Performance of Grain Sorghum Hybrids in Louisiana 2011

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Performance of Grain Sorghum Hybrids in Louisiana, 2011

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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. Results from these trials are used by the LCES for recommending hybrids.

The cooperating LAES units in 2011 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 Northeast Research Station-Macon Ridge Branch, Winnsboro. Data from the trial at the Red River Research Station is not reported due to very high variability among plots.

PROCEDURES

In 2011, 10 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 only one furrow-irrigation was applied. Seed were treated with Concept and Gaucho or similar product. Recommended 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, an LSD at the 10% probability level was calculated. If the LSD(0.10) for yield in 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

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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.

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

Trait	**Abbreviation**	**Description**
Yield	2011 Yield	Grain yield @ 14% harvest grain moisture, lb/a (2011)
2-Year yield average	2-yr avg	Average grain yield for 2010 and 2011, lb/a
Grain moisture	Gr Mo	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
Anthracnose Blight	Anth	Rating of anthracnose symptoms on foliage and stems; where a '0' indicates none and a '9' indicates severe symptoms.
Bird damage	Bird	Average percent of head damaged, %

RESULTS

Yield data and other agronomic data for each location are presented in Tables 2-6. Yields for 2011 and two-year yield averages (2010 and 2011) are presented in the data tables. Yields for the hybrids in the highest-yielding group for 2011 (yields falling within one LSD value) are in bold print. Hybrids in bold print with a single asterisk are in the highest-yielding group for both 2010 and 2011. A location summary, soil type, cultural practices and weather information are listed prior to data tables for each location. Yield summary across Louisiana for 2011 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.0. 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. Dustin Harrell, Rice Research Station, Crowley, Ph: 337-788-7531, Fax: 337-788-7553, e:mail: dharrell@agcenter.lsu.edu; Ms Sarah Sterling, Red River Research Station, Bossier City; Ph: 318-741-7430, Fax 318-741-7433, e:mail: ssterling@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

Weather data was available only through mid-June (see below); however, yields across hybrids were excellent, ranging from 7,450 to 8,920 lb/a (Table 2). There were seven hybrids with two-year yield averages. Four hybrids fell into the highest-yielding group in 2010 and three hybrids did well both in 2010 and 2011. Other agronomic data, mid-heading date, plant height, head type, and head exertion, are presented in Table 2.

Soil Type……...Moreland clay
Row Spacing…….……....38 inch
Seeding Rate……..……..6-7 seed/ft
Previous Crop……Soybeans
Planting Date…….…April 8
Fertilization……..……
Sidedress: 150 lb N/a (30-0-0-2)
Herbicides……
Burndown: Cornerstone Plus @ 1 qt/a + 2,4-D @ 1 qt/a;
Pre-emerge: Bicep II Mag @ 2 qt/a;
Insecticides……. Karate Z @ 2 oz/a (6/13);
Leverage @ 2.8 oz/a (6/20;
Harvest Date…….. ……August 1

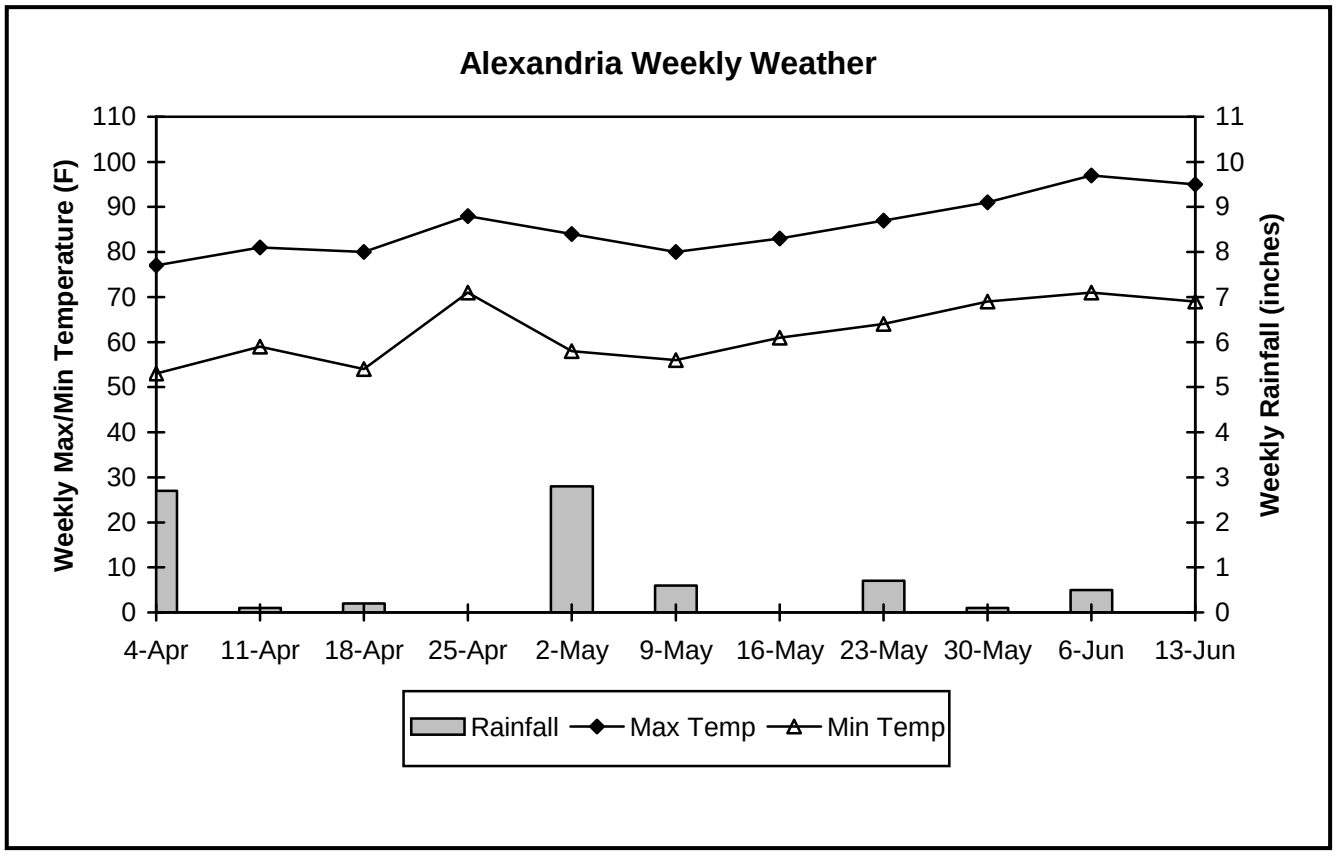

Table 2. Performance of grain sorghum hybrids at Alexandria, 2011.

Brand/hybrid	2011 Yield[1]	2-yr avg[2]	Mid-head	Plant ht	Head type	Head exert
	lb/a	lb/a	DAP	in	1-5	in
Pioneer 84G62*	**8,920**	7,445	66	48	3	3
DEKALB DKS53-67*	**8,493**	7,111	64	50	3	1
DEKALB DKS49-45	**8,490**	6,451	66	51	3	4
Terral TV96H81*	**8,328**	6,896	62	50	2	3
Terral TV93S16	8,159	-	61	53	3	5
Dyna-Gro 771B	8,039	6,413	60	48	4	4
Terral TV96H95	7,955	6,512	61	50	5	3
Dyna-Gro 772B	7,934	-	62	46	5	2
Terral TV94S91	7,567	-	62	47	2	3
Dyna-Gro 780B	7,450	6,618	65	49	1	3
Average	**8,142**		**63**	**49**	**3**	**3**
CV,%	**6**		**2**	**8**	**40**	**65**
LSD (0.10)	**621**		**3**	**NS[3]**	**NS**	**NS**

[1]Yields in bold denote hybrids that are in the highest-yielding group in 2011.
[2]Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2010 and 2011.
[3]NS = Non-significant at the 0.10 probability level

Grain Sorghum Performance at the Central Research Station - Baton Rouge

Location Summary

Rainfall was low in May and June (see below). Yields ranged from 3,847 to 5,743 lb/a (Table 3). There were no two-year yield averages for 2010 and 2011, because data was not available in 2010. Five hybrids fell into the highest-yielding group in 2010. Harvest grain moistures ranged from 18.7 to 23.9%. Anthracnose symptoms appeared in all the hybrids, with ratings ranging from 2 to 7. However, there did not appear to be a significant correlation between yield and anthracnose ratings, with the top yielders having relatively high Anthracnose scores.

Soil Type……..…Commerce silty clay loam
Row Spacing…….…….……30 inches
Seeding Rate…….…….……..…5 seed/ft
Previous Crop……..…Soybeans
Planting Date……..……..…May 2
Fertilization…….
At planting: 150-25-25 (70 gal of 20-3-3)
Herbicides….Pre-emerge: Atrazine @ 2 qt/a + Ignite @ 1 qt/a;
Insecticides……..
At planting: Lorsban @ 12 lb/a (In-furrow);
Flowering: Pounce @ 2 oz/a (midge);
Harvest Date…….…….……...…August 16

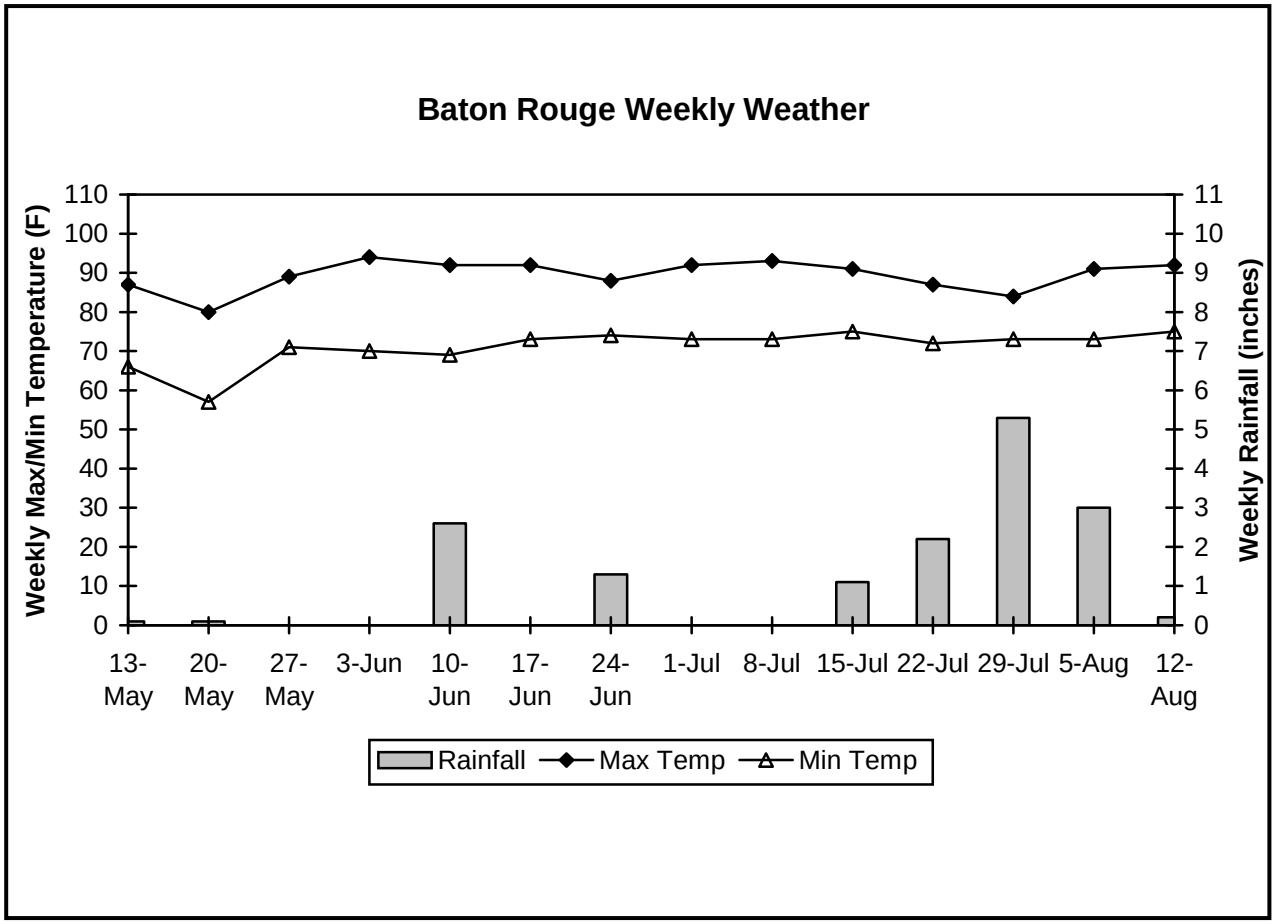

Table 3. Performance of grain sorghum hybrids at Baton Rouge, 2011.

Brand/hybrid	2011 Yield[1]	Gr Mo	Test wt	Mid-head	Plant ht	Bird	Anth
	lb/a	%	lb/bu	DAP	in	%	0-9
DEKALB DKS53-67	**5,743**	23.9	57.1	69	49	20	5
Terral TV96H81	**5,516**	18.8	56.6	69	52	10	6
Dyna-Gro 772B	**5,390**	22.9	54.0	70	48	10	3
Pioneer 84G62	**5,257**	22.2	56.5	70	48	10	7
DEKALB DKS49-45	**5,100**	23.6	54.0	69	53	20	4
Terral TV93S16	4,797	23.9	54.7	69	47	30	3
Terral TV94S91	4,651	21.4	54.5	66	50	25	2
Terral TV96H95	4,640	18.7	55.0	69	49	15	3
Dyna-Gro 771B	4,390	19.1	54.8	67	49	15	3
Dyna-Gro 780B	3,847	20.6	56.2	70	50	5	5
Average	**4,933**	**21.5**	**55.3**	**69**	**49**	**15**	**4**
CV,%	**12**	**10**	**1**	**2**	**2**	**43**	**14**
LSD (0.10)	**692**	**2.5**	**0.8**	**NS[2]**	**2**	**NS**	**1**

[1]Yields in bold denote hybrids that are in the highest-yielding group in 2011. Since there was no available data for 2010, there was no 2-year yield average.

[2]NS = Non-significant at the 0.10 probability level

Grain Sorghum Performance at the Rice Research Station – Crowley

Location Summary

Rainfall was extremely low in May and June (see below). Yields were good, ranging from 4,118 to 5,790 lb/a (Table 4). There were no two-year yield averages for 2010 and 2011, because data was not available in 2010. Four hybrids fell into the highest-yielding group in 2010. Mid-head dates varied between 63 and 69 DAP (days after planting), with harvest grain moistures, ranging from 13.3 to 16.2%.

Soil Type……Crowley silt loam
Row Spacing……30 inches
Seeding Rate……5 seed/ft
Previous Crop……Grain Sorghum
Planting Date……May 9
Fertilization……At Planting: 240 lb/a (0-24-24);
Sidedress: 90 lb N/a (46-0-0);
Herbicides……
Pre-emerge: Dual Mag @1.5 pt/a + Atrazine @ 2 qt/a @1 oz/a (5/13);
Post-emerge: Facet @ 0.3 lb ai/a + Permit @ 0.75 oz/a + 1% COC (May 20);
Insecticides……..Karate Z @ 2 oz/a (July 25)
Harvest Date……..August 30

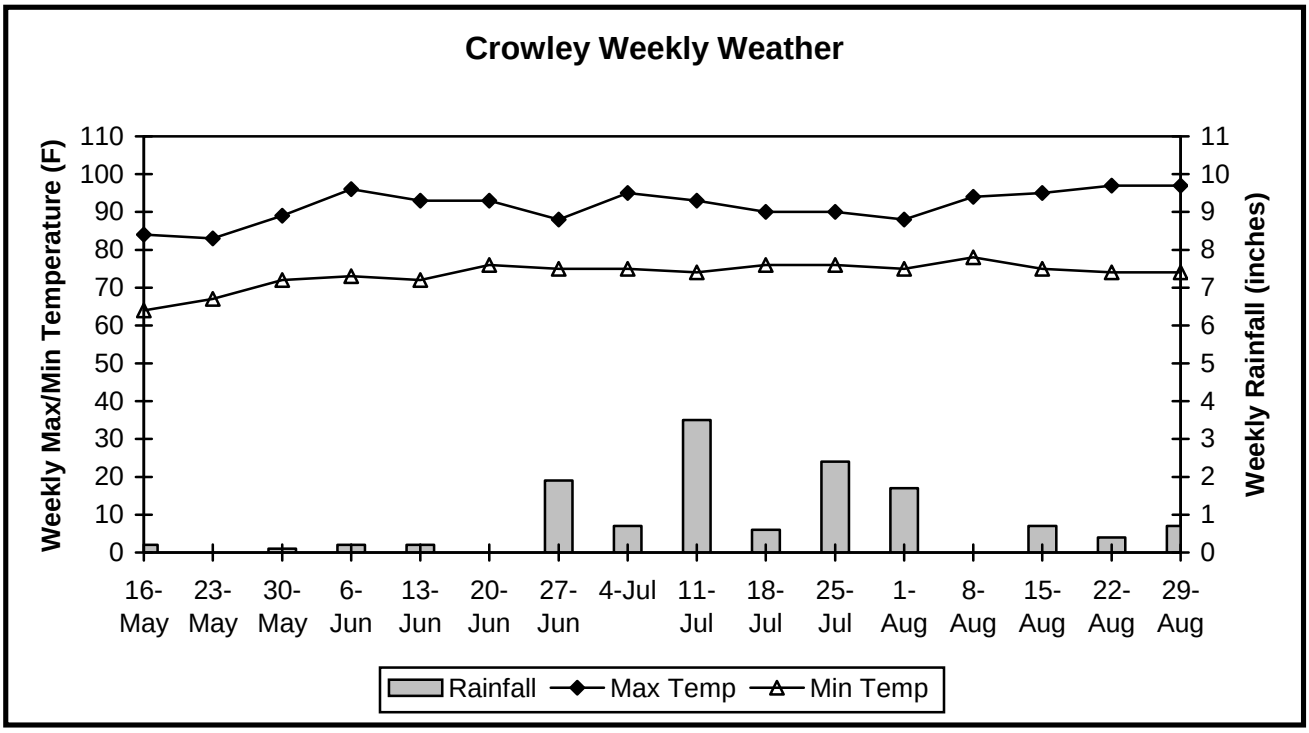

Table 4. Performance of grain sorghum hybrids at Crowley, 2011.

Brand/hybrid	2011 Yield[1]	Gr Mo	Test wt	Mid-head	Plant ht	Head type	Head exert	Bird
	lb/a	%	lb/bu	DAP	in	1-5	in	%
Pioneer 84G62	**5,790**	14.2	54.6	68	49	2	4	10
DEKALB DKS53-67	**5,498**	14.9	54.2	68	51	2	4	10
Dyna-Gro 771B	**5,264**	13.5	55.2	63	49	3	3	20
Terral TV93S16	**5,239**	14.6	54.3	67	53	4	7	10
DEKALB DKS49-45	5,028	14.1	54.6	68	58	3	8	10
Terral TV96H95	5,021	13.3	55.0	64	50	3	4	20
Dyna-Gro 780B	5,016	14.7	54.4	69	51	2	5	10
Terral TV94S91	4,900	13.5	55.0	64	47	2	5	20
Terral TV96H81	4,852	14.0	54.8	66	50	2	5	10
Dyna-Gro 772B	4,118	16.2	52.6	69	51	3	5	20
Average	**5,042**	**14.3**	**54.5**	**66**	**51**	**3**	**5**	**10**
CV,%	**10**	**9**	**2**	**2**	**3**	**12**	**28**	**38**
LSD (0.10)	**630**	**NS[2]**	**NS**	**2**	**2**	**1**	**2**	**10**

[1]Yields in bold denote hybrids that are in the highest-yielding group in 2011. Since there was no available data for 2010, there was no 2-year yield average.

[2]NS = Non-significant at the 0.10 probability level

Grain Sorghum Performance at the Northeast Research Station - St. Joseph

Location Summary

Rainfall was below normal in May and June (see below). There was one furrow-irrigation on June 7. Yields ranged from 3,816 to 4,909 lb/a (Table 5). Seven hybrids had two-year yield averages. Three hybrids fell into the highest-yielding group in 2010 and the same three hybrids did well both in 2010 and 2011. Test weights were excellent, ranging from 56.1 to 60.1 lb/bu. Other agronomic data are presented in Table 5.

Soil Type…….Sharkey clay
Row Spacing…….……40 inches
Seeding Rate……6-7 seed/ft
Previous Crop……..…….Soybeans
Planting Date……..April 21
Fertilization……
Sidedress……120 lb N/a (30-0-0-2)
Herbicides….....
Burndown: Roundup @ 1 qt/a;
Pre-emerge: Atrazine @ 2 qt/a +Dual @ 1 pt/a;
Post-emerge: Atrazine @ 1 pt/a + Lorox @ 1.5 pt/a + 1% COC;
Insecticides……..
At-planting: Discipline @ 1 oz/a;
Baythroid XL @ 2 oz/a (7/19);
Irrigated……...Furrow-irrigated – June 7
Harvest Date…….....August 5

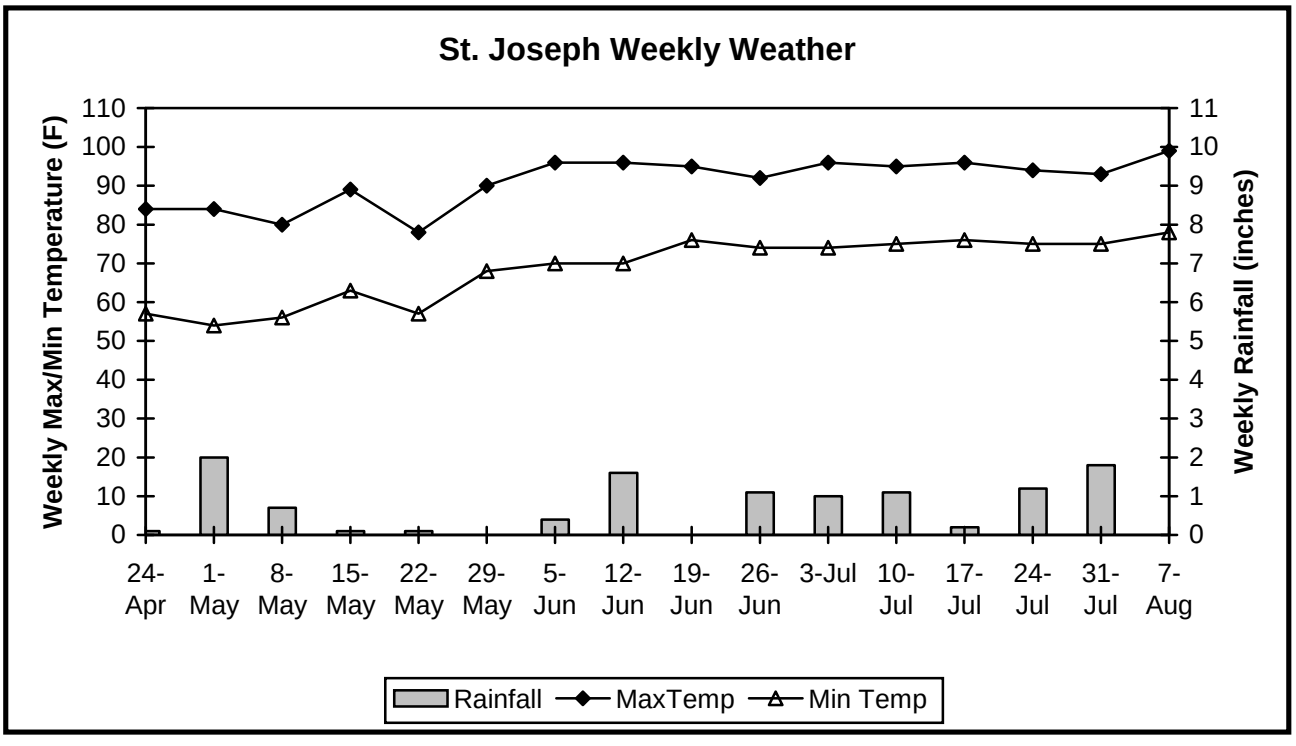

Table 5. Performance of grain sorghum hybrids at St. Joseph, 2011.

Brand/hybrid	2011 Yield[1]	2-yr avg[2]	Gr Mo	Test wt	Mid-head	Plant ht	Head type	Head exert	Bird
	lb/a	lb/a	%	lb/bu	DAP	in	1-5	in	%
DEKALB DKS53-67*	**4,909**	5,331	19.6	59.9	63	51	2	6	5
Dyna-Gro 780B*	**4,790**	5,275	20.7	60.1	68	55	1	6	0
DEKALB DKS49-45*	**4,737**	5,045	17.8	59.4	61	52	3	6	5
Terral TV96H81	4,328	4,998	17.2	57.8	60	51	2	5	10
Terral TV93S16	4,211	-	18.7	57.8	61	48	3	6	5
Pioneer 84G62	4,208	4,573	18.1	59.6	62	49	3	4	0
Dyna-Gro 772B	4,120	-	17.9	58.2	61	48	4	7	5
Dyna-Gro 771B	3,946	4,529	17.3	56.6	60	49	3	6	5
Terral TV96H95	3,854	4,502	17.5	56.4	59	48	3	6	5
Terral TV94S91	3,816	-	18.4	56.1	62	50	3	8	5
Average	**4,295**		**18.3**	**58.2**	**62**	**50**	**3**	**6**	**5**
CV,%	**11**		**6**	**1**	**3**	**5**	**17**	**31**	**71**
LSD(0.10)	**395**		**0.9**	**0.8**	**1**	**2**	**1**	**2**	**5**

[1]Yields in bold denote hybrids that are in the highest-yielding group in 2011.
[2]Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2010 and 2011.

Grain Sorghum Performance at the Macon Ridge Branch of the Northeast Research Station – Winnsboro

Location Summary

Rainfall was below normal in May, June, and early July (see below). Yields were relatively low, ranging from 3,433 to 4,399 lb/a (Table 6). Seven hybrids had two-year yield averages. Three hybrids were in the highest-yielding group in 2010 and the same three hybrids did well both in 2010 and 2011. Test weights were excellent, ranging from 57.6 to 59.2 lb/bu. Head exertion was very poor on this drought-prone soil, ranging from only 1 to 3 inches. Thus, heads were very close to the canopy, which decreases harvest efficiency.

Soil Type……..….Gigger silt loam
Row Spacing…….…...40 inches
Seeding Rate……..6-7 seed/ft
Previous Crop…….Grain Sorghum
Planting Date…….May 1
Fertilization…….
Preplant: 4-21-48 (3/15);
Sidedress: 100 lb N/a (30-0-0-2);
Herbicides…….
Pre-emerge: Atrazine @ 2 pt/a + Dual @ 1 pt/a;
Post-emerge: Atrazine @ 2 pt/a + Gramoxone @ 1.5 pt/a;
Insecticides…….
Karate @ 2oz/a applied twice; Karate @ 2 oz/a + Lannate @ 12 oz/a; Karate @ 2 oz/a + Belt @ 2 oz/a (Insecticides were applied started at first heading and continued for four weeks);
Harvest Date…….…….August 18

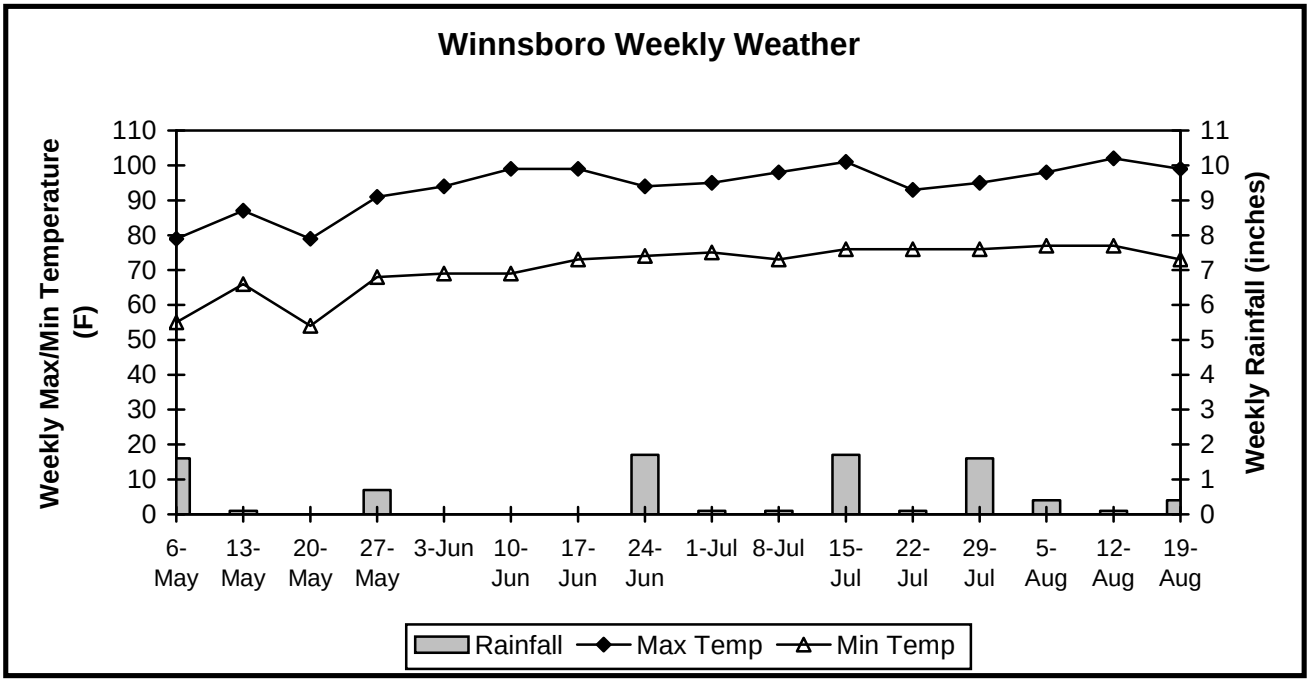

Table 6. Performance of grain sorghum hybrids at Winnsboro, 2011.

Brand/hybrid	2011 Yield[1]	2-yr avg[2]	Gr Mo	Test wt	Mid-head	Plant ht	Head type	Head exert
	lb/a	lb/a	%	lb/bu	DAP	in	1-5	in
DEKALB DKS53-67*	**4,399**	4,477	16.9	57.9	65	44	2	2
Pioneer 84G62*	**4,351**	4,314	14.5	58.7	63	41	4	1
DEKALB DKS49-45*	**4,259**	4,359	15.7	58.2	65	45	4	3
Terral TV96H81	3,709	3,344	13.0	59.2	62	42	1	2
Dyna-Gro 772B	3,686	-	13.3	58.8	60	39	3	1
Terral TV96H95	3,661	3,287	13.3	57.6	56	40	3	2
Terral TV94S91	3,646	-	13.1	58.3	59	42	3	3
Terral TV93S16	3,538	-	13.9	58.7	62	41	3	2
Dyna-Gro 771B	3,528	3,704	13.1	57.7	61	41	3	2
Dyna-Gro 780B	3,433	3,616	16.1	58.6	68	44	1	2
Average	**3,821**		**14.3**	**58.4**	**62**	**42**	**3**	**2**
CV,%	**11**		**6**	**1**	**7**	**6**	**8**	**59**
LSD (0.10)	**396**		**0.8**	**0.7**	**4**	**2**	**1**	**1**

[1]Yields in bold denote hybrids that are in the highest-yielding group in 2011.
[2]Hybrids in bold with an asterisk (*) were in the highest-yielding group in both years, 2010 and 2011.

Table 7. Summary of yield performance of grain sorghum hybrids at five locations in the 2011 LAES hybrid performance trials.

Brand/hybrid	Alex	BR	CR	SJ	Winn	Avg
	----------lb/a----------					
DEKALB DKS49-45	8,490	5,100	5,028	4,737	4,259	5,523
DEKALB DKS53-67	8,493	5,743	5,498	4,909	4,399	5,808
Dyna-Gro 771B	8,039	4,390	5,264	3,946	3,528	5,033
Dyna-Gro 772B	7,934	5,390	4,118	4,120	3,686	5,050
Dyna-Gro 780B	7,450	3,847	5,016	4,790	3,433	4,907
Pioneer 84G62	8,920	5,257	5,790	4,208	4,351	5,705
Terral TV93S16	8,159	4,797	5,239	4,211	3,538	5,189
Terral TV94S91	7,567	4,651	4,900	3,816	3,646	4,916
Terral TV96H81	8,328	5,516	4,852	4,328	3,709	5,347
Terral TV96H95	7,955	4,640	5,021	3,854	3,661	5,026
Average	**8,142**	**4,933**	**5,042**	**4,295**	**3,821**	

Table 8. List of participating seed companies and hybrids tested in the LAES 2011 grain sorghum hybrid performance trials.

Company	Brand/hybrid
Crop Production Services – Dyna-Gro Seed 11 Gin Rd. Rayville, LA	Dyna-Gro 771B, Dyna-Gro772B, Dyna-Gro 780B
Monsanto Company 982 U.S. Hwy. 77 Bishop, TX 78343	DEKALB DKS49-45, DEKALB DKS53-67
Pioneer Hi-Bred International, Inc. 700 Boulevard South – Suite 302 Huntsville, AL 35802	Pioneer 84G62
Terral Seed, Inc. 604 Blount St. Lake Providence, LA 71254	Terral TV93S16, Terral TV94S91, Terral TV96H81, Terral TV96H95