112.6	109.2	93.0	37	31	0
Dyna-Gro 9422	115.5	109.6	61.7	112.9	93.4	122.6	131.3	127.8	113.4	106.8	101.6	37	30	0
KAS Reagan	115.1	110.3	60.2	106.0	94.1	131.0	130.8	127.0	113.0	103.6	93.8	36	31	0
AgriMAXX 516	114.7	105.3	61.2	99.3	96.0	126.6	129.0	132.3	108.1	111.4	94.6	37	30	0
KAS 23X02	114.6		61.4	104.9	94.2	114.6	130.6	125.1	118.1	114.6	100.9	36	31	0
GROWMARK FS WX23B	114.6	109.2	62.0	106.1	98.7	122.2	126.0	132.1	113.6	103.2	98.2	39	30	3
KAS Monroe	114.1		62.1	103.3	98.9	122.3	126.2	131.2	115.8	100.7	97.7	39	30	0
CROPLAN CP8224	113.7		63.3	114.7	82.4	128.5	127.3	118.8	115.0	109.2	102.1	37	32	0
GROWMARK FS 745	113.1	106.3	61.4	94.5	99.1	121.3	126.2	133.4	113.3	103.8	83.3	37	30	0
KWS490	113.1		61.6	101.7	95.9	114.7	130.1	125.8	107.9	115.3	98.2	36	31	0
X14-1009-84-4-3	112.8		60.4	97.7	95.3	105.0	130.0	133.5	119.8	108.4	97.6	39	32	0
Dyna-Gro WX23444	112.7		60.3	90.7	100.9	108.7	137.4	119.5	111.9	119.8	101.8	38	28	1
AgriMAXX 525	112.6	108.1	61.8	108.3	95.0	113.1	131.4	129.0	111.8	99.9	96.8	36	32	0
USG EXP 3354	112.5		60.2	89.8	101.7	114.4	136.4	119.5	108.6	117.3	103.5	38	28	0
AgriMAXX 514	112.2	105.6	60.5	108.1	90.2	118.4	126.9	126.4	106.0	109.8	98.2	37	30	0
Dyna-Gro 9231	112.1	108.0	62.2	104.0	97.1	119.1	125.9	125.9	111.7	100.6	103.7	39	30	0
KWS397	112.0		59.6	89.3	96.3	124.1	133.2	130.4	99.5	111.3	90.2	37	30	0
USG 3352	111.8	105.1	62.0	107.3	98.7	115.1	127.1	122.0	110.5	101.7	88.5	38	33	0
GROWMARK FS 600	111.5	106.2	62.9	101.5	91.5	114.4	125.8	129.3	112.0	106.3	96.8	37	30	0
Dyna-Gro 9172	111.4	105.5	61.6	94.4	97.4	117.1	126.7	127.7	111.3	105.3	92.2	37	31	1
AgriMAXX 454	111.3	104.3	61.5	101.6	96.6	103.5	125.8	123.8	114.6	113.4	99.6	38	30	0
X14-1049-27-10-1	111.2		61.1	100.8	97.8	105.9	126.7	124.2	103.9	119.4	92.4	40	35	1
USG 3463	111.2		59.8	86.5	90.6	117.2	127.4	134.5	110.3	111.7	93.7	35	30	1
AgriMAXX 505	111.0	105.1	62.9	101.6	90.6	109.2	127.2	129.4	111.0	108.1	99.3	37	30	0
Dyna-Gro 9151	110.4	105.7	62.5	99.2	90.7	111.5	127.6	126.7	108.1	109.0	98.1	38	31	0
KWS453	110.1		62.8	97.9	105.8	112.9	129.5	120.9	105.8	97.6	89.5	35	33	0
X11-0039-1-17-5	110.0	104.2	61.3	73.6	87.3	117.4	129.9	136.7	112.2	112.9	94.1	36	30	0
AgriMAXX 513	109.5	104.4	62.2	101.9	90.1	117.9	122.5	119.3	114.2	100.6	97.1	38	30	0
AgriMAXX 511	109.3	102.9	60.0	94.3	89.4	120.4	123.7	125.5	108.0	103.4	99.6	37	30	1
Revere 2169	109.3	103.3	61.7	89.0	100.7	104.7	121.5	135.4	110.0	103.4	88.0	37	31	0
AgriMAXX EXP 2302	109.2		61.2	93.2	97.9	116.0	116.8	120.7	109.0	110.8	104.4	35	31	0
USG EXP 3574	109.2		60.0	95.6	78.6	124.6	125.4	127.3	106.5	106.3	95.0	36	31	0
X14-1031-103-4-1	108.9		59.5	79.9	101.4	110.5	126.9	129.5	107.1	107.1	90.0	36	29	2
CROPLAN CP8045	108.5	103.2	61.2	93.8	94.3	106.4	130.8	124.9	105.0	104.2	88.6	36	31	0
AgriMAXX 503	108.1	103.4	61.9	106.9	91.2	114.7	116.4	117.2	107.2	102.7	95.0	38	31	0
GROWMARK FS 623	108.1	103.2	61.8	104.1	94.7	117.0	118.4	112.4	106.8	103.2	96.7	39	31	0
KWS482	108.1		61.9	94.7	97.1	111.5	120.8	122.7	103.5	106.2	94.5	36	31	0
KWS495	108.1		61.0	93.1	96.0	103.4	128.8	132.5	99.4	103.3	75.1	33	29	1
GROWMARK FS 624	108.1	103.2	62.7	91.7	92.3	121.8	115.0	114.6	117.6	103.3	95.0	39	31	0
X14-1147-131-6-3	107.8		60.6	91.9	80.4	113.8	126.6	129.8	108.1	103.7	93.3	40	30	0

continued

Table 3. *(continued)*

Variety	State Average*		Test Weight* (lb/bu)	Logan	Fulton	Webster	Fayette	Woodford	Caldwell	Late Planted	Low Input**	Height* (In)	Heading Date* > April 1	Lodging* (%)
	2023	2022-23								Caldwell				
Go Wheat 6056	107.4	101.3	61.0	89.7	96.6	107.6	129.5	132.8	102.4	93.1	92.8	36	30	0
USG 3472	107.3	103.6	61.6	93.7	93.4	111.7	121.5	127.1	106.0	97.5	91.9	36	31	0
GROWMARK FS WX23A	107.2		61.6	99.2	88.7	111.7	116.1	124.6	106.6	103.7	86.0	38	31	0
X14-1147-158-14-5	107.2		58.9	94.4	81.9	112.4	129.6	130.2	103.2	98.9	92.5	37	29	0
AgriMAXX 535	107.1		62.8	96.5	86.7	110.0	128.2	117.2	109.9	101.0	100.3	36	31	0
CROPLAN CP8022	107.0	103.5	61.1	107.0	79.2	121.8	120.7	118.6	102.9	98.6	103.5	36	30	1
Dyna-Gro 9393	106.9	102.9	61.1	93.1	87.7	112.2	120.9	121.4	107.5	105.8	92.1	35	31	0
Dyna-Gro 9120	106.9	102.5	63.0	97.3	89.9	112.9	125.2	120.5	100.0	102.5	102.5	36	29	0
X14-1008-92-13-3	106.9		61.6	82.2	94.6	105.8	120.4	124.5	111.9	108.8	86.3	39	31	0
PEMBROKE 2021	106.9	102.0	62.0	80.8	91.7	105.4	127.6	124.5	105.9	112.3	92.5	36	29	0
USG 3234	106.8		64.0	100.2	99.4	116.7	111.5	116.5	103.4	100.2	93.8	40	32	0
AgriMAXX 531	106.5		62.2	101.8	96.4	124.4	119.8	108.2	104.5	90.8	91.6	39	30	0
KWS477	106.5		61.9	76.4	90.4	96.0	132.3	121.7	108.4	120.3	87.4	36	28	0
AgriMAXX EXP 2301	106.4		62.6	99.3	83.2	111.1	126.8	118.4	108.5	97.3	92.3	35	30	0
KWS472	106.3		61.9	99.7	90.5	112.8	112.6	107.5	111.5	109.1	93.8	35	31	1
GROWMARK FS 617	106.3	100.6	61.6	104.7	80.8	110.1	123.1	124.7	106.9	93.4	89.7	37	33	0
X14-1209-141-18-3	106.2		62.1	90.7	96.6	109.2	116.0	119.2	106.7	104.8	99.3	39	30	2
GROWMARK FS 606	106.0		64.1	109.0	103.3	117.7	108.3	110.6	103.1	90.2	93.4	41	31	0
USG 3783	105.9	100.6	61.1	90.4	89.2	106.3	123.2	124.2	105.9	101.7	93.8	34	32	0
KAS 23X01	105.7		60.0	96.6	88.4	102.2	120.4	122.0	106.0	104.4	92.1	36	30	0
X11-0120-12-4-3	105.7	101.1	60.9	94.5	73.4	116.5	125.7	122.4	103.0	104.4	96.4	37	32	3
X14-1141-172-14-5	105.5		61.6	91.2	91.2	100.5	121.1	129.0	100.9	104.2	86.9	39	30	0
X14-1107-182-13-3	105.4		60.0	85.6	87.5	102.6	131.6	129.9	99.5	101.1	98.7	37	30	0
CROPLAN CP8081	105.1	100.8	60.4	89.8	76.9	102.4	125.9	123.4	107.0	110.4	89.7	35	29	0
Dyna-Gro 9290	104.5		61.1	81.1	91.6	102.5	128.7	123.3	99.0	105.3	86.1	37	29	0
GROWMARK FS 597	104.2	99.0	60.9	84.5	96.6	104.9	126.8	120.2	95.0	101.7	88.0	36	29	0
Dyna-Gro 9481	103.9		60.1	91.0	87.0	106.9	121.5	114.7	102.4	103.7	86.8	36	30	0
Go Wheat 4059S	103.2	97.3	61.7	91.0	89.7	103.6	122.6	122.4	101.9	91.2	89.5	36	32	0
KWS459	103.1		59.5	95.9	70.9	99.3	127.7	124.2	101.8	101.7	95.9	34	30	0
X14-1205-147-13-5	102.6		61.7	88.4	89.3	112.5	119.5	114.3	94.6	99.3	87.4	40	29	3
PEMBROKE 2016	98.9	93.8	60.4	76.5	92.2	81.8	124.7	121.3	94.7	101.4	85.2	35	29	0
GROWMARK FS 603	97.5	95.2	60.9	85.3	81.1	112.5	106.0	108.6	98.1	91.0	83.6	35	30	0
PEMBROKE 2014	95.7		60.4	70.2	85.5	86.5	118.5	116.1	89.8	103.4	77.5	33	28	0
Truman	94.7	89.7	63.1	87.5	92.3	98.1	102.3	98.4	86.5	98.1	79.1	43	36	0
CROPLAN CPX92394	94.3		60.0	81.6	83.7	78.7	106.2	109.6	98.5	102.0	89.5	36	29	0
Average	**108.3**	**103.1**	**61.4**	**95.2**	**91.8**	**111.8**	**124.4**	**123.4**	**106.7**	**104.6**	**93.4**	**37**	**31**	**0**
C.V. (%)	6.3	6.2	1.4	6.4	5.6	7.2	4.9	6.8	6.3	6.6	9.2			
LSD (0.10)	4.3	7.5	0.5	10.1	8.5	13.3	10.2	13.9	11.2	11.3	14.2			

* Summary of seven 2023 county trials - (Caldwell, Caldwell - Late Planted, Logan, Fulton, Webster, Woodford, Fayette). Caldwell - Low Input trial excluded.
** Low input trial (no fungicide; single 60lb N application at feekes 5).
Planting Date: Caldwell & Caldwell - Low Input - 10/9/22; Caldwell - Late Planted - 11/14/22; Fulton - 10/10/22; Logan - 10/12/22; Webster - 10/11/22; Fayette - 10/8/22; Woodford - 10/20/22.
Harvest Date: Caldwell & Caldwell - Low Input - 6/15/23; Caldwell - Late Planted - 6/23/23; Fulton - 6/8/23; Logan - 6/15/23; Webster - 6/16/23; Fayette - 6/27/23; Woodford - 6/24/23.

Table 4. 2023 Kentucky Wheat Variety Forage / Cover Crop Trial.

Variety	Milk Stage Dry Matter (tons/a)		Cover Crop* Canopy (%)	Head Type
	2023	2022-23	2023	
X11-0120-12-4-3	5.45	5.32	38	Smooth
KAS 23X01	5.45		39	Bearded
AgriMAXX 513	5.33	5.25	46	Bearded
AgriMAXX EXP 2301	5.28		37	Bearded
AgriMAXX 514	5.27	4.89	34	Bearded
AgriMAXX 516	5.26	4.92	40	Bearded
CROPLAN CP8022	5.23	4.74	32	Bearded
KWS459	5.20		47	Bearded
X14-1205-147-13-5	5.18		37	Smooth
Dyna-Gro 9151	5.16	4.87	37	Bearded
AgriMAXX 505	5.15	4.88	37	Bearded
AgriMAXX 525	5.15	5.28	36	Bearded
GROWMARK FS 600	5.13	4.86	36	Bearded
AgriMAXX EXP 2302	5.12		40	Smooth
KWS482	5.11		31	Bearded
GROWMARK FS WX23A	5.10		37	Bearded
KWS490	5.10		40	Bearded
GROWMARK FS 624	5.09	4.87	38	Smooth
X11-0039-1-17-5	5.06	4.85	38	Smooth
X14-1008-92-13-3	5.06		35	Bearded
X14-1107-182-13-3	5.05		42	Bearded
GROWMARK FS 617	5.04	4.98	36	Bearded
Dyna-Gro 9422	5.03	5.18	36	Bearded
X14-1049-27-10-1	5.03		45	Bearded
PEMBROKE 2014	5.03	4.56	43	Bearded
KAS Washington	5.02	4.92	35	Bearded
X14-1147-131-6-3	5.02		43	Smooth
GROWMARK FS 745	5.01	4.81	31	Bearded
PEMBROKE 2016	4.99	4.48	42	Bearded
Dyna-Gro 9172	4.98	4.90	32	Bearded
CROPLAN CP8045	4.93	4.76	33	Bearded
USG 3352	4.92	4.46	34	Bearded
GROWMARK FS WX23B	4.91	4.98	40	Bearded
Dyna-Gro 9231	4.90	5.38	36	Bearded
USG 3783	4.90	4.76	41	Bearded
X14-1031-103-4-1	4.88		42	Bearded
X14-1009-84-4-3	4.88		43	Bearded
KAS Monroe	4.87	5.24	34	Bearded
KWS495	4.86		39	Bearded
AgriMAXX 535	4.85		43	Bearded
Revere 2169	4.85	4.48	31	Bearded
USG EXP 3574	4.85		37	Smooth
KWS397	4.85		40	Smooth
PEMBROKE 2021	4.85	4.51	43	Smooth
GROWMARK FS 597	4.84	4.44	40	Bearded
USG 3463	4.83		29	Bearded
Dyna-Gro WX23444	4.83		40	Smooth
USG EXP 3354	4.82		37	Smooth
X14-1147-158-14-5	4.82		44	Bearded
KWS477	4.81		37	Smooth
Dyna-Gro 9393	4.81	4.82	37	Bearded
GROWMARK FS 606	4.80		41	Smooth
CROPLAN CP8081	4.78	4.68	43	Bearded
KWS369	4.78		44	Tip-Awned
Dyna-Gro 9290	4.76		28	Bearded
KWS453	4.76		39	Tip-Awned
AgriMAXX 454	4.75	4.75	44	Bearded
GROWMARK FS 603	4.74	4.66	38	Bearded
X14-1209-141-18-3	4.74		38	Smooth
Truman	4.71	4.50	33	Smooth
X14-1141-172-14-5	4.69		36	Bearded
AgriMAXX 531	4.68		40	Smooth
Go Wheat 4059S	4.68	4.56	35	Smooth
KAS 23X02	4.67		32	Bearded
Go Wheat 6056	4.63	4.53	32	Bearded
CROPLAN CPX92394	4.60		29	Smooth
AgriMAXX 511	4.60	4.62	44	Bearded
USG 3472	4.58	4.46	34	Bearded
GROWMARK FS 623	4.54	4.37	39	Smooth
USG 3234	4.43		36	Smooth
KAS Reagan	4.39	4.85	39	Bearded
Dyna-Gro 9120	4.35	4.67	36	Bearded
AgriMAXX 503	4.31	4.30	34	Smooth
CROPLAN CP8224	4.30		37	Smooth
Dyna-Gro 9481	4.23		27	Smooth
KWS472	4.16		38	Bearded
Average	**4.88**	**4.77**	**38**	
C.V. (%)	10.50	9.99	16	
LSD (0.10)	0.85	0.55	11	

Location: Bluegrass Region - Fayette Co.
Planting date: 10-8-2022; conventional tillage.
Dry matter yield harvest date at milk stage: 5-25-2023.
* Winter Cover Crop / Grazing biomass estimate (% Canopy coverage using Canopeo app): measured: 1-10-2023.

continued

Table 5. 2023 Kentucky Wheat Variety Straw Trial.

Variety	DM Straw Yield* tons/acre		State Average*
	2023	2022-23	Grain Yield (bu/a)
X14-1205-147-13-5	2.25		102.6
X14-1008-92-13-3	2.05		106.9
AgriMAXX EXP 2301	2.02		106.4
GROWMARK FS 606	1.99		106.0
Truman	1.99	1.81	94.7
GROWMARK FS WX23A	1.95		107.2
Dyna-Gro 9151	1.94	1.76	110.4
KAS Monroe	1.94	1.86	114.1
X14-1141-172-14-5	1.94		105.5
AgriMAXX 505	1.92	1.77	111.0
AgriMAXX 531	1.91		106.5
X14-1049-27-10-1	1.88		111.2
X14-1147-131-6-3	1.86		107.8
Dyna-Gro WX23444	1.85		112.7
USG EXP 3354	1.84		112.5
USG 3234	1.81		106.8
X14-1009-84-4-3	1.81		112.8
GROWMARK FS WX23B	1.80	1.80	114.6
KWS490	1.79		113.1
GROWMARK FS 597	1.78	1.49	104.2
Dyna-Gro 9290	1.77		104.5
Dyna-Gro 9231	1.76	1.89	112.1
GROWMARK FS 600	1.75	1.65	111.5
Dyna-Gro 9481	1.72		103.9
AgriMAXX EXP 2302	1.71		109.2
CROPLAN CPX92394	1.70		94.3
X11-0120-12-4-3	1.70	1.62	105.7
AgriMAXX 516	1.69	1.59	114.7
Go Wheat 4059S	1.69	1.57	103.2
USG 3352	1.69	1.47	111.8
X14-1209-141-18-3	1.69		106.2
AgriMAXX 514	1.67	1.56	112.2
AgriMAXX 454	1.66	1.55	111.3
CROPLAN CP8045	1.64	1.64	108.5
PEMBROKE 2021	1.64	1.46	106.9
Dyna-Gro 9120	1.63	1.57	106.9
KWS369	1.63		116.4
AgriMAXX 513	1.62	1.56	109.5
CROPLAN CP8081	1.60	1.45	105.1
PEMBROKE 2014	1.60		95.7
PEMBROKE 2016	1.59	1.43	98.9
AgriMAXX 535	1.58		107.1
GROWMARK FS 745	1.58	1.58	113.1
KWS453	1.57		110.1
USG 3783	1.57	1.53	105.9
USG EXP 3574	1.57		109.2
X14-1107-182-13-3	1.57		105.4
AgriMAXX 503	1.56	1.51	108.1
AgriMAXX 525	1.56	1.69	112.6
CROPLAN CP8022	1.56	1.43	107.0
KAS Washington	1.56	1.50	116.5
CROPLAN CP8224	1.55		113.7
GROWMARK FS 623	1.55	1.45	108.1
Go Wheat 6056	1.53	1.58	107.4
KAS 23X02	1.53		114.6
Dyna-Gro 9172	1.52	1.54	111.4
GROWMARK FS 624	1.52	1.64	108.1
KAS 23X01	1.52		105.7
USG 3463	1.51		111.2
GROWMARK FS 617	1.50	1.59	106.3
KWS482	1.48		108.1
X14-1031-103-4-1	1.48		108.9
X14-1147-158-14-5	1.48		107.2
Dyna-Gro 9393	1.47	1.50	106.9
Dyna-Gro 9422	1.47	1.47	115.5
KWS397	1.47		112.0
KWS477	1.47		106.5
KAS Reagan	1.43	1.45	115.1
X11-0039-1-17-5	1.43	1.44	110.0
AgriMAXX 511	1.39	1.36	109.3
Revere 2169	1.38	1.42	109.3
USG 3472	1.38	1.48	107.3
GROWMARK FS 603	1.34	1.26	97.5
KWS459	1.24		103.1
KWS495	1.15		108.1
KWS472	1.12		106.3
Average	**1.64**	**1.56**	**108.3**
C.V. (%)	11.68	12.41	6.3
LSD (0.10)	0.32	0.23	4.3

Location: Bluegrass Region - Fayette Co.
Planting date: 10-8-2022; Conventional tillage.
Harvest date: 6-28-2023.
* Dry Matter straw yield following grain harvest.
* Average grain yield of seven 2023 county trials - (Caldwell, Caldwell - Late Planted, Logan, Fulton, Webster, Woodford, Fayette).

continued

Table 6. 2023 Kentucky Wheat Variety Disease Ratings.

Variety	Leaf Blotch	Head Scab	Glume Blotch	Leaf Rust	Stripe Rust
AgriMAXX 454	4.3	3.0	2.5	7.3	**
AgriMAXX 503	4.5	1.5	3.0	3.5	
AgriMAXX 505	5.8	1.8	4.5	4.8	
AgriMAXX 511	4.3	1.5	2.8	1.3	
AgriMAXX 513	3.8	2.8	1.8	2.0	
AgriMAXX 514	6.8	3.5	2.3	1.8	
AgriMAXX 516	4.3	2.3	3.3	4.8	
AgriMAXX 525	4.0	2.5	1.8	4.5	
AgriMAXX 531	4.3	2.8	3.0	1.3	
AgriMAXX 535	4.3	4.0	2.8	1.8	
AgriMAXX EXP 2301	5.0	2.8	2.8	1.0	
AgriMAXX EXP 2302	4.8	2.0	3.0	1.0	
CROPLAN CP8022	4.3	3.3	2.5	4.0	
CROPLAN CP8045	5.3	2.3	2.8	4.3	
CROPLAN CP8081	5.0	3.5	1.5	1.8	
CROPLAN CP8224	3.0	2.8	2.3	3.3	
CROPLAN CPX92394	6.0	2.0	3.5	1.8	
Dyna-Gro 9120	5.8	2.3	4.8	3.0	
Dyna-Gro 9151	4.8	2.0	4.3	4.8	
Dyna-Gro 9172	4.0	1.8	2.8	4.0	
Dyna-Gro 9231	4.3	3.0	2.8	4.3	
Dyna-Gro 9290	5.5	4.5	2.5	2.0	
Dyna-Gro 9393	5.8	2.8	2.8	1.8	
Dyna-Gro 9422	5.0	3.5	2.3	6.3	**
Dyna-Gro 9481	3.3	2.5	4.0	1.3	
Dyna-Gro WX23444	6.0	3.5	3.8	2.0	
Go Wheat 4059S	5.8	1.8	5.3	2.3	
Go Wheat 6056	5.0	2.3	3.3	3.3	
GROWMARK FS 597	5.5	5.0	3.3	1.5	
GROWMARK FS 600	4.0	2.0	4.3	4.5	
GROWMARK FS 603	4.5	2.0	6.3	2.3	
GROWMARK FS 606	3.3	2.0	3.3	2.5	**
GROWMARK FS 617	4.0	3.3	3.3	3.0	
GROWMARK FS 623	4.5	1.5	3.0	3.5	
GROWMARK FS 624	4.3	3.3	7.3	2.8	
GROWMARK FS 745	4.0	2.0	2.8	4.0	
GROWMARK FS WX23A	4.0	2.3	2.5	2.5	
GROWMARK FS WX23B	5.0	3.0	3.0	4.3	
KAS 23X01	6.3	5.5	3.0	2.5	
KAS Monroe	4.5	3.0	2.8	4.3	
KAS Reagan	5.3	2.5	5.3	3.0	

continued

Table 6. *(continued)*

Variety	Leaf Blotch	Head Scab	Glume Blotch	Leaf Rust	Stripe Rust
KAS Washington	5.3	3.5	1.8	6.3	
KAS 23X02	4.3	2.8	2.8	5.0	
KWS369	4.3	3.3	2.3	1.5	
KWS397	5.0	2.8	3.8	2.5	**
KWS453	3.8	2.0	3.8	2.0	
KWS459	5.3	4.3	3.3	1.5	
KWS472	6.8	3.3	3.0	5.8	
KWS477	5.5	4.3	5.5	1.5	
KWS482	3.8	4.8	2.5	3.8	
KWS490	3.5	3.0	2.3	1.8	
KWS495	6.5	2.3	3.0	1.3	
PEMBROKE 2014	5.3	3.0	4.3	4.3	
PEMBROKE 2016	6.3	2.8	2.5	3.0	
PEMBROKE 2021	5.3	3.5	4.0	3.0	
Revere 2169	4.3	2.5	3.3	5.0	
Truman	4.5	2.3	2.3	4.3	
USG 3234	4.8	2.8	3.0	2.5	**
USG 3352	3.8	3.8	2.8	3.5	
USG 3463	5.3	2.3	3.3	2.0	
USG 3472	4.5	2.0	2.3	5.0	
USG 3783	5.3	2.8	2.5	1.5	
USG EXP 3354	5.5	3.8	4.3	1.3	
USG EXP 3574	5.0	3.0	3.5	5.0	
X11-0039-1-17-5	5.8	3.3	2.5	5.0	
X11-0120-12-4-3	5.0	2.8	2.5	2.0	
X14-1008-92-13-3	5.5	4.3	2.8	2.8	
X14-1009-84-4-3	5.0	3.5	2.8	2.3	
X14-1031-103-4-1	6.5	3.3	6.5	5.0	
X14-1049-27-10-1	5.3	3.8	3.8	1.3	
X14-1107-182-13-3	6.5	3.0	5.5	3.3	
X14-1141-172-14-5	6.5	2.5	2.5	1.8	
X14-1147-131-6-3	5.3	3.0	2.3	1.8	
X14-1147-158-14-5	7.5	3.8	3.3	3.8	**
X14-1205-147-13-5	5.5	2.5	3.0	3.5	
X14-1209-141-18-3	4.0	3.0	3.8	5.8	
Average	**4.9**	**2.9**	**3.2**	**3.1**	

Disease Rating scale: 1 = resistant; 9 = susceptible.
Ratings taken at Logan Co. location.
** Stripe Rust observed in multiple plots.

Table 7. 2023 Kentucky Barley Variety Trial.

Variety	Yield (Bu/A)*	Yield (Bu/A)*	Test Wt. (Lb/bu)	Height (In)	Heading Date > April 1	Lodging (%)
	2023	2022-23	2023	2023	2023	2023
FLAVIA	126.1	94.1	45.8	36	24	29
Marouetta	123.8	104.8	46.3	43	23	33
KWS Donau	122.6	99.4	46.1	40	24	18
Hirondella	120.2	93.2	44.7	40	23	5
LCS Violetta	113.2	87.4	47.4	36	22	15
Thoroughbred	106.5	99.2	47.1	43	21	15
Origin Malt Puffin	100.3		47.9	40	25	40
Secretariat	100.1	89.6	47.2	36	18	26
LCS Calypso	100.0	78.3	45.6	42	24	45
Origin Malt Regina	93.9	84.7	48.4	41	25	40
Avalon	91.7	86.9	49.9	44	22	19
Origin Malt OM88	91.1		46.4	41	24	48
Origin Malt OMZ	89.5	80.6	45.6	39	25	60
VT Beahm	84.6		44.5	46	16	1
20211573**	81.5	79.4	56.1	46	23	58
Origin Malt OML	70.2		43.1	43	25	64
Average	**101.0**	**90.0**	**47.0**	**41**	**23**	**32**
C.V. (%)	12.7	12.6				
LSD (0.10)	22.0	13.5				

* 48-lb standard bushel weight.
** Hulless barley
Planting date: 10-9-22; Conventional tillage.
Harvest Date: 6-16-23.
Location: Caldwell County, (UKREC-Princeton, KY).
Note: higher levels of early lodging was observed - likely due to cold injury to stems.

Table 8. 2023 Kentucky Triticale Variety Trial.

Variety	Yield (Bu/A)*	Yield (Bu/A)*	Test Wt. (Lb/bu)	Height (In)	Heading Date > April 1	Lodging (%)
	2023	2022-23	2023	2023	2023	2023
NST 22005	86.6	76.6	54.8	56	32	5
Trical Ace	86.4	70.7	52.0	52	30	0
Trical EXP 71321	83.2		53.3	50	21	0
LAX Nitrous	81.6	70.6	50.3	54	33	3
SS 1414	81.4	64.3	53.9	49	21	3
NST 22003	79.8	68.1	54.0	51	23	0
Trical Gainer 154	67.6	59.9	52.5	48	20	23
Trical Gunner	64.8	60.8	50.9	56	33	48
Trical EXP 0209	60.1		51.4	59	31	58
Trical EXP 0220	58.1		52.9	58	36	48
Trical EXP 0305	55.9		46.9	64	35	11
NST 22001	46.0	49.3	46.9	57	31	86
Average	**71.0**	**65.0**	**51.6**	**54**	**29**	**24**
C.V. (%)	12.8	11.6				
LSD (0.10)	15.8	8.9				

*60-lb standard bushel weight.
Planting date: 10-9-22; Conventional tillage.
Harvest Date: 6-23-23.
Location: Caldwell County, (UKREC-Princeton, KY).

Table 9. 2023 Kentucky Cereal Rye Variety Trial.

Variety	Yield (Bu/A)*	Yield (Bu/A)*	Test Wt. (Lb/bu)	Height (In)	Heading Date > April 1	Lodging (%)
	2023	2022-23	2023	2023	2023	2023
KWS SH-05**	104.1	78.0	53.5	51	20	0
KWS SH-06**	99.4	77.0	54.1	52	20	0
KWS RECEPTOR**	86.9	85.3	57.3	57	32	4
KWS H20003**	86.4	83.0	55.3	59	31	5
KWS Serafino**	78.7	80.7	55.7	57	32	23
KWS Tayo**	77.9	83.0	55.2	57	32	15
ND Dylan	65.1		56.1	62	25	17
Spooner	63.3	57.0	55.3	64	22	27
AC Hazlet	45.6		56.6	63	32	35
Danko	42.3		52.8	65	28	75
LAX Guardian	39.9	51.7	55.4	64	25	82
Average	**71.8**	**74.5**	**55.2**	**59**	**27**	**26**
C.V. (%)	16.2	15.0				
LSD (0.10)	18.0	11.3				

* 56-lb standard bushel weight.
Planting date: 10-9-22; Conventional tillage.
Harvest Date: 6-23-23.
Location: Caldwell County, (UKREC-Princeton, KY).
** Hybrid Rye

Table 10. 2023 Kentucky Oat Variety Trial.

Variety	Yield (Bu/A)*	Test Wt. (Lb/bu)	Height (In)	Heading Date > April 1	Lodging (%)
Horizon 578	174.7	36.0	43	31	0
SCOP 85-8	169.6	35.4	48	33	0
Cosaque	169.3	35.9	48	36	0
NC20-4452	165.0	37.1	45	34	0
NC20-4621	163.4	37.0	48	34	0
NSO 20010	158.4	34.1	40	33	0
SCLA 0100214	158.4	34.1	40	33	0
NC20-4441	156.2	35.3	48	32	18
GRAHAM	150.6	34.1	38	33	0
NSO 12000	144.1	35.9	49	29	0
Bob	142.7	37.0	45	30	0
NC20-4700	140.8	34.2	45	33	0
SS 76-50	133.8	34.6	41	31	0
Average	**155.7**	**35.4**	**45**	**32**	**1**
C.V. (%)	12.9				
LSD (0.10)	34.8				

Location: Caldwell Co. (UKREC)
Planting date: 10-9-2022; Conventional tillage.
Harvest date: 6-16-2023.
*32-lb standard bushel weight.
Winter Survival = 100%.

Table 11. 2022** Kentucky Spelt Variety Trial.

Variety	Yield (bu/a)*			Height (in)	Heading Date > May 1
	2022	2021-22	2020-22	2022	2022
Zollernperle	70.8	71.5	73.1	46	20
Sammy	69.4	64.7	68.1	43	13
Comet	69.3	64.7	67.2	40	12
Mavrick	67.4	64.1	69.5	52	15
Sungold	65.9	72.7	82.0	51	17
Zollernspelz	43.4	47.9	57.3	42	22
Sonic	43.0	44.9	59.1	49	20
Average	**61.3**	**61.5**	**68.0**	**46**	**17**

*40-lb standard bushel weight.
Location: Fayette Co. (Lexington, KY); Lodging = 0%.
Planting date: 10-14-2021; Conventional tillage;
Harvest date: 6-30-2022.
** 2023 spelt trial dropped due to poor stands.

2023 Kentucky Small Grain Variety Performance Trial

varietytesting.ca.uky.edu/wheat

Martin-Gatton College of Agriculture, Food and Environment
University of Kentucky

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