

Louisiana Grain Sorghum Hybrid Trials 2018



**LAES Research
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GRAIN SORGHUM HYBRID TEST LOCATIONS



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Introduction

The performance of grain sorghum hybrids is annually evaluated in the official variety trials (OVTs) by LSU AgCenter researchers. The purpose of these trials is to provide Louisiana growers, seedsmen, county agents and consultants with unbiased performance data for commercial grain sorghum hybrids submitted for evaluation by private

companies. Selection of superior hybrids that are well-adapted for a given region is essential for maximizing yield and profit. In 2018, 16 grain sorghum hybrids were entered by the commercial seed companies. Locations of these trials included the Central Research Station in Baton Rouge; Dean Lee Research and Extension Center in Alexandria; Red River Research Station in Bossier City; and Macon Ridge Research Station in Winnsboro (Table 1).

Table 1. Summary of grain sorghum hybrid trials by location, 2018.					
Location	Soil type	Irrigation	Row spacing	Planting date	Harvest date
Baton Rouge	Commerce silt loam	Nonirrigated	38"	April 24	Aug. 14
Alexandria	Coushatta silt loam	Nonirrigated	38"	April 18	Aug. 20
Bossier City	Moreland silty clay loam	Irrigated	40"	May 1	Aug. 17
Winnsboro	Gigger silt loam	Nonirrigated	40"	May 1	Aug. 16

Suggestion for Selecting Hybrids

Most producers will agree that grain yield is the most important characteristic on which to base hybrid selection. The second characteristic to consider is maturity group. Grain sorghum maturity groups include early; medium/early; medium; medium/full; and full. The selection of hybrid maturity is usually based on available water for the season, whether through rainfall or irrigation. Hybrids that are high yielding in Louisiana are predominantly in the medium or medium/full maturity groups. Additional hybrid selection criteria include lodging susceptibility, weathering, plant height, test weight, stay-green, head exertion, panicle or head type, tolerance to sugar cane aphids, greenbug resistance and disease resistance.

In summary, review the results from all the trials that you can find that are relevant to your farming location and look for hybrids that have good, consistent results over years and locations. Do not rely on only one source of hybrid performance information. Plant two or more hybrids to spread out your risk. Place more value on replicated trials when comparing to strip trials.

Procedures

The experimental design at each location was a randomized complete block design with four or five

replications. Grain sorghum variables measured and rating scales are listed in Table 2. Analysis of variance and least-significant differences (LSD) were calculated only if differences existed at the 90 percent confidence level. If differences were significant, an LSD at the 10 percent probability level was calculated. If the LSD (0.10) for yield in a trial is 10 bushels per acre, there is a 10 percent chance that two hybrids with a reported yield difference of 10 bushels per acre are genetically equal and a 90 percent probability they have a difference in genetic potential in that particular environment. LSD values are influenced by how well soil fertility, stand establishment, plot length, harvest efficiency and other variables are controlled and by number of replications for each hybrid. The letters NS are used in the text and tables to indicate lack of significance (not significantly different) at the 10 percent probability level. The coefficient of variation (CV) reflects the magnitude of experimental error (random variation not accounted for by hybrids and replications) in relation to the trial mean. A high CV means that relative differences among hybrids were not consistent among replications, which reduces the precision of the test.

Yield data for 2018 across locations is summarized in Table 3. For each individual location, a summary of cultural practices, growing conditions, temperatures and rainfall is listed prior to the yield and agronomic data (Tables 4-7). Also, participating seed companies and their hybrid entries are listed in Table 8.

Table 2. Grain sorghum performance variables measured for the LSU AgCenter Official Variety Trials, 2018.		
Variable	Abbreviation	Description
Yield	Yield	Grain yield, bu/a, @ 14.0% harvest grain moisture
Grain moisture	GM	Grain moisture at harvest, %
Test weight	Test wt	Volume weight of grain, lb/bu
Heading date	MH	Date of head emergence in 50% of plants, days after planting (DAP)
Plant height	PH	Head from ground to top of the head, inches (in)
Head type	HT	Head type is a measure of head structure, with ratings of 1-5; 1=closed,3=intermediate, and 5=open
Head exertion	HE	Distance from the flag leaf to base of head, inches (in)
Lodging	LO	Plants that are lodged at harvest, %
Midge damage	MD	Average percent of head damage, %
Bird damage	BD	Average percent of head damage, %

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Table 3. Summary of yield performance of grain sorghum hybrids in the 2018 LSU AgCenter official hybrid trials.						
Company	Hybrid	BR ¹	ALEX ¹	BC ¹	WN ¹	Avg
bu/acre @ 14.0%						
DEKALB	DKS 51-01	91.6	123.1	80.2	61.5	89.1
Pioneer	83P17	86.9	109.0	76.3	81.9	88.5
Dyna-Gro	M74GB17	92.0	117.4	78.9	57.0	86.3
Dyna-Gro	GX 17379	88.7	125.6	59.8	67.4	85.4
Pioneer	84P80	86.5	116.3	67.3	63.1	83.3
Dyna-Gro	GX 17962	91.3	119.5	73.6	47.9	83.1
DEKALB	DKS 47-07	83.1	115.1	67.9	64.4	82.6
Dyna-Gro	M73GR55	83.4	113.9	81.4	51.1	82.5
Dyna-Gro	GX 17948	67.4	119.5	55.0	81.9	81.0
Dyna-Gro	GX 17968	78.2	111.5	66.9	63.8	80.1
Simplot	GS 7117	86.5	123.3	56.4	50.4	79.2
Dyna-Gro	GX 16833	90.6	113.1	55.5	54.2	78.4
Simplot	GS 7016	80.6	116.6	55.1	59.5	78.0
DEKALB	DKS 53-53	63.3	123.4	49.5	66.4	75.7
Simplot	GS 7215	80.7	120.6	45.2	41.5	72.0
Pioneer	83P99	64.4	92.7	66.9	57.6	70.4
Average		81.97	116.3	64.62	60.14	
CV, (%)		10.07	9.86	19.21	15.52	
LSD (0.10)		9.81	13.62	14.75	11.09	

Numbers shaded within a column are not significantly different from the numerically greatest value.

¹BR=Baton Rouge; Alex=Alexandria; BC=Bossier City; WN=Winnsboro

Grain Sorghum Hybrid Performance Trial, Central Research Station, Baton Rouge

Crop Summary

Grain yields ranged from 63.3 to 92.0 bushels per acre with a trial average of 81.97 bushels per acre (Table 4). There were 10 hybrids that fell within the high-yielding group for 2018. Anthracnose was observed, and ratings are included along with other agronomic data in Table 8.

Soil type:	Commerce silt loam	Post-plant fertilizer:	120-0-0 (5/14/17)
Soil pH:		Insecticide applications:	Bifenthrin (4/26/18), Prevathon and Karate (6/1/18)
Tillage:	Conventional	Insecticide applications:	Transform (6/27/18, 7/17/18)
Previous crop:	Grain sorghum	Herbicide applications:	Pre-emerge: Atrazine + Roundup (4/26/18)
Row width:	38"	Herbicide applications:	Post-emerge: Atrazine + Basagran (6/1/18)
Seeding rate:	80,000	Harvest date:	August 14, 2018
Planting date:	April 24, 2018	Harvested plot size:	2 rows by 24 feet
Irrigation:	No	Experimental design:	RCBD
Preplant fertilizer:		Replications:	4

Baton Rouge Weather: Not available for the 2018 season

Table 4. Performance of grain sorghum hybrids at Baton Rouge, 2018.

Company	Hybrid	Yield ¹	GM ²	Test wt	MH ²	PH ²	HE ²	HT ²	Ant ^{2,3}
		bu/a	%	lb/bu	DAP	in	in	1-5	0-9
Dyna-Gro	M74GB17	92.0	16.1	56.5	66.5	55.5	2.5	3	2.75
DEKALB	DKS 51-01	91.6	15.8	57.1	64.5	55.5	4.0	3	2.75
Dyna-Gro	GX 17962	91.3	15.3	55.8	61.0	51.5	3.5	5	2.50
Dyna-Gro	GX 16833	90.6	15.7	59.4	65.5	54.5	3.0	1	3.00
Dyna-Gro	GX 17379	88.7	16.0	56.2	69.0	51.5	2.0	3	2.25
Pioneer	83P17	86.9	17.7	54.9	67.0	53.5	2.5	3	1.75
Simplot	GS 7117	86.5	15.8	58.1	69.0	49.5	2.0	3	4.00
Pioneer	84P80	86.5	15.5	55.1	63.0	53.0	2.5	3	4.00
Dyna-Gro	M73GR55	83.4	17.8	57.9	73.0	56.5	3.5	2	1.75
DEKALB	DKS 47-07	83.1	16.6	55.3	63.0	60.0	4.0	3	2.50
Simplot	GS 7215	80.7	15.7	58.3	63.0	59.5	4.0	3	3.50
Simplot	GS 7016	80.6	15.6	58.2	64.0	58.0	3.0	2	3.25
Dyna-Gro	GX 17968	78.2	15.8	57.4	65.0	56.0	4.0	3	4.00
Dyna-Gro	GX 17948	67.4	16.0	55.3	63.5	53.5	2.0	2	4.25
Pioneer	83P99	64.4	15.4	55.2	67.0	48.0	2.5	1	7.00
DEKALB	DKS 53-53	63.3	15.8	55.6	65.0	54.0	2.0	2	5.00
	Average	81.97	16.019	56.619	65.56	54.38	2.94	2.63	3.391
	CV, %	10.07	2.99	1.65	2.35	4.11	23.26	27.82	21.95
	LSD (0.10)	9.81	0.568	1.109	2.7	3.92	1.2	1.28	1.304

Numbers shaded within a column are not significantly different from the numerically greatest value.

¹Yield adjusted to 14.0%.

²GM-harvest grain moisture; MH-mid head; PH-plant height; HE-head exertion; HT-head type; Ant-anthracnose.

³Anthracnose ratings (0-9, with 0 having no symptoms and 9 having severe symptoms) average of two dates.

NS=Statistically nonsignificant at the 0.10 probability level.

Grain Sorghum Hybrid Performance Trial, Dean Lee Research Station, Alexandria

Crop Summary

During the months of May and June, rainfall was below normal, and temperatures were above normal (see graph below). Grain yields ranged from 92.7 bushels per acre to 125.6 bushels per acre with a trial average of 116.3 bushels per acre (Table 5). There were 13 hybrids that fell within the high-yielding group for 2018. Other agronomic data are presented in Table 5.

Soil type:	Coushatta silt loam	Preplant fertilizer:	0-41-81 (11/16/17)
Soil pH:	7.6	Post-plant fertilizer:	150-0-0-10 (5/1/18)
Tillage	Stale seedbed	Herbicide applications:	Pre-emerge: Atrazine + Medal II (4/20/18)
Previous crop:	Soybeans	Insecticide applications:	Savanto (6/21/18)
Row width:	38"	Harvest date:	August 20, 2018
Seeding rate:	80,000	Harvested plot size:	2 rows by 50 feet
Planting date:	April 18, 2018	Experimental design:	RCBD
Irrigation:	No	Replications:	5

Alexandria Weather (For Each 10-Day Period)

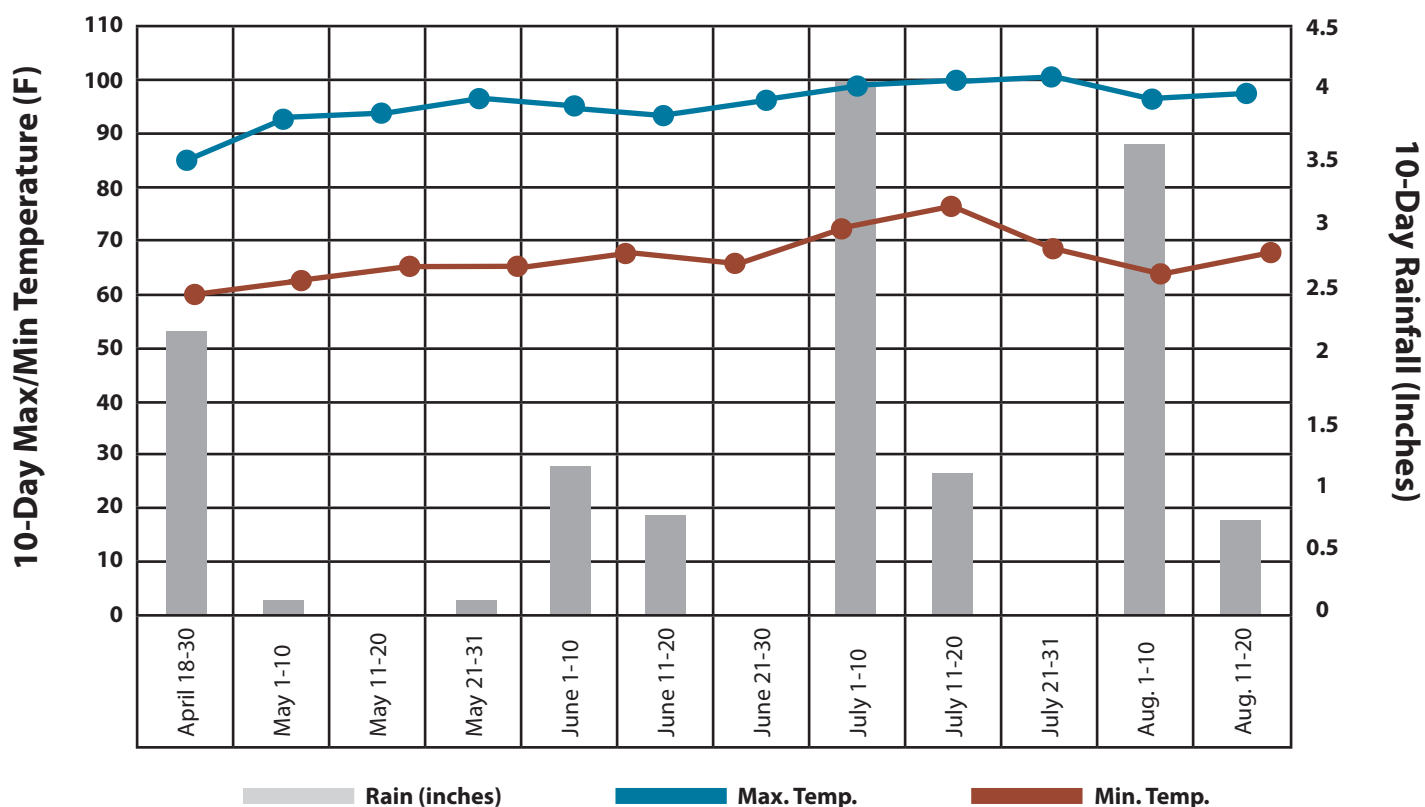


Table 5. Performance of grain sorghum hybrids at Alexandria, 2018.									
Company	Hybrid	Yield ¹	GM ²	Test wt	MH ²	PH ²	HE ²	HT ²	BD ²
		bu/a	%	lb/bu	DAP	in	in	1-5	%
Dyna-Gro	GX 17379	125.6	16.6	54.2	63.2	59.7	3.58	1.8	0.4
DEKALB	DKS 53-53	123.4	16.5	52.8	62.0	59.9	3.66	2.2	0.4
Simplot	GS 7117	123.3	15.6	52.5	61.6	57.7	3.07	1.8	0.6
DEKALB	DKS 51-01	123.1	16.7	55.5	64.2	61.6	2.92	1.4	0.0
Simplot	GS 7215	120.6	16.0	53.1	62.6	58.5	3.19	2.2	4.2
Dyna-Gro	GX 17948	119.5	16.1	54.4	62.2	57.4	3.32	2.6	2.4
Dyna-Gro	GX 17962	119.5	16.7	54.8	61.6	57.2	4.22	1.4	0.4
Dyna-Gro	M74GB17	117.4	17.8	53.6	63.8	58.8	3.19	2.6	2.0
Simplot	GS 7016	116.6	16.3	53.6	63.8	58.9	3.56	1.4	0.2
Pioneer	84P80	116.3	15.4	54.2	62.2	56.0	3.31	3.8	0.2
DEKALB	DKS 47-07	115.1	16.5	53.4	65.0	58.2	2.89	1.8	0.2
Dyna-Gro	M73GR55	113.9	16.9	54.4	65.6	58.8	3.20	1.8	0.4
Dyna-Gro	GX 16833	113.1	16.6	52.6	62.6	59.8	3.01	1.0	0.2
Dyna-Gro	GX 17968	111.5	16.0	54.3	62.8	54.5	3.29	2.6	0.0
Pioneer	83P17	109.0	16.9	53.9	62.6	59.3	3.27	2.2	1.6
Pioneer	83P99	92.7	16.0	52.9	62.2	59.5	3.57	2.6	0.4
Average		116.3	16.4	53.8	63	58.48	3.32	2.08	0.85
CV, %		9.86	8.91	3.78	3.76	6.92	26.5	61.59	295.4
LSD (0.10)		13.62	NS	NS	NS	NS	NS	NS	NS

Numbers shaded within a column are not significantly different from the numerically greatest value.

¹Yield adjusted to 14.0%.

²GM-harvest grain moisture; MH-mid head; PH-plant height; HE-head exertion; HT-head type; BD-bird damage.

NS=Statistically nonsignificant at the 0.10 probability level.

Grain Sorghum Hybrid Performance Trial, Red River Research Station, Bossier City

Crop Summary

During the months of May and June, rainfall was below normal, and temperatures were above normal (see graph below). Grain yields ranged from 45.2 bushels per acre to 81.4 bushels per acre with a trial average of 64.6 bushels per acre (Table 6). There were nine hybrids that fell within the high-yielding group for 2018. Yields were impacted by birds feeding on the heads. Bird damage ratings and other agronomic data are presented in Table 6.

Soil type:	Moreland silty clay loam	Post-plant fertilizer:	160-0-0 (5/29/18)
Soil pH:		Herbicide applications:	Burndown: Liberty (4/5/18)
Tillage	Conventional	Herbicide applications:	Pre-emerge: Bicep II Magnum + Round-up
Previous crop:	Corn	Herbicide applications:	Post-Direct: Gramoxone (6/14/18)
Row width:	40"	Insecticide applications:	Transform (6/22/18)
Seeding rate:	80,000	Harvest date:	August 17, 2018
Planting date:	May 1, 2018	Harvested plot size:	2 rows by 35 feet
Irrigation:	Yes	Experimental design:	RCBD
Preplant fertilizer:	None was applied	Replications:	4

Bossier City Weather (For Each 10-Day Period)

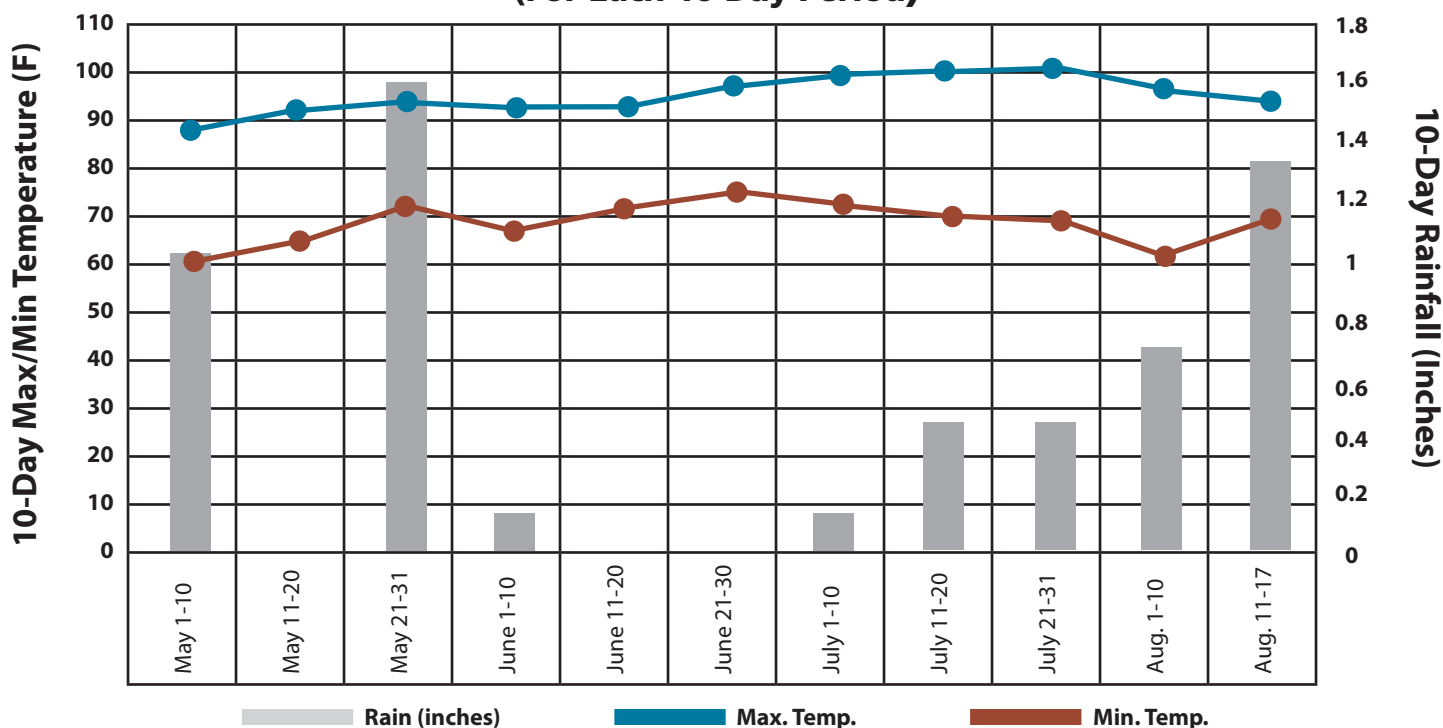


Table 6. Performance of grain sorghum hybrids at Bossier City, 2018.

Company	Hybrid	Yield ¹	GM ²	Test wt	MH ²	PH ²	HE ²	HT ²	BD ²
		bu/a	%	lb/bu	DAP	in	in	1-5	%
Dyna-Gro	M73GR55	81.4	14.5	55.8	63.3	56.8	4.5	1.5	15.0
DEKALB	DKS 51-01	80.2	13.5	55.8	60.0	55.3	5.3	3.5	20.0
Dyna-Gro	M74GB17	78.9	19.5	54.3	66.5	56	6.5	1.0	6.3
Pioneer	83P17	76.3	17.0	52.7	60.8	57.8	3.8	2.5	21.3
Dyna-Gro	GX 17962	73.6	14.0	52.5	56.3	53.3	4.8	4.5	25.0
DEKALB	DKS 47-07	67.9	16.0	51.8	59.5	58	3.0	3.0	25.0
Pioneer	84P80	67.3	13.3	54.3	56.5	56	4.0	3.5	30.0
Dyna-Gro	GX 17968	66.9	15.8	51.5	64.3	55.5	6.0	1.5	12.5
Pioneer	83P99	66.9	14.8	53.3	58.8	55.3	2.3	2.5	32.5
Dyna-Gro	GX 17379	59.8	18.3	50.8	64.0	55.3	3.3	1.5	11.3
Simplot	GS 7117	56.4	13.0	51.8	62.5	53.8	5.8	1.5	25.0
Dyna-Gro	GX 16833	55.5	13.5	53.3	59.8	55.5	2.8	2.0	30.0
Simplot	GS 7016	55.1	13.3	51.5	59.5	60.3	3.3	3.0	35.0
Dyna-Gro	GX 17948	55.0	18.3	52.3	58.5	54.8	5.0	1.0	22.5
DEKALB	DKS 53-53	49.5	16.3	52.0	61.0	55.8	4.8	1.0	12.5
Simplot	GS 7215	45.2	13.8	47.8	58.3	56.3	4.0	2.5	30.0
Average		64.62	15.25	52.56	60.58	55.95	4.3	2.25	22.11
CV, %		19.21	7.65	4.44	3	5.37	42.47	41.64	40.5
LSD (0.10)		14.75	1.39	2.77	2.16	NS	2.17	1.11	10.63

Numbers shaded within a column are not significantly different from the numerically greatest value.

¹Yield adjusted to 14.0%.

²GM-harvest grain moisture; MH-mid head; PH-plant height; HE-head exertion; HT-head type; BD-bird damage.

NS=Statistically nonsignificant at the 0.10 probability level.

Grain Sorghum Hybrid Performance Trial, Macon Ridge Research Station, Winnsboro

Crop Summary

During the months of May and June, rainfall was below normal, and temperatures were above normal (see graph below). Grain yields ranged from 41.5 bushels per acre to 81.9 bushels per acre with a trial average of 60.1 bushels per acre (Table 7). There were two hybrids that fell within the high-yielding group for 2018. Yields were impacted by birds feeding on the heads. Bird damage ratings and other agronomic data are presented in Table 7.

Soil type:	Gigger silt loam	Post-plant fertilizer:	120-0-0 (side-dress)
Soil pH:		Herbicide applications:	Pre-emerge: Lexar (5/1/18)
Tillage	Conventional	Insecticide applications:	Transform (6/8/18)
Previous crop:	Soybeans	Insecticide applications:	Transform (7/13/18)
Row width:	40"	Insecticide applications:	Transform + Beseige (7/19/18)
Seeding rate:	80,000	Harvest date:	August 16, 2018
Planting date:	May 1, 2018	Harvested plot size:	2 rows by 33 feet
Irrigation:	No	Experimental design:	RCBD
Preplant fertilizer:	Gigger silt loam	Replications:	5

Winnsboro Weather (For Each 10-Day Period)

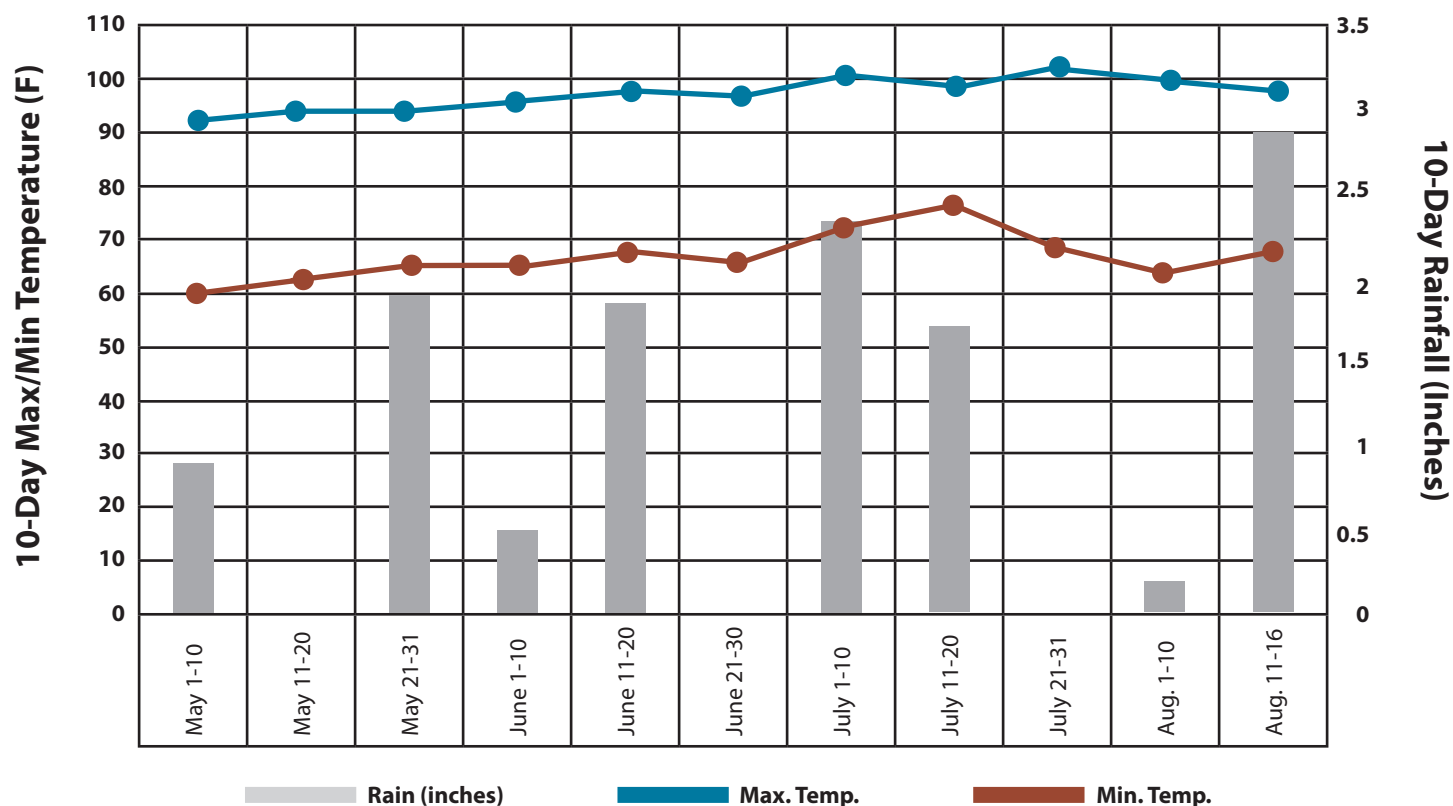


Table 7. Performance of grain sorghum hybrids at Winnsboro, 2018.										
Company	Hybrid	Yield ¹	GM ²	Test wt	MH ²	PH ²	HE ²	HT ²	MD ²	BD ²
		bu/a	%	lb/bu	DAP	in	in	1-5	%	%
Pioneer	83P17	81.9	19.3	52.7	68.0	59.5	5.5	3.0	11	0
Dyna-Gro	GX 17948	81.9	17.5	58.3	66.6	56.0	4.5	2.0	2	0
Dyna-Gro	GX 17379	67.4	19.2	53.9	69.8	59.0	4.5	2.0	10	2
DEKALB	DKS 53-53	66.4	17.5	58.4	64.6	55.0	3	2.0	1	7
DEKALB	DKS 47-07	64.4	16.6	57.7	66.0	57.5	5	2.5	14	0
Dyna-Gro	GX 17968	63.8	18.9	52.2	67.8	55.0	11	1.5	9	0
Pioneer	84P80	63.1	17.0	57.7	65.8	53.5	4.5	3.0	14	0
DEKALB	DKS 51-01	61.5	16.3	59.4	64.8	57.5	6.5	3.0	13	0
Simplot	GS 7016	59.5	16.6	58.1	65.6	65.5	5.5	1.5	4	5
Pioneer	83P99	57.6	16.3	57.6	63.8	55.5	5	2.5	27	0
Dyna-Gro	M74GB17	57.0	17.8	56.0	66.4	57.0	8	2.0	7	0
Dyna-Gro	GX 16833	54.2	17.5	56.5	65.0	57.5	4	1.0	4	4
Dyna-Gro	M73GR55	51.1	22.4	50.9	75.2	59.0	2	1.5	13	6
Simplot	GS 7117	50.4	17.6	57.5	69.4	53.0	6.5	2.0	7	6
Dyna-Gro	GX 17962	47.9	16.6	57.2	63.6	52.0	5	4.0	13	0
Simplot	GS 7215	41.5	16.8	57.1	66.6	62.5	6	2.0	12	6
	Average	60.14	17.748	56.297	66.81	57.19	5.41	2.22	10.06	2.25
	CV, %	15.52	5.27	3.05	66.81	2.61	42.31	18.28	103.67	270.92
	LSD (0.10)	11.09	0.988	3.006	2.5	2.62	NS	0.71	11.02	NS

Numbers shaded within a column are not significantly different from the numerically greatest value.

¹Yield adjusted to 14.0%.

²GM-harvest grain moisture; MH-mid head; PH-plant height; HE-head exertion; HT-head type; MD-midge damage; BD-bird damage.

NS=Statistically nonsignificant at the 0.10 probability level.

Table 8. List of participating seed companies and hybrids tested, 2018.			
Company	Contact	Hybrid	Maturity Days
DEKALB	Blake Edwards blake.edwards@monsanto.com 662-820-6804	DKS 51-01	114
		DKS 47-07	112
		DKS 53-53	114
Dyna-Gro	Joe Pankey joe.pankey@nutrien.com 318-381-3280	M74GB17	117
		GX 17379	116
		GX 17962	
		M73GR55	
		GX 17948	
		GX 17968	
		GX 16833	
Simplot	Max Crittenden max.crittenden@simplot.com 254-652-0032	GS 7117	
		GS 7016	
		GS 7215	
Pioneer	George Stabler george.stabler@pioneer.com 803-308-1003	83P17	125
		84P80	124
		83P99	128

LOUISIANA GRAIN SORGHUM HYBRID TRIALS 2018

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Rice Research Station,
Crowley, La.

Boyd Padgett, Professor and Plant Pathologist,
Dean Lee Research Station,
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Trey Price, Assistant Professor and Plant Pathologist,
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