

# Wheat Update 2017

## ARKANSAS WHEAT PERFORMANCE TRIALS AND VARIETY SELECTION

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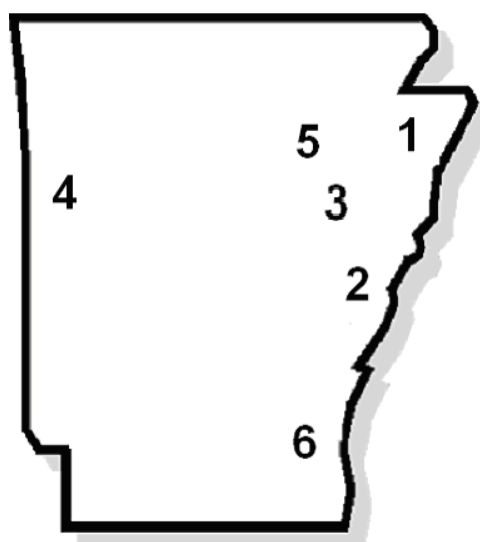
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Wheat performance trials were conducted during the 2016-2017 growing season by the Arkansas Wheat Variety Testing Program under the direction of Dr. Esten Mason to provide information about yield potential, agronomic characteristics, and disease reaction of commercially available varieties of wheat. Variety selection is very important for successful and profitable wheat production. This publication is a summary of the Arkansas Wheat Variety Testing Program results of commercially available varieties and is designed to help producers select adapted, high-yielding, disease-resistant varieties with acceptable agronomic characteristics.



**FIGURE 1. LOCATIONS OF ARKANSAS WHEAT PERFORMANCE TESTS**

- 1 – Northeast Research and Extension Center, Keiser – Sharkey Silty Clay
- 2 – Lon Mann Cotton Research Station, Marianna – Loring Silt Loam
- 3 – Pine Tree Research Station, Colt – Calloway Silt Loam
- 4 – Vegetable Substation, Kibler – Roxanna Silt Loam
- 5 – Newport Extension Center, Newport – Beulah Fine Sandy Loam
- 6 – Southeast Branch Station, Rohwer –Herbert Silt Loam

### Methods

Wheat varieties and experimental lines were entered by seed companies and public institutions and evaluated for an unbiased comparison of their performance. In general, recommended cultural practices for wheat production in Arkansas were used. All locations were planted between October 18<sup>th</sup> and November 25<sup>st</sup> into conventionally tilled seedbeds using small plot planters.

Each trial consisted of 96 varieties and experimental lines replicated four times in a randomized complete block design. A seeding rate of 105 lb/A was used for all varieties at each location, with the exception Rohwer which was 82 lb/A. Recommended production practices were followed and pests were controlled as needed. Plots were harvested with a small plot combine to determine yields, which were adjusted to 13 percent moisture.

For further details concerning methods, consult the *Small-Grain Cultivar Performance Tests 2016-17*, Arkansas Agricultural Experiment Station, located at [www.arkansasvarietytesting.com](http://www.arkansasvarietytesting.com).

## Variety Selection

Variety selection is a very important management decision in wheat production, even more so in years when budgets are tight. There are many factors that producers should consider when evaluating potential wheat varieties in addition to yield potential. Genetic diversity is very important as no single variety will be the best performer every year. Planting more than one unique variety with differing maturity is the best way to spread risks. Always look at two and three-year average yields rather than yield from any particular season or location (See Table 1) to get a better understanding of the varieties' overall performance.

Wheat yields of commercially available varieties from the 2016-2017 trials are reported in Table 1. Yields overall were very good this year due to a warm and dry fall and winter which allowed for excellent tillering and timely applications of top-dress nitrogen. Some entries, especially the early maturing varieties started jointing very early and headed early. A freeze on March 15<sup>th</sup> with lows in the mid-20's likely caused some injury at some locations, especially to early varieties. Foliar diseases were relatively light in most locations, but leaf rust was heavy at Rohwer and other locations late in the season. Leaf and stripe rust ratings are found in Table 2. Fusarium head blight (scab) was rated from a misted and inoculated field nursery at Newport. Fusarium head blight levels were very high in this trial, much higher than the relatively low levels seen in commercial fields this year. Fusarium head blight ratings are found in Table 2.

Agronomic characteristics of a variety are also important to consider when choosing a variety. Below are several factors to consider when making variety selections for this fall:

### Relative Maturity

**Variety maturity is a very important factor to consider when selecting varieties. Producers should select several different varieties with differing maturity to reduce risks for a late spring freeze.** Early maturing varieties typically should not be planted early in the planting season. These varieties do not have as much of a vernalization requirement as later maturing varieties and can begin jointing very early in the spring, which increases the likelihood of freeze injury from a late spring freeze. Late maturity varieties require a greater vernalization period and generally do not begin to joint as quickly as early maturing varieties. An ideal planting order by maturity would be to plant late maturity varieties first, medium maturity varieties second and early maturing varieties last. Planting varieties with differing maturity may help spread out harvest operations so that wheat can be harvested when ready. An estimated relative maturity rating based on heading date can be found in Table 3.

## Test Weight

Many producers have experienced low test weight wheat during the last few years as a result of excessive rainfall after maturity and or from delayed harvest. Harvesting wheat timely is important to achieve high test weight wheat. Foliar diseases such as leaf rust and stripe rust can also be a factor in causing low test weight wheat. There are some varieties have characteristically higher test weights than others and test weight should be a variety selection criteria. When environmental conditions cause poor test weights, varieties with high test weight potential usually have heavier test weights than other varieties. Selecting a variety with a good test weight along with good foliar disease resistance can reduce the likelihood of having low test weight wheat that may be discounted at the grain terminal. Differences in test weight of 3 to 4 lbs/bu or more between varieties is common.

## Lodging Resistance

Lodging resistance is important to prevent yield losses and to allow for efficient harvest. Variety, nitrogen rate, and seeding rate all have an impact on lodging. Varieties with low lodging scores and high yields are preferred. Lodging ratings taken in 2017 were relatively low and are shown in Table 3.

## Disease Resistance

Stripe rust resistance is very important for Mid-South wheat producers to consider. Foliar fungicides can help control stripe rust, but can add additional production expense that could be avoided with a variety that is resistant to stripe rust. Varieties that are susceptible or very susceptible to stripe rust may need more than one fungicide application to provide adequate control if conditions are favorable for disease development. Keep in mind, stripe rust ratings are taken after heading. Many varieties can have stripe rust develop prior to heading (February-March) even though they may be resistant varieties. Resistance genes become active after jointing. Leaf rust and fusarium head blight resistance should also be considered when choosing wheat varieties. Leaf rust developed late in 2017 impacting yield and test weight of many susceptible varieties that were not treated with a foliar fungicide. A summary of all available foliar disease ratings taken in the spring of 2017 are found in Table 2.

## Insect Resistance

Hessian fly can be a problem in Arkansas wheat especially in very early planted wheat. There are several biotypes of Hessian fly, but the predominant biotype of the Hessian fly present in Arkansas is Biotype 'L'. Delayed planting is a recommended practice for avoiding Hessian fly problems.

**Table 1. Arkansas Wheat Performance Trials Summary of Commercially Available Entries, 2017.**

Entry Name	---Statewide Yield (Bu/acre) ---				---Delta Region Yield (Bu/acre)---		
	2-year average	3-year average	2017 average	2017 Rank	2-year average	3-year average	2017 average
AgriMAXX 415	72.2	71.1	77.5	18	72.5	73.5	75.7
AgriMAXX 444	66.7	65.7	69.0	36	67.1	68.4	66.5
AgriMAXX 446	67.8	66.9	68.8	38	68.9	69.6	67.8
AgriMAXX 463	67.5		62.6	47	68.0		62.9
AgriMAXX 464			56.2	51			58.4
AgriMAXX 473	78.9		80.7	11	80.6		79.7
AgriMAXX 474			74.0	26			72.2
AgriMAXX 475	73.7		74.3	25	74.3		72.0
AGS 2038	73.7	69.3	76.2	22	76.6	72.1	76.2
AGS 2055	81.0	77.6	82.8	6	82.3	79.8	84.0
Armor Ambush	71.4		70.3	35	73.3		71.1
Armor Lockdown			84.4	1			83.9
Armor Mayhem	79.1		80.3	14	80.2		77.9
Armor Menace	73.2		73.4	27	74.3		72.6
Delta Grow 1000	77.3	74.5	77.6	17	79.7	78.6	77.6
Delta Grow 3500	71.0	63.5	71.8	31	74.0	65.1	74.4
Dixie Bell 500	66.2	66.4	65.9	41	64.8	67.7	63.0
Dixie Bell 600	69.9		69.0	36	69.0		66.7
Dixie Bentley	78.0		81.6	9	80.1		82.6
Dixie Brown	78.5		81.4	10	80.2		81.2
Dixie Kelsey II	67.7	66.2	70.8	34	67.7	68.6	68.7
Dixie McAlister	73.1	71.8	76.6	20	73.3	74.4	74.7
Dyna-Gro 9012	72.6	70.2	75.1	24	74.1	73.2	73.8
Dyna-Gro 9171	76.0	72.7	79.6	15	75.9	74.5	77.2
Dyna-Gro 9223			59.7	49			56.8
Dyna-Gro 9522	65.1	64.8	65.7	43	63.7	65.6	62.6
Dyna-Gro 9600			51.6	52			54.6
Dyna-Gro 9701	79.3		80.6	12	81.5		80.6
Dyna-Gro 9750			66.4	40			67.3
GO Wheat 2058	73.6	72.1	77.9	16	77.0	76.4	78.3
GO Wheat 2059	66.4		64.5	45	66.0		64.0
LCS 3204			67.3	39			65.7
Pioneer 26R10	64.4	65.1	65.8	42	63.4	65.7	62.4
Pioneer 26R36	76.9	75.8	83.4	4	77.4	78.1	81.6
Pioneer 26R41	80.5	77.4	83.5	3	81.8	79.5	83.1
Pioneer 26R53	73.0	71.5	77.4	19	72.9	73.0	76.3
Pioneer 26R59	73.6	71.4	76.3	21	72.9	72.3	74.5
Pioneer 26R87	69.2	64.5	71.7	32	70.8	66.5	73.9
Progeny #BOSS			82.4	8			81.0
Progeny #Bullet	78.1		80.5	13	80.6		78.7
Progeny #Turbo	71.9		75.2	23	71.6		73.5
Progeny #Warrior	66.2		71.4	33	66.7		69.1
Progeny P243	58.1	58.9	60.4	48	60.9	63.2	61.5
Progeny P357	48.5	48.1	42.1	53	46.7	48.5	38.0

<b>Entry Name</b>	<b>---Statewide Yield (Bu/acre) ---</b>				<b>---Delta Region Yield (Bu/acre)---</b>		
	<b>2-year average</b>	<b>3-year average</b>	<b>2017 average</b>	<b>2017 Rank</b>	<b>2-year average</b>	<b>3-year average</b>	<b>2017 average</b>
SY 547			63.9	46			63.1
SY Harrison	65.3	65.5	64.7	44	64.9	66.8	63.7
SY Viper	69.5	67.0	72.4	29	68.2	68.1	69.3
USG 3197			57.5	50			59.6
USG 3404	68.5	65.9	72.1	30	68.6	67.6	70.7
USG 3448			72.7	28			70.9
USG 3536	80.6		82.8	6	82.7		81.3
USG 3895			84.2	2			82.5
VA Hilliard	78.8	74.8	82.9	5	80.7	77.5	82.8
<b>Mean</b>	<b>71.8</b>	<b>68.4</b>	<b>72.4</b>	<b>30</b>	<b>72.6</b>	<b>70.6</b>	<b>71.5</b>

\*Delta average is calculated from Keiser, Marianna, Newport, Pine Tree and Rohwer locations.

For detailed information on each location consult the 2016-2017 Arkansas Wheat Cultivar Performance Publication at: <http://www.arkansasvarietytesting.com/home/wheat/>

<b>Entry Name</b>	<b>% Stripe Rust</b>	<b>%Leaf Rust</b>	<b>Fusarium Head Blight Severity, 0-100, Newport</b>	<b>Fusarium Damaged Kernels, 0-100, Newport</b>
AgriMAXX 415	0	17	3	15
AgriMAXX 444	0	31	5	15
AgriMAXX 446	2	50	3	18
AgriMAXX 463	1	17	0	8
AgriMAXX 464	36	15	3	53
AgriMAXX 473	0	5	0	23
AgriMAXX 474	2	64	5	40
AgriMAXX 475	0	28	5	23
AGS 2038	2	2	25	60
AGS 2055	2	1	25	73
Armor Ambush	4	10	3	16
Armor Lockdown	1	4	13	43
Armor Mayhem	1	8	3	10
Armor Menace	0	43	0	5
Delta Grow 1000	0	5	0	5
Delta Grow 3500	6	6	20	28
Dixie Bell 500	1	33	5	35
Dixie Bell 600	1	37	5	28
Dixie Bentley	1	2	30	23
Dixie Brown	0	6	0	5
Dixie Kelsey II	0	42	5	40
Dixie McAlister	0	33	5	43
Dyna-Gro 9012	0	23	3	35
Dyna-Gro 9171	0	29	3	58

**Table 2. Disease Reactions of Commercially Available Wheat Varieties in Arkansas Performance Trials,2017.**

<b>Entry Name</b>	<b>% Stripe Rust</b>	<b>%Leaf Rust</b>	<b>Fusarium Head Blight Severity 0-100, Newport</b>	<b>Fusarium Damaged Kernels 0-100, Newport</b>
Dyna-Gro 9223	0	72	13	38
Dyna-Gro 9522	0	31	10	30
Dyna-Gro 9600	36	12	10	30
Dyna-Gro 9701	0	5	0	45
Dyna-Gro 9750	2	11	3	28
GO Wheat 2058	7	6	5	4
GO Wheat 2059	0	14	0	2
LCS 3204	4	42	18	38
Pioneer 26R10	15	55	5	58
Pioneer 26R36	2	12	8	40
Pioneer 26R41	0	6	5	35
Pioneer 26R53	2	54	0	2
Pioneer 26R59	2	29	0	10
Pioneer 26R87	7	12	23	7
Progeny #BOSS	2	17	48	78
Progeny #Bullet	0	7	8	38
Progeny #Turbo	1	11	38	43
Progeny #Warrior	4	45	10	25
Progeny P243	15	38	10	30
Progeny P357	11	65	13	38
SY 547	12	6	3	20
SY Harrison	1	53	8	43
SY Viper	0	40	10	13
USG 3197	30	5	10	68
USG 3404	0	42	5	20
USG 3448	0	32	5	25
USG 3536	0	6	3	5
USG 3895	0	14	25	55
VA Hilliard	0	6	10	33
<b>Mean</b>	<b>4</b>	<b>24</b>	<b>9</b>	<b>30</b>

Leaf and stripe rust ratings are averages from all locations with ratings in 2017.

**Table 3. Agronomic Characteristics of Commercially Available Varieties in Arkansas Performance Trials, 2017.**

<b>Entry Name</b>	<b>Test Wt. Lb/bu</b>	<b>Lodging 0-9 scale</b>	<b>Plant Ht Inches</b>	<b>Heading Date</b>	<b>Maturity Date</b>	<b>Relative Maturity</b>	<b>Awned Heads</b>
AgriMAXX 415	55.4	1	36	1-Apr	13-May	Medium	Yes
AgriMAXX 444	53.6	0	36	3-Apr	14-May	Late	Yes
AgriMAXX 446	55.2	2	35	2-Apr	16-May	Late	Yes
AgriMAXX 463	53.6	3	35	29-Mar	11-May	Early	No
AgriMAXX 464	51.6	0	38	30-Mar	13-May	Medium	Yes
AgriMAXX 473	54.9	2	38	1-Apr	12-May	Medium	Yes
AgriMAXX 474	53.2	0	34	31-Mar	11-May	Medium	No
AgriMAXX 475	53.4	1	34	1-Apr	14-May	Medium	Yes
AGS 2038	53.2	1	41	30-Mar	15-May	Medium	Yes
AGS 2055	54.7	1	38	28-Mar	13-May	Early	Yes
Armor Ambush	54.2	0	37	30-Mar	12-May	Medium	No
Armor Lockdown	56.2	3	40	27-Mar	10-May	Early	Yes
Armor Mayhem	54.8	0	38	2-Apr	13-May	Late	Yes
Armor Menace	53.8	0	35	29-Mar	15-May	Early	Yes
Delta Grow 1000	54.8	1	38	2-Apr	13-May	Late	Yes
Delta Grow 3500	53.6	1	35	26-Mar	9-May	Early	Yes
Dixie Bell 500	52.6	1	36	2-Apr	16-May	Late	Yes
Dixie Bell 600	51.5	0	38	1-Apr	13-May	Medium	Yes
Dixie Bentley	56.0	0	40	28-Mar	9-May	Early	Yes
Dixie Brown	55.0	1	38	31-Mar	12-May	Medium	Yes
Dixie Kelsey II	53.4	2	37	2-Apr	14-May	Late	Yes
Dixie McAlister	54.1	0	34	2-Apr	11-May	Late	Yes
Dyna-Gro 9012	55.7	1	35	1-Apr	13-May	Medium	Yes
Dyna-Gro 9171	54.1	1	35	31-Mar	14-May	Medium	Yes
Dyna-Gro 9223	50.9	1	34	1-Apr	11-May	Medium	No
Dyna-Gro 9522	54.1	1	37	2-Apr	13-May	Late	Yes
Dyna-Gro 9600	51.3	1	35	27-Mar	10-May	Early	Yes
Dyna-Gro 9701	54.8	0	39	31-Mar	13-May	Medium	Yes
Dyna-Gro 9750	53.2	2	35	29-Mar	12-May	Early	No
GO Wheat 2058	55.3	0	32	1-Apr	14-May	Medium	Yes
GO Wheat 2059	53.3	0	35	29-Mar	11-May	Early	No
LCS 3204	56.3	1	39	29-Mar	11-May	Early	No
Pioneer 26R10	52.6	1	36	1-Apr	13-May	Medium	Yes
Pioneer 26R36	53.9	0	37	2-Apr	15-May	Late	Yes
Pioneer 26R41	55.4	1	33	1-Apr	11-May	Medium	Yes
Pioneer 26R53	55.3	2	34	30-Mar	13-May	Medium	Yes
Pioneer 26R59	50.6	1	32	1-Apr	11-May	Medium	No
Pioneer 26R87	56.1	2	36	26-Mar	9-May	Early	Yes
Progeny #BOSS	54.0	1	35	31-Mar	13-May	Medium	Yes
Progeny #Bullet	54.9	1	38	2-Apr	11-May	Late	Yes
Progeny #Turbo	55.3	1	34	27-Mar	9-May	Early	No
Progeny #Warrior	53.4	2	34	31-Mar	11-May	Medium	No
Progeny P243	53.6	1	37	29-Mar	13-May	Early	Yes
Progeny P357	51.3	1	36	4-Apr	14-May	Late	Yes
SY 547	54.1	0	37	31-Mar	14-May	Medium	No

**Table 3. Agronomic Characteristics of Commercially Available Varieties in Arkansas Performance Trials, 2017.**

	<b>Test Wt.</b>	<b>Lodging</b>	<b>Plant Ht</b>	<b>Heading</b>	<b>Maturity</b>	<b>Relative</b>	<b>Awned</b>
<b>Entry Name</b>	<b>Lb/bu</b>	<b>0-9 scale</b>	<b>Inches</b>	<b>Date</b>	<b>Date</b>	<b>Maturity</b>	<b>Heads</b>
SY Harrison	51.6	0	34	1-Apr	15-May	Medium	Yes
SY Viper	54.4	4	40	27-Mar	11-May	Early	No
USG 3197	51.8	0	37	29-Mar	12-May	Early	Yes
USG 3404	53.3	1	37	2-Apr	13-May	Late	Yes
USG 3448	53.3	1	35	31-Mar	15-May	Medium	Yes
USG 3536	54.8	1	39	2-Apr	12-May	Late	Yes
USG 3895	53.0	0	34	1-Apr	17-May	Medium	Yes
VA Hilliard	54.4	0	37	28-Mar	12-May	Early	Yes
<b>Mean</b>	53.9	1	36	31-Mar	12-May	--	--

Test weight, lodging (0-9 scale with 0 having no lodging), mature plant height, heading date and maturity date are averages from all trials with data during the 2016-17 growing season. Heading date is the average date that 50% of heads had emerged. Maturity date is the average date that 90% of the culms were yellow. Relative maturity rating is based on heading date.