

Wheat Tech Agronomy

2016-2017 Wheat Variety Performance Test Results

General Information:

The 2016-2017 soft red winter wheat variety performance tests were conducted at three different sites: Auburn, Kentucky; Greenfield, Tennessee; and Bertrand, Missouri. The KY location contained 62, the TN location contained 59, and the MO location contained 50 different varieties.

Varieties were tested in conventional till (MO), minimum till (TN), and no-till (KY) practices. The preceding crop for all locations was corn. Seeding rates used for the conventionally and minimum tilled sites were 325 s/yd², while no-tilled rates were 375 s/yd². Trials were planted using a Hege Drill with a row spacing of 7.5 inches, and were harvested with a Kincaid 8-XP research combine with a HarvestMaster Classic GrainGage. Plot dimensions used were 5 feet wide by 20 feet long. All sites contained four replications, and the experimental design used was randomized complete block.

All locations were managed intensively with split applications of nitrogen, insecticides, herbicide sprays in the fall and spring, and a Feekes 5 and Feekes 10.51 fungicide. Nitrogen applied to all locations was a January-February/March split application. The rate at KY was 45/70 pounds per acre, the rate at TN was 45/65 pounds per acre, and MO was split into three different applications of 45/40/48 pounds per acre. At the Kentucky no-till site, there were four replications treated with a foliar fungicide at Feekes 5 and Feekes 10.51 and four without. The objective for having four untreated replications is to see how each variety responds to the given level of head blight and foliar diseases, and then create a yield fungicide response column. At the Tennessee and Missouri sites all replications were sprayed with a foliar fungicide. The MO site is irrigated, and our other locations are non-irrigated.

Growing Season:

Planting wheat plots began on October 11th with the KY location, followed by MO on the 13th, and TN on the 17th. Planting conditions were dry throughout the month of October, and would continue to remain dry all fall. A weather station was placed on-site at our KY location, which we use to collect and maintain a record of weather activity throughout the growing season. According to information collected, the month of October yielded only 1.1" of rainfall and November only 2". This is far below the 4 year average of 4.47" for October, and the 5 year average of 4.23" for November. According to www.climate.com, the Greenfield, TN site received 0.3" for the month of October and 2.38" for November. As of the 17th of November, the site had only accumulated 0.15". Again, this is much lower than the 5 year averages of 3.15" for October and 4.18" for November. Despite these adverse planting and germinating conditions, both our KY and TN locations managed to have exceptional stands. Our early planting dates and tillage selections left enough moisture in the soil to result in a good stand of wheat. The Bertrand, MO site was irrigated by a center pivot system and had no problems with achieving an excellent stand.

Temperatures throughout the winter and spring would come to play a major role in the wheat crop. Above average temperatures during the months of January and February lead to wheat being much bigger, thicker, and further along than desired. At the KY site, the average temperature for January was 44°F and February was 50°F, while the 5 year average for January is 34.4°F and February is 36.6°F. This same trend continued across TN and MO. The wheat at each was location was approximately 2-3 weeks further along in development than is typical for the month of March. All wheat varieties at all locations had jointed to some degree before the March freeze event on the 15th and 16th. In Auburn, KY between the hours of 12:00 am and 7:00 am on March 15th and 8:00 pm March 15th through 7:00 am March 16th, temperatures stayed below 24°F. According to Table 3-3 from ID-125: A Comprehensive Guide to Wheat Management in Kentucky (University of Kentucky publication), wheat that has reached Feekes 6-7 is likely to have moderate to severe yield effect if temperatures stay at 24°F for approximately 2 hours. Many varieties experienced a higher lodging rating than normal. This was due to the stem damage created by the freeze event. Lodging ratings were much worse at the KY and MO sites. This also led to decreased test weight and grain quality; many kernels were smaller and more shriveled. While grain quality was affected, yields for many varieties seemed to be unaffected by the freeze. This is a testament to the diversity of the varieties commercially available to growers.

Fusarium Head Blight was not a problem this year at any of the locations. Although weather conditions during flowering at the locations were favorable for disease development, the amount remained very low. Septoria and Leaf Rust did have an impact on the untreated plots. This would be the reason for the fungicide response column having a mean of 15.5 bu/ac. Insects did not cause any problems despite the warmer than average winter.

Data Interpretation:

Maturity groups are separated out into the following classifications:

E = Early

M = Medium

L = Late

ME = Medium/Early

ML = Medium/Late

The tables on the following pages have been prepared with the entries listed in order of performance, the highest-yielding entry being listed first. All yields presented have been adjusted to 13.5% moisture. At the bottom of the tables are there are three different values: LSD (Least Significant Difference), CV (Coefficient of Variation), and Grand Mean. The mean yields of any two varieties being compared must differ by at least the LSD amount shown to be considered different in yielding ability at the 5% level of probability of significance. CV is a measure of the error variability found within each experiment. It is the percentage that the square root of error mean square is of the overall test mean yield at that location. Grand Mean is the mean of all values in the group.

Acknowledgements

We would like to acknowledge the following participating companies, Wheat Tech R&D, Wheat Tech owners, and supporting chemical companies. Also, special thanks are extended to all other Wheat Tech employees for any involvement with the research and development division.

Wheat Tech Research & Development Division:

Brad Wilks – Research Director

Matt Miller – Senior Research Associate

Wheat Tech Owners:

Chris Bowley

Bill Brinkley

David West

Participating Companies:

AgriMAXX Wheat Company

Armor Seed, LLC

Beck's Hybrids

DuPont Pioneer

Dyna-Gro Seed

Equity Seed/Direct Enterprises, Inc.

Erwin-Keith Inc. (Progeny Ag Products)

Kentucky American Seeds, LLC

KY Small Grain Growers Association

Limagrain Cereal Seed

Steyer Seeds

Stratton Seed Company

UniSouth Genetics, Inc.

Warren Seed and Agronomy Service

Winfield

Supporting Chemical Companies:

Bayer CropScience

Syngenta Crop Protection, LLC.

DuPont Crop Protection

DOW AgroSciences, LLC.

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Table 1

2016-2017 Missouri Winter Wheat Variety Performance Results

Bertrand, MO

Variety	Maturity	Yield (bu/ac)		TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)
Pioneer variety 26R59	M	129.1	a*	56.3	1	29
Dyna-Gro 9701	ME	127.5	ab	57.2	2	32
AgriMAXX 473	ME	125.2	abc	56.8	3	29
Armor Mayhem	ME	124.8	abc	57.2	2	33
Pioneer variety 26R10	L	124.8	abc	57.0	2	30
Dyna-Gro 9171	ME	123.4	a-d	55.9	2	34
USG 3536	ME	122.9	a-e	56.7	4	30
Progeny Ag #Warrior	ME	121.6	a-f	57.2	2	30
Progeny Ag #Bullet	M	121.6	a-f	56.7	4	30
Warren Seed - McKay 120	M	121.3	a-g	57.6	1	30
Dyna-Gro 9862	M	121.0	a-h	58.2	1	28
AgriMAXX 454	M	120.6	a-i	57.7	2	30
Warren Seed - McKenna 325	M	120.3	a-i	56.5	4	30
Pioneer variety 26R36	ML	120.1	a-i	58.3	2	34
Beck 125	M	120.0	a-i	58.1	4	31
Progeny Ag PGX16-3	M	119.6	a-i	57.5	2	32
AgriMAXX 474	ME	119.2	b-i	57.1	1	31
Warren Seed - McKenna 315	ME	118.9	b-i	55.7	3	30
KAS LIBERTY IV	ME	118.3	b-i	56.3	6	31
Beck 123	ME	118.1	b-j	56.8	5	31
Dyna-Gro 9692	M	117.6	c-k	57.6	2	31
AgriMAXX 444	M	117.2	c-l	57.7	2	32
Beck 128	ML	116.5	c-m	57.7	2	31
AgriMAXX 446	M	116.5	c-m	58.0	2	29
Progeny Ag #BOSS	ME	114.4	d-n	56.0	4	32
PEMBROKE 2016	E	114.0	d-n	57.7	3	29
PEMBROKE 2014	E	113.8	d-o	58.0	2	29
USG 3895	M	113.5	e-o	56.4	4	31
Progeny Ag P357	ME	113.3	e-o	55.8	2	30
Progeny Ag P243	ME	113.1	f-o	58.0	4	31
Pioneer variety 26R41	M	112.2	f-o	57.4	3	29
AgriMAXX 438	ML	112.2	f-o	56.9	5	31
Pioneer variety XW15C	M	111.9	g-o	56.5	3	29
GO Wheat 2059	ME	111.3	h-o	56.1	3	30
AgriMAXX 475	ME	111.1	i-o	56.2	4	30
Limagrain L11550	M	108.6	j-p	57.9	2	31
Dyna-Gro 9750	E	108.4	k-p	56.0	2	29
AgriMAXX 463	E	107.9	l-p	55.9	4	30
DEI 17092	M	107.5	m-p	58.0	1	30
Armor Menace	ME	107.5	m-p	55.9	4	28

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Table 1 - Continued

2016-2017 Missouri Winter Wheat Variety Performance Results

Bertrand, MO

Variety	Maturity	Yield (bu/ac)		TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)
Progeny Ag #Turbo	M	107.4	m-p	56.9	2	28
USG 3197	M	107.4	m-p	55.8	3	31
KAS JEFFERSON	ME	106.5	nop	55.5	2	32
DEI 17076	M	106.3	nop	57.1	2	30
KAS S1300	M	104.2	opq	56.3	4	31
DEI 16053	E	101.4	pq	58.6	3	28
Dyna-Gro 9772	M	96.5	qr	55.2	4	31
DEI 16087	E	95.9	qr	57.7	2	29
KAS RUMBLE	M	89.4	r	55.8	5	31
Progeny Ag PGX14-5	M	88.3	r	58.1	2	29
LSD P=.05		9.6		.	.	.
CV		6.1		.	.	.
Grand Mean		113.8		57.0	3	30

Planted: October 13, 2016; Harvested: June 7, 2017

* - Means followed by same letter do not significantly differ (P=.05, LSD)

1 - Lodging notes were taken at harvest on a 0-10 scale, where 0 = no lodging and 10 = completely lodged

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Table 2

2016-2017 Tennessee Winter Wheat Variety Performance Results

Greenfield, TN

Variety	Maturity	Yield (bu/ac)		TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)
STEYER Haubert	ML	133.7	a*	57.8	0	36
Pioneer variety XW15C	M	132.4	ab	55.9	1	35
Dyna-Gro 9692	M	132.1	ab	57.6	0	35
Beck 128	ML	130.9	ab	57.7	0	36
Progeny Ag #Warrior	ME	130.5	ab	56.6	0	33
AgriMAXX 454	M	128.9	abc	56.3	0	36
STex163	ME	128.8	abc	57.2	1	35
Pioneer variety 26R59	M	128.2	a-d	56.6	0	30
Pioneer variety 26R36	ML	128.2	a-d	57.5	0	35
Dyna-Gro 9862	M	128.1	a-d	58.3	1	34
Warren Seed - McKay 120	M	128.0	a-d	56.8	0	35
AgriMAXX 446	M	127.2	a-e	57.4	0	34
CROPLAN SRW 9415	M	127.0	a-e	57.5	0	34
Progeny Ag PGX16-3	M	126.9	a-e	56.9	0	35
Warren Seed - McKenna 325	M	126.6	a-f	55.1	1	33
AgriMAXX 473	ME	126.6	a-g	56.9	0	37
STEYER Berwick	ML	126.2	a-h	58.6	0	34
KAS S1300	M	126.2	a-i	57.3	0	33
AgriMAXX 444	M	126.1	a-i	56.9	1	35
AgriMAXX 474	ME	126.0	a-i	56.7	0	33
Pioneer variety 26R10	L	125.1	b-j	56.9	0	34
AgriMAXX 438	ML	124.9	b-j	56.8	2	37
Progeny Ag P357	ME	124.6	b-k	55.3	0	34
CROPLAN SRW 9606	M	124.0	b-k	56.0	0	33
Beck 125	M	123.9	b-k	58.0	0	36
USG 3197	M	121.9	c-l	56.4	2	33
Progeny Ag #Bullet	M	121.4	c-l	56.2	0	38
AgriMAXX 475	ME	121.1	c-m	56.7	0	33
Progeny Ag #BOSS	ME	120.6	c-n	55.6	0	31
USG 3895	M	120.5	c-n	56.9	0	33
Armor Mayhem	ME	120.1	d-o	57.0	0	37
CROPLAN SS 8550	M	119.8	d-p	57.3	0	37
KAS LIBERTY IV	ME	119.8	d-p	55.9	0	33
USG 3536	ME	119.3	e-q	57.0	0	37
STex162	M	119.0	e-q	57.7	1	38
Armor Menace	ME	118.9	e-q	57.4	0	33
Progeny Ag P243	ME	118.9	e-q	56.8	0	35
DEI 17092	M	118.0	f-q	58.3	1	37
Dyna-Gro 9701	ME	118.0	g-q	56.8	0	37
STEYER Wharton	ME	117.8	h-q	56.9	0	33

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Table 2 - Continued

2016-2017 Tennessee Winter Wheat Variety Performance Results

Greenfield, TN

Variety	Maturity	Yield (bu/ac)	TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)
Dyna-Gro 9171	ME	117.7 h-q	55.4	0	31
Pioneer variety 26R41	M	117.6 i-q	57.5	0	32
Beck 123	ME	117.6 i-q	57.4	0	35
DEI 17076	M	116.9 j-r	56.9	0	34
Dyna-Gro 9772	M	116.1 k-r	55.7	0	33
AgriMAXX 463	E	114.5 l-s	55.2	0	32
DEI 16053	E	112.6 m-s	57.4	1	32
CROPLAN SS 8530	ME	112.5 m-s	55.4	0	33
Limagrain L11550	M	112.3 n-s	58.5	2	33
PEMBROKE 2016	E	111.8 o-s	57.0	0	33
KAS JEFFERSON	ME	111.3 p-s	56.0	2	33
GO Wheat 2059	ME	111.0 qrs	55.4	0	32
KAS RUMBLE	M	110.8 qrs	56.8	1	34
Warren Seed - McKenna 315	ME	108.9 rst	53.4	0	31
PEMBROKE 2014	E	108.5 rst	57.6	0	31
Progeny Ag PGX14-5	M	106.5 st	58.6	3	39
Dyna-Gro 9750	E	106.1 st	54.5	0	31
DEI 16087	E	105.9 st	57.9	2	33
Progeny Ag #Turbo	M	101.2 t	56.0	0	33
LSD P=.05		8.6	.	.	.
CV		5.1	.	.	.
Grand Mean		120.4	56.8	0	34

Planted: October 17, 2016; Harvested: June 9, 2017

* - Means followed by same letter do not significantly differ (P=.05, LSD)

1 - Lodging notes were taken at harvest on a 0-10 scale, where 0 = no lodging and 10 = completely lodged

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Table 3

2016-2017 Kentucky No-Till Winter Wheat Variety Performance Results

Auburn, KY

Variety	Maturity	Fungicide Treated					Fungicide Response (bu/ac)	Heading Date (April)
		Yield (bu/ac)	TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)			
STEYER Haubert	ML	141.9	a*	56.2	1	37	34.0	15
STEYER Berwick	ML	137.2	ab	56.9	0	35	13.0	17
Pioneer variety 26R36	ML	136.9	abc	56.5	2	35	18.6	15
Dyna-Gro 9692	M	136.4	abc	56.3	0	38	27.4	16
Armor Rage	M	134.4	a-d	55.6	1	38	25.8	17
Beck 128	ML	134.4	a-e	56.1	2	36	26.6	17
Pioneer variety XW15C	M	133.8	a-f	54.0	6	35	11.6	14
Dyna-Gro 9862	M	133.3	a-g	56.6	3	35	9.1	16
AgriMAXX 446	M	133.3	a-g	55.8	2	35	18.9	17
CROPLAN SRW 9415	M	132.0	a-h	56.1	1	36	19.7	15
AgriMAXX 474	ME	131.7	a-h	54.6	0	34	10.5	14
Pioneer variety 26R10	L	131.3	a-i	54.7	3	36	32.1	16
AgriMAXX 454	M	130.3	b-j	55.5	2	37	22.8	17
Progeny Ag #Warrior	ME	130.3	b-j	54.7	3	34	11.2	14
Warren Seed - McKay 120	M	129.9	b-k	54.6	3	37	16.0	15
AgriMAXX 473	ME	128.0	b-l	55.4	1	38	10.2	15
Pioneer variety 26R59	M	128.0	b-l	54.0	0	31	6.9	14
STex163	ME	127.8	b-m	54.9	5	37	15.6	16
CROPLAN SS 8550	M	126.5	b-n	55.7	2	38	8.5	15
USG 3536	ME	126.3	b-n	55.7	0	37	4.3	14
Progeny Ag #Bullet	M	126.3	b-n	56.0	0	37	6.1	15
Dyna-Gro 9750	E	126.1	c-n	54.6	2	34	12.6	16
DEI 17076	M	125.9	c-n	55.2	1	36	4.9	15
GO Wheat 2059	ME	125.2	d-o	54.8	2	34	12.6	14
Progeny Ag P357	ME	124.3	d-o	53.7	1	36	20.2	17
USG 3895	M	124.0	d-o	53.4	5	33	20.7	14
Armor Mayhem	ME	123.7	d-p	55.5	2	37	8.1	15
AgriMAXX 463	E	123.4	e-q	55.0	0	34	13.4	15
Progeny Ag #Turbo	M	122.9	f-q	55.1	0	34	11.6	15
Progeny Ag #BOSS	ME	122.8	f-q	54.1	2	31	18.2	15
Dyna-Gro 9701	ME	122.7	g-q	55.3	2	37	7.5	14
Warren Seed - McKenna 325	M	121.9	h-q	52.9	7	34	28.6	14
Beck 125	M	121.5	h-q	55.5	7	36	10.0	15
Dyna-Gro 9171	ME	121.5	h-q	54.4	3	33	11.3	14
Progeny Ag PGX16-3	M	121.5	h-q	54.6	8	36	13.2	16
AgriMAXX 444	M	121.0	h-q	54.2	3	36	13.5	17
DEI 17092	M	120.4	i-r	56.5	3	39	12.9	17
STex162	M	120.3	i-r	55.5	6	39	6.2	17
USG 3404	ML	120.0	j-r	54.5	4	37	12.5	17
CROPLAN SRW 9606	M	119.4	j-s	53.1	4	34	24.9	14
Pioneer variety 26R41	M	119.3	j-s	54.8	5	34	12.1	16
KAS LIBERTY IV	ME	119.0	k-s	53.5	5	34	34.5	14

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Table 3 - Continued
2016-2017 Kentucky No-Till Winter Wheat Variety Performance Results
Auburn, KY

Variety	Maturity	Fungicide Treated					Fungicide Response (bu/ac)	Heading Date (April)
		Yield (bu/ac)	TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)			
Beck 123	ME	119.0	k-s	55.3	4	36	9.7	14
Dyna-Gro 9600	E	118.7	l-s	53.8	2	33	8.1	15
AgriMAXX 475	ME	117.3	l-s	54.4	4	34	18.0	14
AgriMAXX 438	ML	117.0	l-s	53.7	4	38	24.1	16
KAS S1300	M	116.8	m-s	54.6	6	35	17.8	14
STEYER Wharton	ME	116.6	n-s	54.4	5	35	27.7	14
PEMBROKE 2014	E	116.1	n-s	57.0	0	32	10.6	14
Beck 120	E	116.0	n-s	53.4	5	32	12.6	14
CROPLAN SS 8530	ME	115.6	n-s	53.5	4	34	8.7	15
PEMBROKE 2016	E	114.3	o-t	56.1	3	34	16.1	14
DEI 16053	E	114.3	o-t	55.5	6	33	27.8	13
Progeny Ag P243	ME	112.9	p-t	55.8	6	37	11.4	14
Armor Menace	ME	112.6	q-t	54.8	3	35	16.3	14
Warren Seed - McKenna 315	ME	109.9	r-u	54.0	9	30	8.3	14
DEI 16087	E	109.6	r-u	56.7	5	34	13.1	15
Progeny Ag PGX14-5	M	109.0	stu	56.9	8	39	22.9	15
Dyna-Gro 9772	M	104.3	tuv	53.2	9	34	14.2	14
KAS JEFFERSON	ME	101.4	uv	53.7	9	32	7.6	14
Limagrain L11550	M	99.7	uv	54.3	8	34	12.0	14
KAS RUMBLE	M	95.9	v	51.6	9	n/a	17.8	14
LSD P=.05		11.1	.	.	.	.	.	.
CV		6.5	.	.	.	.	.	.
Grand Mean		122.2		54.9	3	35	15.5	15

Planted: October 11, 2016; Harvested: June 14, 2017

* - Means followed by same letter do not significantly differ (P=.05, LSD)

1 - Lodging notes were taken at harvest on a 0-10 scale, where 0 = no lodging and 10 = completely lodged

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Table 4

2016-2017 Winter Wheat Variety Performance Results

Three Location Average

Variety	Maturity	Yield (bu/ac)	TW (lb/bu)	Lodging ¹ (0-10)	Height (inches)
Dyna-Gro 9692	M	128.7	57.2	1	35
Pioneer variety 26R59	M	128.4	55.6	1	30
Pioneer variety 26R36	ML	128.4	57.4	1	35
Progeny Ag #Warrior	ME	127.5	56.2	2	32
Dyna-Gro 9862	M	127.5	57.7	1	32
Beck 128	ML	127.3	57.2	1	34
Pioneer variety 26R10	L	127.1	56.2	2	33
AgriMAXX 473	ME	126.6	56.4	1	35
AgriMAXX 454	M	126.6	56.5	1	34
Warren Seed - McKay 120	M	126.4	56.3	1	34
Pioneer variety XW15C	M	126.0	55.4	3	33
AgriMAXX 446	M	125.7	57.1	1	33
AgriMAXX 474	ME	125.6	56.1	1	32
Progeny Ag #Bullet	M	123.1	56.3	1	35
Warren Seed - McKenna 325	M	122.9	54.8	4	32
Armor Mayhem	ME	122.9	56.5	1	35
USG 3536	ME	122.8	56.5	1	34
Dyna-Gro 9701	ME	122.7	56.4	1	35
Progeny Ag PGX16-3	M	122.7	56.3	3	34
Beck 125	M	121.8	57.2	3	34
AgriMAXX 444	M	121.4	56.3	2	34
Dyna-Gro 9171	ME	120.9	55.2	2	33
Progeny Ag P357	ME	120.7	54.9	1	33
USG 3895	M	119.4	55.6	3	32
Progeny Ag #BOSS	ME	119.3	55.3	2	31
KAS LIBERTY IV	ME	119.0	55.3	4	32
Beck 123	ME	118.2	56.5	3	34
AgriMAXX 438	ML	118.0	55.8	3	35
AgriMAXX 475	ME	116.5	55.8	3	32
USG 3404	ML	116.4	55.6	3	33
Pioneer variety 26R41	M	116.4	56.6	2	31
DEI 17076	M	116.4	56.4	1	33
GO Wheat 2059	ME	115.9	55.4	2	32
KAS S1300	M	115.7	56.1	3	33
DEI 17092	M	115.3	57.6	2	35
AgriMAXX 463	E	115.2	55.4	1	32
Progeny Ag P243	ME	115.0	56.9	3	34
Dyna-Gro 9750	E	113.5	55.1	1	32
PEMBROKE 2016	E	113.4	56.9	2	32
Armor Menace	ME	113.0	56.0	2	32
PEMBROKE 2014	E	112.8	57.6	1	31
Warren Seed - McKenna 315	ME	112.6	54.4	4	30
Progeny Ag #Turbo	M	110.5	56.0	1	32
DEI 16053	E	109.4	57.2	3	31
Limagrain L11550	M	106.9	56.9	4	33
KAS JEFFERSON	ME	106.4	55.1	4	32
Dyna-Gro 9772	M	105.6	54.7	4	33
DEI 16087	E	103.8	57.4	3	32
Progeny Ag PGX14-5	M	101.2	57.8	4	35
KAS RUMBLE	M	98.7	54.7	5	33
Grand Mean		118.4	56.2	2	33

1 - Lodging notes were taken at harvest on a 0-10 scale, where 0 = no lodging and 10 = completely lodged