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Mississippi Grain Sorghum Hybrid Trials, 2013

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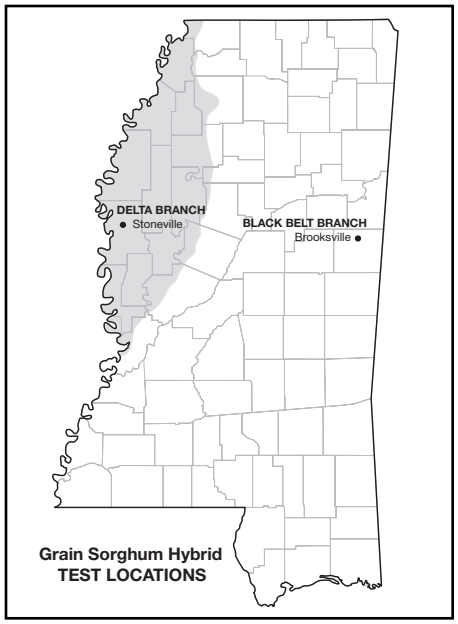
Procedure

Trials were conducted on Experiment Station land in two geographical areas in Mississippi: Area I, located in the hill region of Mississippi; and Area II, located in the Delta region of Mississippi (see map). Commercial seed companies were given the opportunity to enter hybrids in the trial.

Plots consisted of two 30-inch rows, 15 feet long. Weeds were controlled by cultivation and/or herbicides. Only herbicides currently registered for use on corn were used in these studies, with strict adherence to all label instructions.

Experimental design was a randomized complete block with four replications at each location.

Seed of all entries were supplied by participating companies. All seed were packaged for planting at seeding rates suggested by the participating company and planted with a cone planter. Fertilizer was applied according to soil test recommendations.



Variables Tested

Yield: An Almaco SPC 20 plot combine was used to harvest the total area of each plot. Harvested grain was weighed, moisture was determined, and yields were converted to bushels per acre at 14% moisture.

Head Exertion: Average distance in inches from the flag leaf to the base of the panicle.

Use of Data Tables and Summary Statistics

The yield potential of a given hybrid cannot be measured with complete accuracy. Consequently, replicate plots of all hybrids are evaluated for yield, and the yield of a given hybrid is estimated as the mean of all replicate plots of that hybrid. Yields vary somewhat from one replicate plot to another, which introduces a certain degree of error to the value. As a result, although the mean yields of some hybrids are numerically different, the two hybrids may not be significantly different from each other within the range of natural variation. That is, the ability to measure yield is not precise enough to determine what the small differences are, other than what might be observed purely by chance.

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The least significant difference (LSD) is an estimate of the smallest difference between two hybrids that can be declared to be the result of something other than random variation in a particular trial. Consider the following example for a given trial:

Hybrid	Yield
A	90 bu/A
B	85 bu/A
C	81 bu/A
LSD	7 bu/A

The difference between hybrid A and hybrid B is 5 bu/A (i.e., 90 - 85 = 5). This difference is smaller than the LSD (7 bu/A). Consequently, we would conclude that hybrid A and hybrid B have the same yield potential, since we are unable to say that the observed difference did not occur purely due to chance. However, the difference between hybrid A and hybrid C is 9 bu/A (i.e., 90 - 81 = 9), which is larger than the LSD (7 bu/A). We would therefore conclude that the yield potential of hybrid A is superior to that of hybrid C.

The coefficient of variation (CV) is a measure of the relative precision of a given trial and is used to compare the relative precision of different trials. The CV is generally considered an estimate of the amount of unexplained variation in a given trial. This unexplained variation can be the result of variation between plots with respect to soil type, fertility, insects, diseases, moisture stress, etc. Overall, as the CV increases, the precision of a given trial decreases.

The coefficient of determination (R^2) is another measure of the level of precision in a trial and is also used to compare the relative precision of different trials. The R^2 is a measure of the amount of variation that is explained, or accounted for, in a given trial. For example, an R^2 value of 90 percent indicates that 90 percent of the observed variation in the trial has been accounted for in the trial, with the remaining 10 percent being unaccounted for. The higher the R^2 value, the more precise the trial. The R^2 is generally considered a better measure of precision than the CV for comparison of different trials.

Table 1. Hybrids entered in the Mississippi Grain Sorghum Hybrid Trials, 2013.

Company	Brand	Hybrid	Planting rate (x1000)
BH Genetics	BH Genetics	BH 5566	70
BH Genetics	BH Genetics	BH 5350	70
BH Genetics	BH Genetics	X13010	70
BH Genetics	BH Genetics	X13014	70
BH Genetics	BH Genetics	X13023	70
Monsanto	DEKALB	DKS54-00	90
Crop Production Service	Dyna-Gro	M75GB39	83
Crop Production Service	Dyna-Gro	M77GB52	83
Crop Production Service	Dyna-Gro	765B	83
Crop Production Service	Dyna-Gro	GX13661	83
Progeny Ag Products	Golden Acres	737	85
Progeny Ag Products	Golden Acres	3552	85
Progeny Ag Products	Golden Acres	3696	85
Progeny Ag Products	Golden Acres	5556	85
Progeny Ag Products	Golden Acres	5613	85
Dupont Pioneer	Pioneer	83P17	80
Dupont Pioneer	Pioneer	84P80	80
Dupont Pioneer	Pioneer	83P99	80
Terral Seed, Inc.	REV®	9562™	85
Terral Seed, Inc.	REV®	9782™	85
Terral Seed, Inc.	REV®	9794™	85
Terral Seed, Inc.	REV®	9803™	85
Terral Seed, Inc.	REV®	9823™	85
Terral Seed, Inc.	REV®	9883™	85
Terral Seed, Inc.	REV®	9924™	85
Terral Seed, Inc.	REV®	9973™	85

Table 2. Summary of yields for the 2013 Mississippi Grain Sorghum Hybrid Trials.				
Brand	**Hybrid**	**Brooksville**	**Stoneville**	**Overall avg.**
		bu/A	*bu/A*	*bu/A*
B-H Genetics	BH 5350	103.3	78.5	90.9
B-H Genetics	BH 5566	117.3	84.4	100.8
B-H Genetics	X 13010	105.6	75.3	90.5
B-H Genetics	X 13014	98.6	59.8	79.2
B-H Genetics	X 13023	109.9	68.1	89.0
Dekalb	DKS 54-00	119.3	86.1	102.7
Dyna-Gro	765B	113.0	90.4	101.7
Dyna-Gro	GX13661	105.3	87.9	96.6
Dyna-Gro	M75GB39	108.6	76.7	92.6
Dyna-Gro	M77GB52	113.5	87.8	100.6
Golden Acres	737	99.2	72.8	86.0
Golden Acres	3552	105.1	79.2	92.2
Golden Acres	3696	106.5	87.7	97.1
Golden Acres	5556	108.9	86.5	97.7
Golden Acres	5613	124.1	85.3	104.7
Pioneer	83P17	98.6	86.0	92.3
Pioneer	83P99	121.5	90.3	105.9
Pioneer	84P80	126.6	86.1	106.3
Rev®	9562™	114.0	90.2	102.1
Rev®	9782™	113.3	81.1	97.2
Rev®	9794™	113.2	59.3	86.2
Rev®	9803™	113.2	72.7	93.0
Rev®	9823™	105.2	84.8	95.0
Rev®	9883™	103.9	75.2	89.5
Rev®	9924™	111.6	78.5	95.1
Rev®	9973™	104.0	38.3	71.1
Mean		110.1	78.8	94.5
LSD .1		13.2	12.7	
Error df		75	75	
CV		10.2	13.8	
R-square		43.3	62	

Location 1. MAFES Black Belt Branch, Brooksville

Crop Summary

Sorghum plots were planted into a freshly tilled seedbed with adequate moisture for germination. All plots quickly emerged to a good stand. Rainfall throughout the season allowed for sufficient soil moisture that the plots never became stressed. Harvest was completed without any problems or weather delays.

Soil type	**Brooksville silty clay**
Soil PH	**5.4**
Soil fertility	**P=M; K=M**
Fertilizer added	**Sidedress — N @ 125 lb/A (32% UAN)**
Herbicide applications	**Preemergence — Lexar @ 2 qt/A and Roundup Powermax @ 24 oz/A on May 16** **Postemergence —Atrazine @ 1 qt/A plus crop oil concentrate on July 2**
Insecticide applications	**Karate @ 1.92 oz/A on August 2**
Previous crop	**Soybeans**
Planting date	**May 16**
Harvest date	**August 23**

Rainfall Summary

	Inches
May	**0.46**
June	**3.16**
July	**3.49**
August	**0.53**
Total	**7.64**

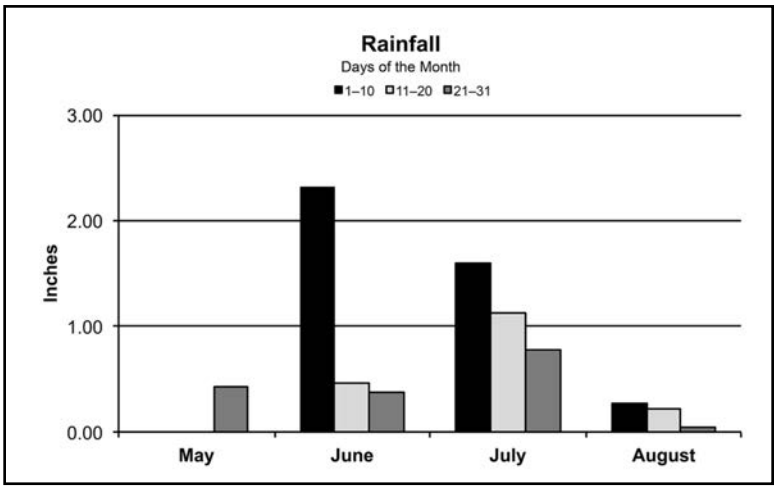

Table 3. Performance results for 26 hybrids grown without irrigation at Black Belt Branch Station, Brooksville, 2013.

Brand	Hybrid	Yield	Moisture	Head exertion
		bu/A	*%*	*in*
Pioneer	84P80	126.6	17.8	5
Golden Acres	5613	124.1	16.6	7
Pioneer	83P99	121.5	17.8	3
Dekalb	DKS 54-00	119.3	18.0	4
B-H Genetics	BH 5566	117.3	17.7	5
Rev®	9562™	114.0	17.9	4
Dyna-Gro	M77GB52	113.5	17.4	5
Rev®	9782™	113.3	17.9	4
Rev®	9803™	113.2	17.0	9
Rev®	9794™	113.2	16.8	5
Dyna-Gro	765B	113.0	17.5	3
Rev®	9924™	111.6	16.6	6
B-H Genetics	X 13023	109.9	17.7	5
Golden Acres	5556	108.9	17.9	7
Dyna-Gro	M75GB39	108.6	17.8	7
Golden Acres	3696	106.5	16.0	5
B-H Genetics	X 13010	105.6	19.1	4
Dyna-Gro	GX13661	105.3	18.2	6
Rev®	9823™	105.2	17.2	3
Golden Acres	3552	105.1	17.0	6
Rev®	9973™	104.0	18.8	4
Rev®	9883™	103.9	18.3	5
B-H Genetics	BH 5350	103.3	16.7	3
Golden Acres	737	99.2	16.9	8
Pioneer	83P17	98.6	16.9	5
B-H Genetics	X 13014	98.6	15.6	6
Mean		110.1		
LSD .1		13.2		
Error df		75		
CV		10.2		
R-square		43.3		

MAFES Delta Branch, Stoneville

Crop Summary

Sorghum plots were planted into a stale seedbed with adequate moisture for germination. Planting was delayed somewhat due to frequent spring rains. All plots emerged to a suitable stand. Harvest was delayed a couple of weeks due to rain.

Soil type	**Sharkey clay**
Soil PH	**7.1**
Soil fertility	**P=H; K=H**
Fertilizer added	**Sidedress — N @ 120 lb/A (32% UAN)**
Herbicide applications	**Preemergence — Lexar @ 2 qt/A and Roundup Powermax @ 24 oz/A on May 16** **Postemergence — Atrazine @ 1 qt/A plus crop oil concentrate on June 27**
Insecticide applications	**Karate @ 1.92 oz/A on August 8**
Previous crop	**Soybeans**
Planting date	**May 31**
Harvest date	**October 22**

Rainfall Summary

	Inches
May	**1.15**
June	**3.13**
July	**1.37**
August	**1.27**
September	**6.09**
October	**5.20**
Total	**18.21**

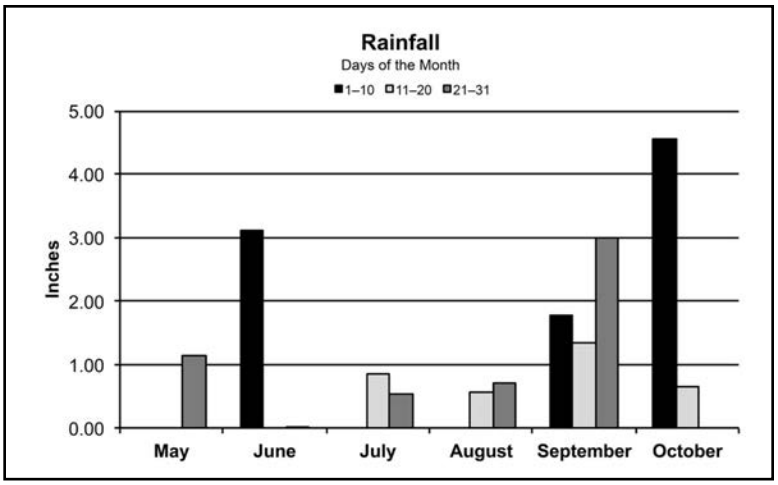

Table 4. Performance results for 26 hybrids grown without irrigation at Delta Branch Experiment Station, Stoneville, 2013.

Brand	Hybrid	Yield	Moisture	Head exertion
		bu/A	*%*	*in*
Dyna-Gro	765B	90.4	12.3	4
Pioneer	83P99	90.3	14.7	3
Rev®	9562™	90.2	14.0	4
Dyna-Gro	GX13661	87.9	10.7	4
Dyna-Gro	M77GB52	87.8	11.3	7
Golden Acres	3696	87.7	9.8	4
Golden Acres	5556	86.5	10.0	6
Dekalb	DKS 54-00	86.1	11.4	4
Pioneer	84P80	86.1	11.3	3
Pioneer	83P17	86.0	10.6	3
Golden Acres	5613	85.3	9.8	8
Rev®	9823™	84.8	10.7	5
B-H Genetics	BH 5566	84.4	10.6	4
Rev®	782™	81.1	9.5	5
Golden Acres	3552	79.2	15.1	6
Rev®	9924™	78.5	13.1	4
B-H Genetics	BH 5350	78.5	12.8	3
Dyna-Gro	M75GB39	76.7	14.3	4
B-H Genetics	X 13010	75.3	11.9	4
Rev®	9883™	75.2	14.9	3
Golden Acres	737	72.8	11.1	5
Rev®	9803™	72.7	12.4	4
B-H Genetics	X 13023	68.1	8.6	5
B-H Genetics	X 13014	59.8	8.9	4
Rev®	9794™	59.3	8.9	3
Rev®	9973™	38.3	8.7	4
Mean		78.8		
LSD .1		12.7		
Error df		75		
CV		13.8		
R-square		62		

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