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Mississippi Grain Sorghum

HYBRID TRIALS, 2014

MAFES

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NOTICE TO USER

This Mississippi Agricultural and Forestry Experiment Station information bulletin is a summary of research conducted under project number MIS 1414 at locations shown on the map on the second page. It is intended for colleagues, cooperators, and sponsors. The interpretation of data presented in this report may change after additional experimentation. Information included is not to be construed as a recommendation for use or as an endorsement of a specific product by Mississippi State University or the Mississippi Agricultural and Forestry Experiment Station.

This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station research program. Joint sponsorship by the organizations listed on page 2 is gratefully acknowledged.

Trade names of commercial products used in this report are included only for clarity and understanding. All available names (i.e., trade names, chemical names, etc.) of products used in this research project are listed on page 2.

Mississippi Grain Sorghum Hybrid Trials, 2014

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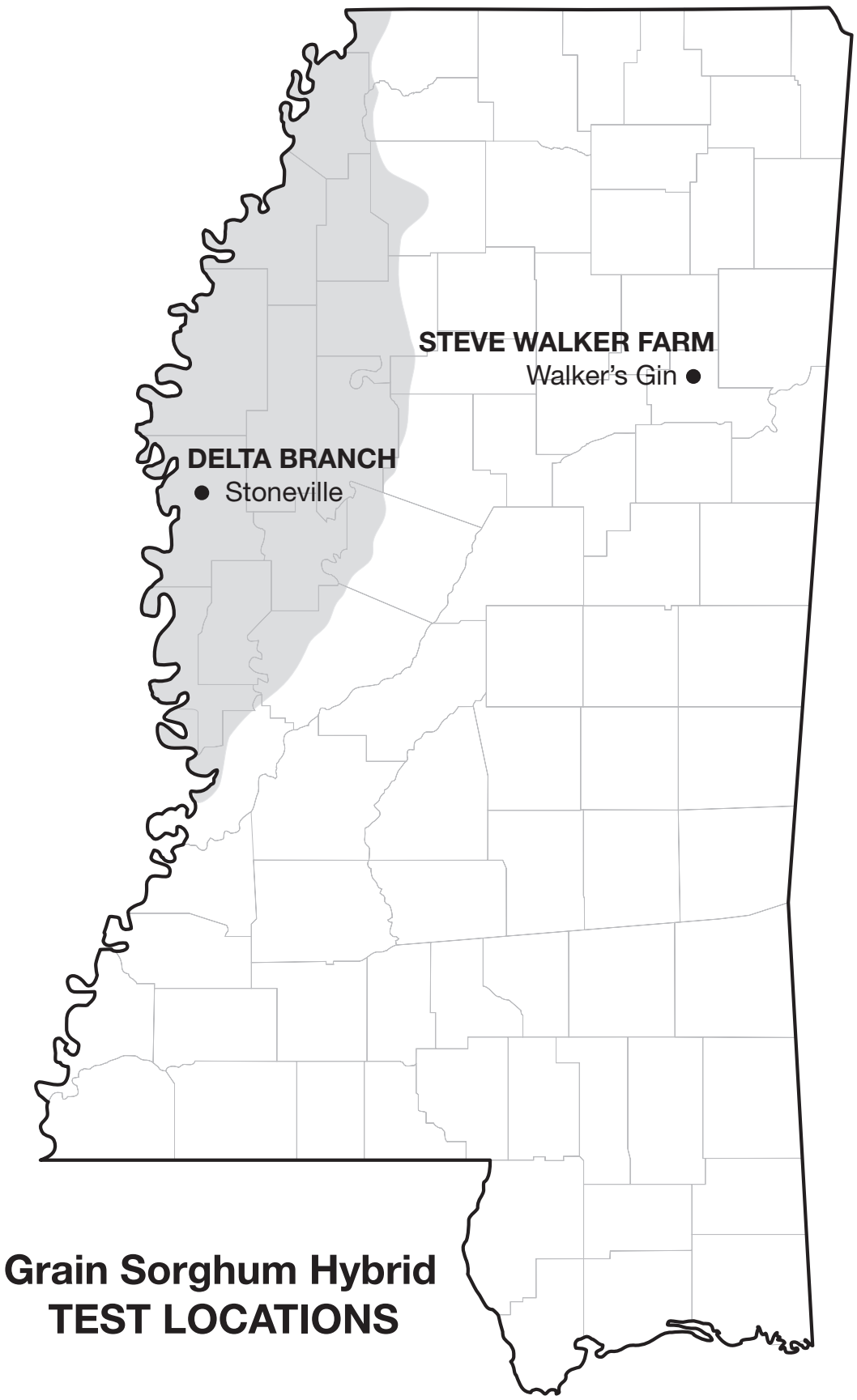
Our website address is ***mafes.msstate.edu/variety-trials***.



Grain Sorghum Hybrid TEST LOCATIONS

Mississippi Grain Sorghum Hybrid Trials, 2014

PROCEDURES

Trials were conducted on Experiment Station land and on grower-cooperator fields 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 38-inch-wide, 15-foot-long twin rows. Weeds were controlled by cultivation and/or herbicides. Only herbicides currently registered for use on grain sorghum 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.

Grain Sorghum Performance Measurements

Yield: An Almaco 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: This measurement is the average distance in inches from the flag leaf to the base of the panicle.

Grain Moisture: This measurement is expressed as a percent moisture of grain at harvest.

Plant Height: This measurement is the average height in inches from the soil surface to the top of the grain head.

Head Compactness: This variable was measured on a 1–5 scale: 1 = head short and oval; 2 = head long and slender; 3 = head elongated and oval; 4 = head elongated and rectangular; and 5 = head elongated and open.

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.

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, 2014.

Company	Brand	Hybrid[1]	Planting rate (x1000)
Terral Seed, Inc.	Rev®	9924™	85
Terral Seed, Inc.	Rev®	9782™	85
Terral Seed, Inc.	Rev®	9562™	85
Terral Seed, Inc.	Rev®	9883™	85
DuPont Pioneer	Pioneer	83P17	85
DuPont Pioneer	Pioneer	84P80	85
DuPont Pioneer	Pioneer	83P99	85
Crop Production Service	Dyna-Gro	M77GB52	95
Crop Production Service	Dyna-Gro	M77GR61	95
Crop Production Service	Dyna-Gro	765B	95
Crop Production Service	Dyna-Gro	M75GB39	95
Crop Production Service	Dyna-Gro	GX 13231	95
Sorghum Partners	Sorghum Partners	*X445*	65
Sorghum Partners	Sorghum Partners	*X446*	65
Sorghum Partners	Sorghum Partners	*X742*	65
Sorghum Partners	Sorghum Partners	NK 6638	60
Sorghum Partners	Sorghum Partners	SP 7868	60
Sorghum Partners	Sorghum Partners	X 840	60
Sorghum Partners	Sorghum Partners	K73-J6	60
Sorghum Partners	Sorghum Partners	*SPX 3678*	60
Sorghum Partners	Sorghum Partners	*SPX 3680*	60
Sorghum Partners	Sorghum Partners	*SPX 3675*	60
Sorghum Partners	Sorghum Partners	*SPX 3550*	60

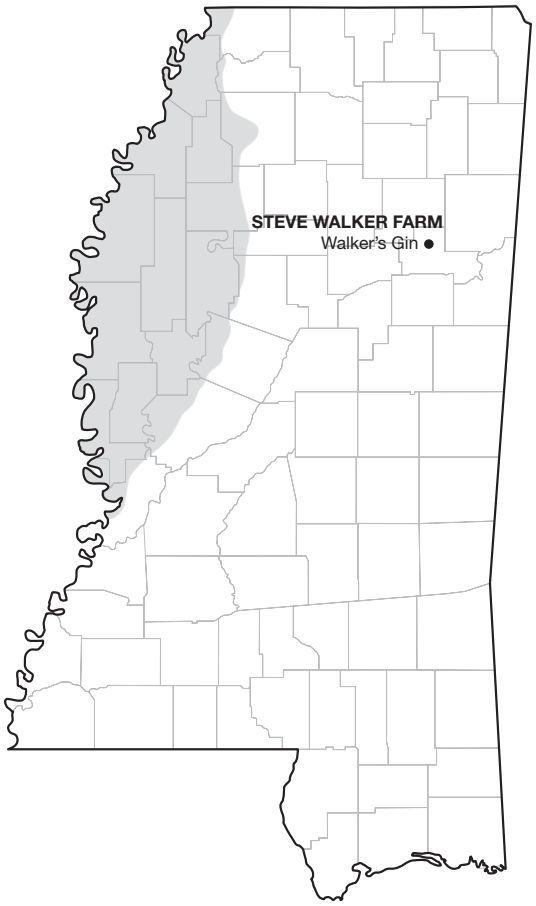
[1]Hybrid in italics denotes an experimental entry.

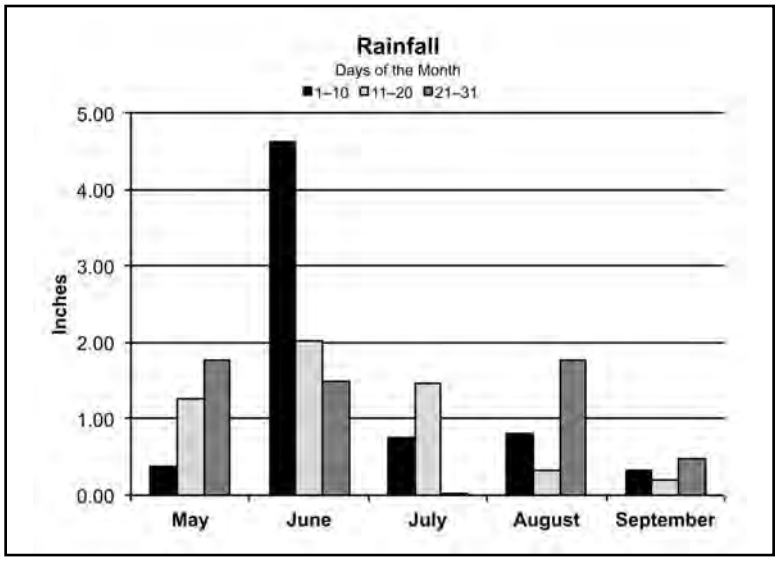
STEVE WALKER FARM, WALKER'S GIN

Crop Summary

The sorghum plots were planted into a stale seedbed with adequate moisture for germination. The plots quickly emerged to a good stand. Growing conditions throughout the season were very favorable with ample rainfall and mild temperatures throughout. During the latter part of the growing season, large numbers of white sugarcane aphids began to build in the field where the plots were located. These insects were controlled with two timely applications of Transform, and harvest was completed in a timely manner.

Planting date . . . . . **May 5**
Harvest date . . . . . **September 8**
Soil type . . . . . **Mathiston silt loam**
Soil pH **5.8**
Soil fertility . . . . . **P= H, K= H+**
Fertilizer added . . . . . **Poultry litter @ 1.5 ton/A on May 12 and N @ 92 lb/A (Urea) on May 26**
Herbicide applications . . . . . **Preemergence — Lexar @ 2 qt/A on May 5**
Postemergence — Atrazine @ 1 qt/A and Facet @ 1 qt/A; Glyphosate @ 40 oz/A on August 23 (dessicant)
Insecticide applications . . . . . **Transform @ 1 oz/A and Prevathon @ 16 oz/A on July 16**
Transform @ 1.5 oz/A on August 12
Previous crop . . . . . **Soybeans**





Rainfall Summary

	Inches
May	3.39
June	8.14
July	2.22
August	2.92
September	1.02
Total	17.69

Table 2. Performance results for 23 hybrids grown without irrigation at Steve Walker Farm, Walker's Gin, 2014.

Brand	Hybrid[1]	2014 yield	2-year average	3-year[2] average	Plant height	Head exertion	Head compactness	Moisture content
		bu/A	*bu/A*	*bu/A*	*in*	*in*	*1-5*	*%*
Pioneer	83P17	108.6	103.6	—	57	3	3	15.4
REV®	9883™	98.6	101.3	—	59	3	3	14.8
REV®	9782™	97.3	105.3	—	52	8	3	13.8
Pioneer	84P80	90.9	108.8	—	56	3	5	14.1
REV®	9924™	90.3	101.0	—	58	8	3	14.8
Sorghum Partners	*X742*	89.7	—	—	53	5	2	13.8
Dyna-Gro	*GX13231*	87.9	—	—	53	3	5	13.8
Dyna-Gro	M77GB52	87.8	100.6	—	54	4	3	14.5
Pioneer	83P99	87.4	104.5	—	50	4	2	14.5
Dyna-Gro	M77GR61	87.1	61.0	—	61	5	2	14.0
Sorghum Partners	SP 7868	85.1	—	—	53	8	2	15.7
Sorghum Partners	*X445*	82.9	—	—	49	7	2	14.3
Dyna-Gro	765B	82.7	97.9	—	61	9	2	15.0
Sorghum Partners	NK 6638	82.6	—	—	54	3	5	14.4
REV®	9562™	82.0	98.0	—	55	4	3	14.5
Sorghum Partners	*SPX 3550*	77.4	—	—	39	3	3	13.5
Sorghum Partners	*SPX 3675*	76.3	—	—	51	5	3	12.4
Sorghum Partners	*X840*	74.7	—	—	67	8	2	16.0
Sorghum Partners	*SPX 3680*	73.0	—	—	49	4	3	13.7
Sorghum Partners	*SPX 3678*	71.7	—	—	56	7	3	13.2
Sorghum Partners	K73-76	71.2	—	—	54	9	3	14.0
Dyna-Gro	M75GB39	59.7	84.1	—	60	8	1	14.2
Sorghum Partners	*X446*	55.7	—	—	46	4	2	14.4
Mean		82.6						
LSD		11.5						
Error df		66						
CV		11.7						
R sq		68.3						

[1]Hybrid in italics denotes an experimental entry.
[2]No 3-year averages

MAFES DELTA BRANCH, STONEVILLE

Data Not Reported Due to Poor Stand

The sorghum plots were planted on May 13 into a stale seedbed with adequate moisture for germination. Heavy rains after planting caused temporary flooding, resulting in poor stands. After evaluating the poor stand, we determined it was necessary to replant the trial. The plots were planted again on June 23 and once again received substantially heavy rainfall before all the plots emerged to a good stand. Once again the heavy rains resulted in less-than-desired stands. Therefore, harvest data and hybrid yield performance will not be published for this location.

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