

*Performance of Grain Sorghum
Hybrids in Louisiana 2010*



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Performance of Grain Sorghum Hybrids in Louisiana, 2010

H.J. “Rick” Mascagni, Jr., Brooks Blanche, Millie Deloach, Bobby Golden, Dustin Harrell, Jim Hayes, Steve Harrison, Clayton Hollier, John Kruse, Roger Leonard, and Boyd Padgett

Performance of grain sorghum hybrids is annually evaluated by Louisiana Agricultural Experiment Station (LAES) researchers. The purpose of these trials is to provide to Louisiana growers, seedsmen, county agents of the Louisiana Cooperative Extension Service (LCES) and other interested individuals and organizations with unbiased performance data for commercial grain sorghum hybrids submitted for evaluation by private agencies.

The cooperating LAES units in 2010 were: Dean Lee Research Station, Alexandria; Central Research Station, Baton Rouge; Red River Research Station, Bossier City; Rice Research Station, Crowley; Northeast Research Station, St. Joseph; and the Macon Ridge Research Station, Winnsboro. Baton Rouge and Crowley locations were lost to very dry conditions.

PROCEDURES

In 2010, 17 grain sorghum hybrids were entered in the LAES yield trials. Soil type, cultural practices, location summaries and weather graphs are listed prior to data tables for each location. In weather graphs, maximum and minimum temperatures are weekly averages and rainfall weekly totals. Trials were not irrigated, except at St. Joseph, where both irrigated and non-irrigated trials were conducted. Seed were treated with Concept and Gaucho and recommended LSU AgCenter cultural practices were followed at each location.

The experimental design at each location was a randomized complete block design with four replications. Traits measured and rating scales are listed in Table 1. Analysis of variance and least significant differences (LSD) were computed using SAS (Statistical Analysis System). We used the protected F-test, which means LSD's were calculated only if differences among hybrids existed at the 90% confidence level. If differences were significant, a LSD at the 10% probability level was calculated. If the LSD (0.10) for yield in

H.J. “Rick” Mascagni, Jr., Professor and Coordinator, Northeast Research Station, St. Joseph, LA 71366; Brooks Blanche, Millie Deloach, and John Kruse Assistant Professor, Research Associate, and Assistant Professor/Specialist, Dean Lee Research Station, Alexandria, LA 71302; Bobby Golden and Jim Hayes, Assistant Professor and Research Associate, Red River Research Station, Bossier City, LA 71113; Steve Harrison, Professor, School of Plant, Environmental and Soil Sciences, Baton Rouge, LA 70803; Clayton Hollier, Professor, Department of Plant Pathology and Crop Physiology, Baton Rouge, LA 70803; Dustin Harrell, Assistant Professor, Rice Research Station, Crowley, LA 70527; and Roger Leonard and Boyd Padgett, Professors, Macon Ridge Research Station, Winnsboro, LA 71295.

a trial is 400 lb/acre, there is a 10% chance that two hybrids with a reported yield difference of 400 lb/acre are genetically equal and a 90% probability they have differences 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 or treatment. The letters NS are used in the text and tables to indicate lack of significance (**not significantly different**) at the 10% 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 a test.

Yields for 2010 and two-year averages (2009 and 2010) are presented in the data tables. Yields for the hybrids in the highest-yielding group for 2010 (yields falling within one LSD value) are in bold print. Hybrids in bold print with a single asterisk fall within the highest-yielding group for both years, 2009 and 2010.

Table 1. Traits and rating scales for LAES grain sorghum performance trials.

Trait	Abbreviation	Description
Yield	Yield	Grain yield @ 14% harvest grain moisture, lb/a
2-Year average yield	2-Year avg	Average grain yield for 2009 and 2010, lb/a
Grain moisture	GrMo	Grain moisture at harvest, %
Test weight	Test wt	Volume weight of grain, lb/bu
Heading date	Mid-head	Date of head emergence in 50% of plants, days after planting (DAP)
Plant height	Plant ht	Plant height from ground to top of head, inches (in)
Head exertion	Head exert	Distance between flag leaf and base of head, inches (in)
Head type	Head type	Head type is a measure of head architecture, with ratings of 1-5; 1-compact, 3-intermediate, and 5-open
Midge damage	Midge	Average percent (%) of head damaged.
Bird damage	Bird	Average percent (%) of head damaged

RESULTS

Yield data and other agronomic data for each location are presented in Tables 2-6. A location summary, soil type, cultural practices and weather information are listed prior to data tables for each location. Yield summary across Louisiana for 2010 is presented in Table 7 and participating seed companies are listed in Table 8.

For additional information on grain sorghum trials, please contact Dr. Rick Mascagni, Northeast Research Station, P.O. Box 438, St. Joseph, LA 71366 (Ph: 318-766-3769; Fax: 318-766-4278; e-mail: hmascagni@agcenter.lsu.edu); or the coordinator at a specific location, Dr. Brooks Blanche, Dean Lee Research Station, Alexandria (Ph: 318-473-6524, Fax 318-473-6535, e:mail: sblanche@agcenter.lsu.edu); Dr. Bobby Golden, Red River Research Station, Bossier City (Ph: 318-741-7430, Fax 318-741-7433, e:mail: bgolden@agcenter.lsu.edu); Dr. Dustin Harrell, Rice Research Station, Crowley (Ph: 337-788-7531, Fax: 337-788-7553, e:mail: dharrell@agcenter.lsu.edu); Dr. Steve Harrison, Central Station, Baton Rouge (Ph:225-578-1308, Fax: 225-578-1403, e:mail:sharrison@agcenter.lsu.edu).

Grain Sorghum Performance at the Dean Lee Research Station – Alexandria

Location Summary

Late April and early May were dry resulting in a relatively late planting date. However, grain yields were good, ranging from 4,046 to 5,969 lb/a with a trial average of 5,170 lb/a (Table 2). There were twelve hybrids with two-year averages. Test weights ranged from 53.6 to 60.4 lb/bu with a trial average of 56.6 lb/bu. There were seven hybrids that fell into the highest-yielding group in 2010 and three hybrids that did well both years, 2009 and 2010. There was extensive bird damage, averaging 40% damage across the trial.

Soil Type.....Norwood silt loam
 Row Spacing.....38 inch
 Seeding Rate.....6-7 seed/ft
 Planting Date.....May12
 Previous Crop.....Soybeans
 Fertilization.....
 Fall: 0-18-36 @ 180 lb/a;
 Sidedress: 30-0-0-2 @ 150 lb N/a (6/17);
 Herbicides.....Lexar @ 3 qt/a (5/13);
 Atrazine @ 1 qt/a, Prowl @ 1.5 pt/a (6/21);
 Insecticides.....
 Karate @ 2.6 oz/a (7/9); Karate @ 2 oz/a
 (7/20); Leverage @ 2.8 oz/a (7/29);
 Harvest Date.....August 31

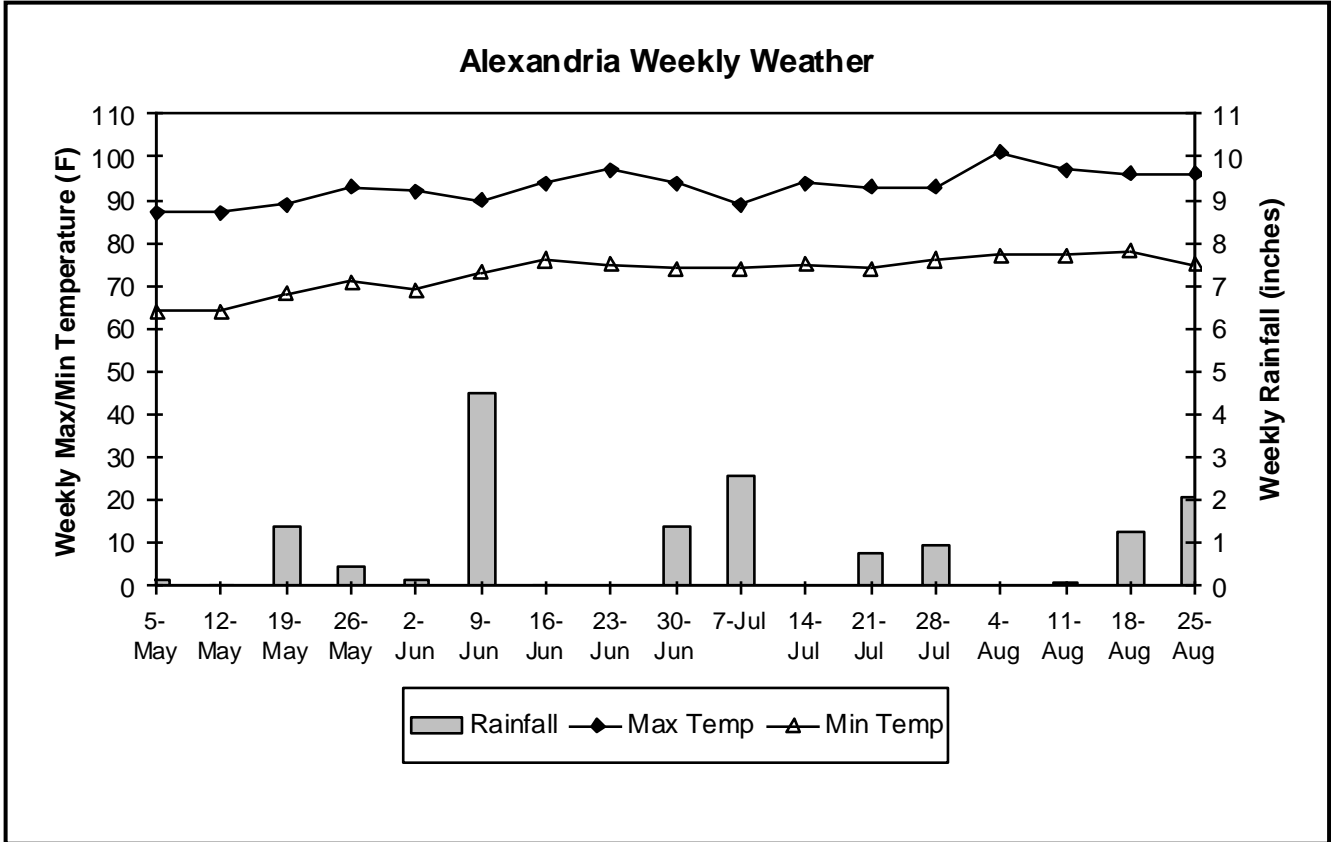


Table 2. Performance of grain sorghum hybrids at Alexandria, 2010.

Brand/hybrid	2010 Yield ¹ lb/a	2-Year avg ² lb/a	GrMo %	Test wt lb/bu	Mid- head DAP	Plant ht in	Head type 1-5	Head exert in	Bird %
Pioneer 84G62*	5,969	6,669	13.8	59.3	60	55.5	3	6	30
Dyna-Gro 780B	5,785	5,786	11.7	60.4	61	58.5	1	8.5	20
Dekalb DKS53-67*	5,728	6,329	15.7	57.0	59	56	3	7.5	20
Terral TV9421	5,644	6,192	12.3	53.6	57	55	2	7	70
Dekalb DKS54-03	5,485	5,932	14.7	55.9	62	57	4	6.5	30
Terral TV96H81*	5,463	6,428	15.0	-	60	57	1	7.5	30
Syngenta 5556	5,316	-	17.6	58.0	60	54.5	4	3.5	30
Terral TV96H91	5,217	5,901	11.7	57.2	60	57.5	3	4	30
Pioneer 83P17	5,145	-	15.9	56.0	62	54.5	2	7	20
Terral TV96H95	5,068	6,177	13.3	57.5	56	57	4	5	50
Syngenta 5464	5,039	-	15.3	56.4	60	57.5	5	4	50
Golden Acres 3696	5,027	5,933	13.9	54.9	57	55	3	7	60
Dyna-Gro 751B	4,927	6,136	15.9	-	57	55.5	3	4.5	30
Dekalb DKS54-00	4,828	5,897	15.8	56.4	62	66	3	6.5	30
Dyna-Gro 771B	4,787	5,781	14.0	54.9	55	55.5	5	6	40
Dekalb DKS49-45	4,412	-	15.3	-	62	68	4	4.5	40
Golden Acres 3566	4,046	-	15.2	54.9	56	56	4	5.5	60
Average	5,170	.	14.5	56.6	59	57.5	3	6	40
CV, %	11	.	19	2	1	4	48	36	41
LSD (0.10)	676	.	NS	2.6	1	4.0	NS	NS	1.8

¹Yields in bold denote hybrids that are in the highest-yielding group in 2010.

²Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2009 and 2010.

Grain Sorghum Performance at the Red River Research Station Bossier City

Location Summary

Although May and June were extremely dry (see weather chart below), grain yields were excellent ranging from 4,540 to 6,521 lb/a with a trial average of 5,543 lb/a (Table 3). Test weights were also very good ranging from 53.9 to 58.8 lb/bu with a trial average of 56.8 lb/bu. The LSD (0.10) for yield was very low (395 lb/a) resulting in only three hybrids falling within the highest-yielding group in 2010. There were twelve hybrids having two-year averages; however, no hybrid fell into the two-year highest-yielding group. There was moderate bird damage ranging from 5 to 25% with a trial average of 15%.

Soil Type.....	Moreland silty clay loam
Row Spacing.....	40 inches
Seeding Rate.....	6-7 seed/ft
Planting Date.....	May 4
Previous Crop.....	Cotton
Fertilization.....	32-0-0 @ 130 lb N/a @ (5/20)
Herbicides.....	Atrazine @ 1.6 qt/a, Dual @1.2 pt/a (5/4);
Harvest Date.....	August 11

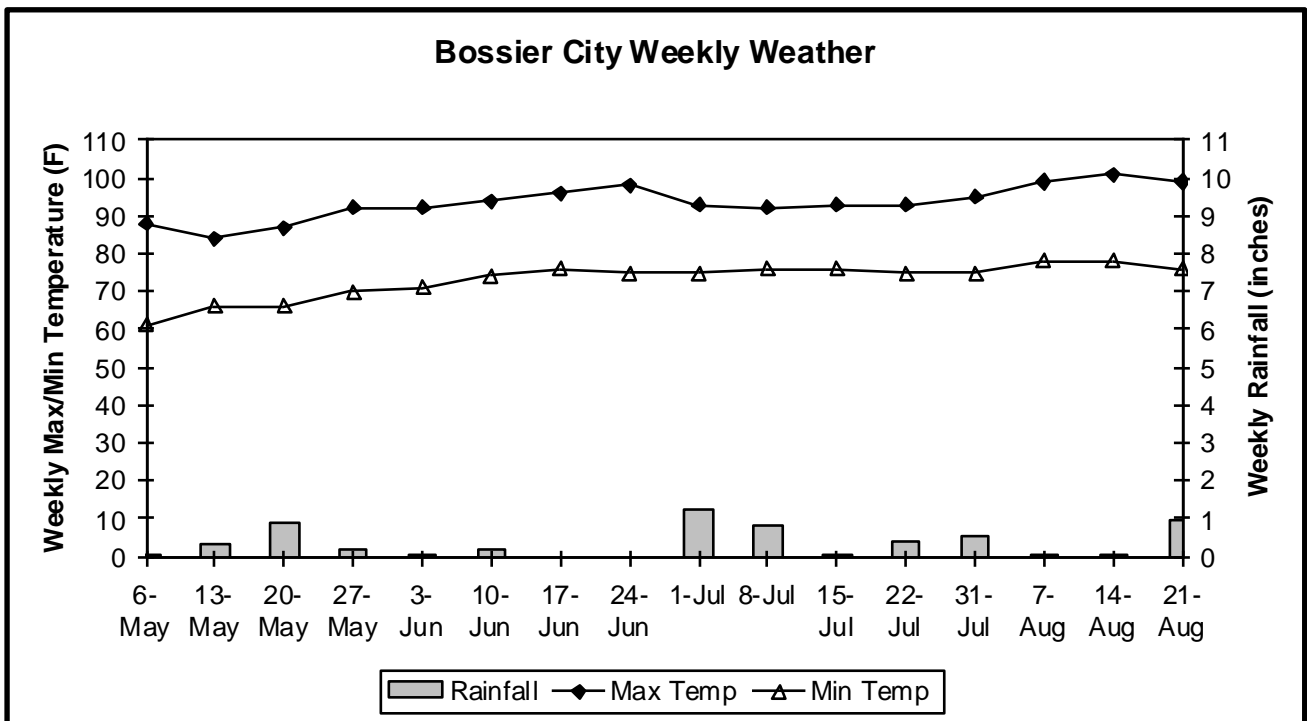


Table 3. Performance of grain sorghum hybrids at Bossier City, 2010.

Brand/hybrid	2010 Yield ¹ lb/a	2-Year avg lb/a	GrMo %	Test wt lb/bu	Mid- head DAP	Plant ht in	Head type 1-5	Head exert In	Bird %
Syngenta 5556	6,521	-	13.7	58.6	53	47	3	4	10
Pioneer 84G62	6,367	5,408	14.1	58.0	51	51	2	1	20
Dekalb DKS53-67	6,276	5,508	15.3	57.7	56	51	2	4	5
Syngenta 5464	6,085	-	14.0	57.3	52	49	3	3	15
Dekalb DKS49-45	5,963	-	14.8	55.7	55	52	2	2	10
Dekalb DKS54-00	5,874	5,290	17.1	53.9	58	54	2	7	15
Dekalb DKS54-03	5,857	5,149	14.5	56.3	55	51	2	5	10
Pioneer 83P17	5,701	-	15.2	56.2	54	52	2	1	15
Dyna-Gro 780B	5,650	5,030	13.3	58.8	54	53	1	2	15
Terral TV9421	5,493	5,458	13.6	55.8	49	46	3	2	20
Terral TV96H91	5,323	5,106	13.6	58.6	52	51	2	4	25
Golden Acres 3696	5,207	5,104	13.6	56.3	50	49	3	2	20
Dyna-Gro 771B	5,119	4,912	13.3	56.8	50	51	2	3	20
Terral TV96H81	5,020	4,970	13.0	57.1	52	51	1	2	15
Terral TV96H95	4,833	4,823	13.8	54.7	51	52	2	3	20
Golden Acres 3566	4,635	-	13.7	56.8	50	48	2	2	25
Dyna-Gro 751B	4,540	4,671	13.4	56.9	54	48	1	2	20
Average	5,543	.	14.1	56.8	53	50	2	3	15
CV, %	6	.	5	2	2	4	20	42	31
LSD (0.10)	395	.	0.9	1.2	1	NS	1	2	10

¹Yields in bold denote hybrids that are in the highest-yielding group in 2010.

Non-Irrigated and Irrigated Grain Sorghum Performance at the Northeast Research Station – St. Joseph

Location Summary

Grain yields ranged from 3,941 to 5,785 lb/a in the non-irrigated trial with a trial average of 5,304 lb/a (Table 4). In the irrigated trial, grain yields ranged from 5,007 to 6,352 lb/a with a trial average of 5,809 lb/a (Table 5). May and especially June were very dry (see weather chart below). Rainfall was well distributed in July. There were three furrow irrigations, May 27, June 15, and June 29, for the irrigated trial. The non-irrigated trial was also furrow-irrigated on May 27 to activate the N fertilize. In the 2010 highest-yielding group, there were nine hybrids in the non-irrigated trial and ten hybrids in the irrigated trial. In the two-year highest-yielding group, there were no hybrids in the non-irrigated trial and five hybrids in the irrigated trial.

Soil Type.....Sharkey clay
 Row Spacing.....40 inches
 Seeding Rate.....6-7 seed/ft
 Planting Date.....May 14
 Previous Crop.....Soybeans
 Fertilization.....
 Sidedress: 30-0-0-2 @ 120 lb N/a (5/27)
 Herbicides.....
 Preemerg: Atrazine @ 2 qt/a, Dual
 @ 1.5 pt/a;
 Postemerg: Lorox @ 1 qt/a,
 Atrazine @ 1 pt/a;
 Insecticides.....
 Preemerg: Discipline @ 1.5 oz/a;
 At flowering: Karate Z @ 1 oz/a;
 Leverage @ 3 oz/a;
 Heading: Discipline @ 3 oz/a;
 Harvest Date.....August 30

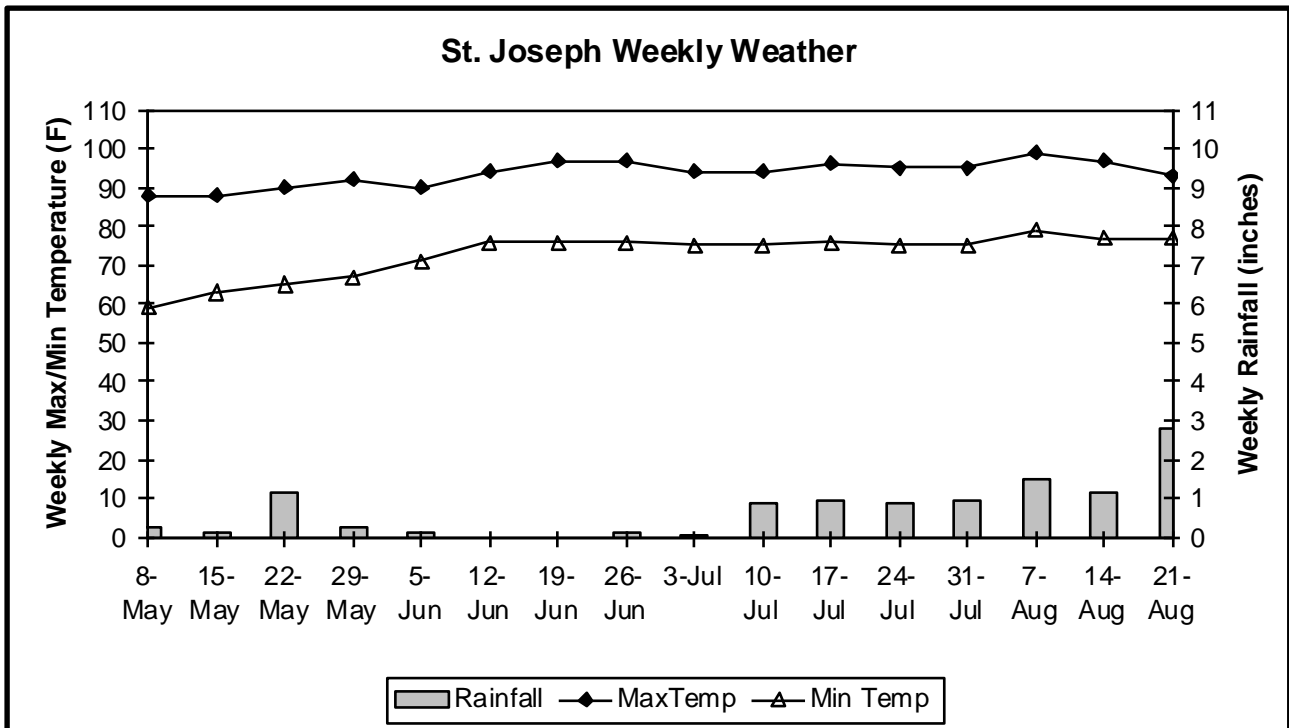


Table 4. Performance of non-irrigated grain sorghum hybrids at St. Joseph, 2010.

Brand/hybrid	2010 Yield ¹ lb/a	2-Year avg lb/a	GrMo %	Mid- head DAP	Plant ht in	Head type 1-5	Head exert in
Syngenta 5556	5,785	-	14.4	53	53	3	7
Dyna-Gro 780B	5,760	4,593	13.7	55	55	2	8
Dekalb DKS53-67	5,753	4,433	14.3	52	56	3	12
Dyna-Gro 751B	5,737	4,587	13.4	53	52	3	9
Terral TV96H81	5,667	4,467	13.1	53	55	2	9
Terral TV9421	5,603	4,400	12.2	50	53	4	8
Terral TV96H91	5,455	4,147	14.0	52	53	4	7
Golden Acres 3566	5,428	-	15.3	51	52	3	7
Dekalb DKS49-45	5,352	-	13.4	53	53	3	10
Syngenta 5464	5,333	-	15.7	54	54	3	8
Pioneer 83P17	5,208	-	14.8	55	55	3	10
Dekalb DKS54-03	5,168	4,053	13.0	54	55	3	9
Terral TV96H95	5,149	4,190	13.2	51	56	3	10
Dyna-Gro 771B	5,111	4,262	13.2	50	53	3	6
Pioneer 84G62	4,938	4,178	13.6	52	56	4	8
Golden Acres 3696	4,903	4,248	13.3	50	54	3	10
Dekalb DKS54-00	3,941	3,684	14.7	58	52	3	5
Average	5,304	.	13.8	53	54	3	8
CV, %	7	.	6	3	5	15	33
LSD (0.10)	450	.	1.4	2	NS	1	NS

¹Yields in bold denote hybrids that are in the highest-yielding group in 2010.

Table 5. Performance of irrigated grain sorghum hybrids at St. Joseph, 2010.

Brand/hybrid	2010 Yield ¹ lb/a	2-Year avg ² lb/a	GrMo %	Mid- head DAP	Plant ht in	Head type 1-5	Head exert in
Terral TV96H81*	6,352	5,087	14.4	52	51	2	10
Dekalb DKS49-45	6,302	-	15.1	53	49	3	9
Pioneer 83P17	6,199	-	17.9	52	49	3	9
Dyna-Gro 780B*	6,132	4,974	16.0	54	52	2	8
Terral TV9421*	6,127	4,921	14.9	50	49	3	10
Dekalb DKS54-03	5,984	4,756	16.2	54	51	3	8
Dyna-Gro 751B*	5,913	4,897	15.9	53	49	2	9
Syngenta 5556	5,893	-	15.9	53	50	4	9
Golden Acres 3566	5,840	-	16.6	52	48	4	9
Dyna-Gro 771B*	5,803	4,755	15.2	51	48	3	7
Golden Acres 3696	5,693	4,151	14.2	50	49	3	8
Pioneer 84G62	5,628	4,715	16.0	53	49	3	10
Terral TV96H95	5,608	4,988	16.3	51	49	3	8
Terral TV96H91	5,563	4,867	18.0	52	49	3	9
Dekalb DKS53-67	5,560	4,661	15.7	53	50	2	10
Syngenta 5464	5,183	-	17.6	54	48	4	10
Dekalb DKS54-00	5,007	4,430	16.5	57	51	2	11
Average	5,809	.	16.0	52	49	3	9
CV, %	9	.	6	2	6	16	33
LSD (0.10)	651	.	1.7	1	NS	1	NS

¹Yields in bold denote hybrids that are in the highest-yielding group in 2010.

²Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2009 and 2010.

Grain Sorghum Performance at the Macon Ridge Research Station Winnsboro

Location Summary

Grain yields ranged from 2,227 to 4,555 lb/a with a trial average of 3,415 lb/a (Table 6). The low yields were probably due to the extremely low rainfall in June (see weather chart below) on this shallow, drought-prone soil. The very dry conditions during grain fill were born out by the lack of head exertion. Across the trial, heads emerged an average of only 2 inches above the flag leaf. There were six hybrids that fell in the highest-yielding group for 2010 and three hybrids did well both years, 2009 and 2010.

Soil Type.....Gigger silt loam
 Row Spacing.....40 inches
 Seeding Rate.....6-7 seed/ft
 Planting Date:.....April 17
 Previous Crop.....Grain Sorghum
 Fertilization.....
 Preplant: 25 lb/a P₂O₅, 60 lb/a K₂O (Mar 15)
 Sidedress: 30-0-0-2 @ 100 lb N/a (5/22)
 Herbicides.....
 Preemerg: Atrazine @ 1 qt/a, Dual @ 1 pt/a;
 Postemerg: Atrazine @ 1 qt/a;
 Insecticides...Prolex @ 2 oz/a (6/25 & 6/30);
 Brigade @ 5 oz/a, Intrepid @ 6 oz/a (7/24);
 Karate @ 2 oz/a (8/4);
 Harvest Date.....August 19

Winnsboro Weekly Weather

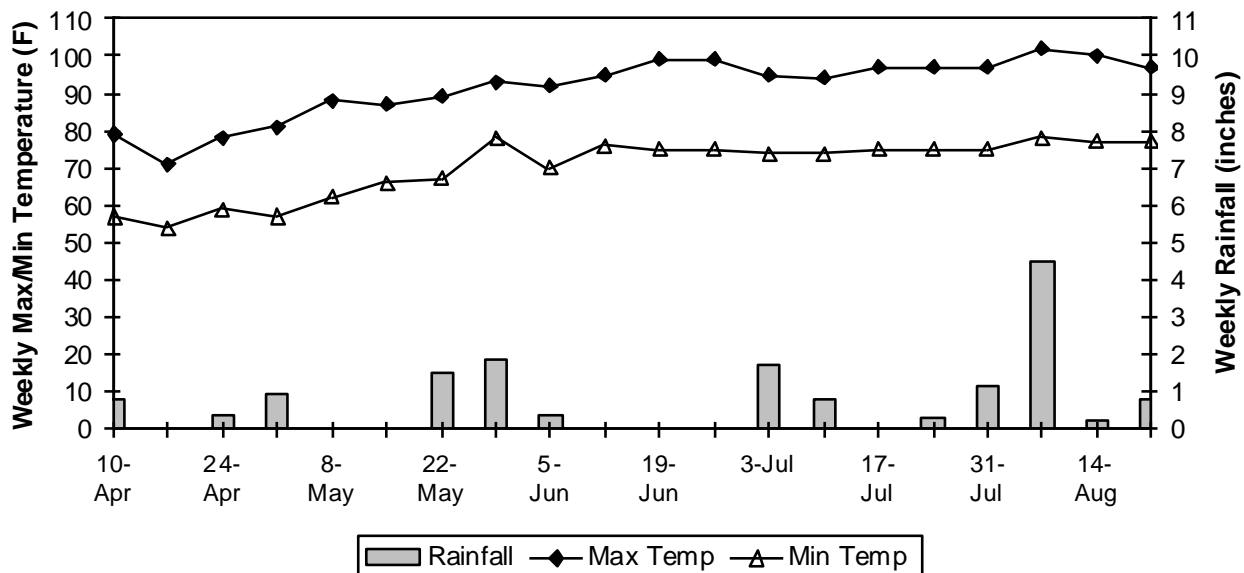


Table 6. Performance of grain sorghum hybrids at Winnsboro, 2010.

Brand/hybrid	2010 Yield ¹	2-Year avg ²	GrMo	Mid- head	Plant ht	Head exert	Midge
	lb/a	lb/a	%	DAP	in	in	%
Dekalb DKS53-67*	4,555	5,170	16.0	57	42	2	0
Dekalb DKS49-45	4,459	-	15.5	57	46	2	0
Pioneer 83P17	4,289	-	17.1	60	47	2	0
Pioneer 84G62*	4,277	5,215	14.7	56	46	3	0
Dekalb DKS54-00*	3,897	4,760	16.5	61	44	3	0
Dyna-Gro 771B	3,879	4,286	15.8	57	42	3	10
Dyna-Gro 780B	3,799	4,117	16.6	58	47	2	0
Terral TV96H91	3,488	4,438	15.1	58	43	3	0
Terral TV9421	3,440	4,249	14.6	57	42	2	15
Dyna-Gro 751B	3,210	3,998	16.6	58	44	3	5
Terral TV96H81	2,978	4,340	15.7	57	44	3	0
Syngenta 5464	2,967	-	15.2	58	41	3	5
Terral TV96H95	2,913	4,168	15.6	57	43	2	10
Golden Acres 3696	2,896	4,194	15.5	58	42	1	5
Dekalb DKS54-03	2,377	3,618	14.7	62	43	3	5
Syngenta 5556	2,227	-	14.7	59	38	2	10
Golden Acres 3566	2,227	-	15.4	56	43	2	0
Average	3,415	.	15.6	58	43	2	5
CV, %	18	.	5	3	5	40	265
LSD (0.10)	723	.	0.9	2	3	1	NS

¹Yields in bold denote hybrids that are in the highest-yielding group in 2010.

²Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2009 and 2010.

Table 7. Summary of yield performance of grain sorghum hybrids at five locations entered in the 2010 LAES hybrid performance trials.

Brand/hybrid	Alex	BC	St. Joseph		Winn	Avg
			Non-irr	Irr		
-----lb/a-----						
Dekalb DKS49-45	4,412	5,963	5,352	6,302	4,459	5,298
Dekalb DKS53-67	5,728	6,276	5,753	5,560	4,555	5,574
Dekalb DKS54-00	4,828	5,874	3,941	5,007	3,897	4,709
Dekalb DKS54-03	5,485	5,857	5,168	5,984	2,377	4,974
Dyna-Gro 751B	4,927	4,540	5,737	5,913	3,210	4,865
Dyna-Gro 771B	4,787	5,119	5,111	5,803	3,879	4,940
Dyna-Gro 780B	5,785	5,650	5,760	6,132	3,799	5,425
Golden Acres 3566	4,046	4,635	5,428	5,840	2,227	4,435
Golden Acres 3696	5,027	5,207	4,903	5,693	2,896	4,745
Pioneer 83P17	5,145	5,701	5,208	6,199	4,289	5,308
Pioneer 84G62	5,969	6,367	4,938	5,628	4,277	5,436
Syngenta 5464	5,039	6,085	5,333	5,183	2,967	4,921
Syngenta 5556	5,316	6,521	5,785	5,893	2,227	5,148
Terral TV9421	5,644	5,493	5,603	6,127	3,440	5,261
Terral TV96H81	5,463	5,020	5,667	6,352	2,978	5,096
Terral TV96H91	5,217	5,323	5,455	5,563	3,488	5,009
Terral TV96H95	5,068	4,833	5,149	5,608	2,913	4,714
Average	5,170	5,543	5,304	5,809	3,415	

Table 8. List of participating seed companies and hybrids tested in the LAES 2010 grain sorghum hybrid performance trials.

Company	Brand/hybrid
Crop Production Services 417 Danner Dr. Marion, AR 72364	Dyna-Gro 751B, Dyna-Gro 771B, Dyna-Gro 780B
Golden Acres Genetics P.O. Box 579 Buchanan Dam, TX 78609	Golden Acres 3566, Golden Acres 3696
Monsanto Company 982 U.S. Hwy. 77 Bishop, TX 78343	Dekalb DKS49-45, Dekalb DKS53-67, Dekalb DKS54-00, Dekalb DKS54-03
Pioneer Hi-Bred International 700 Blvd. South, Suite 302 Huntsville, AL 35802	Pioneer 84G62, Pioneer 83P17
Syngenta Seeds, Inc. 11055 Wayzata Blvd. Minnetonka, MN 55305-1526	Syngenta 5464, Syngenta 5556
Terral Seed, Inc. 604 Blount St. Lake Providence, LA 71254	Terral TV9421, Terral TV96H81, Terral TV96H91, Terral TV96H95