



Mississippi
Grain Sorghum

HYBRID TRIALS, 2016

MISSISSIPPI'S OFFICIAL VARIETY TRIALS



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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, 2016

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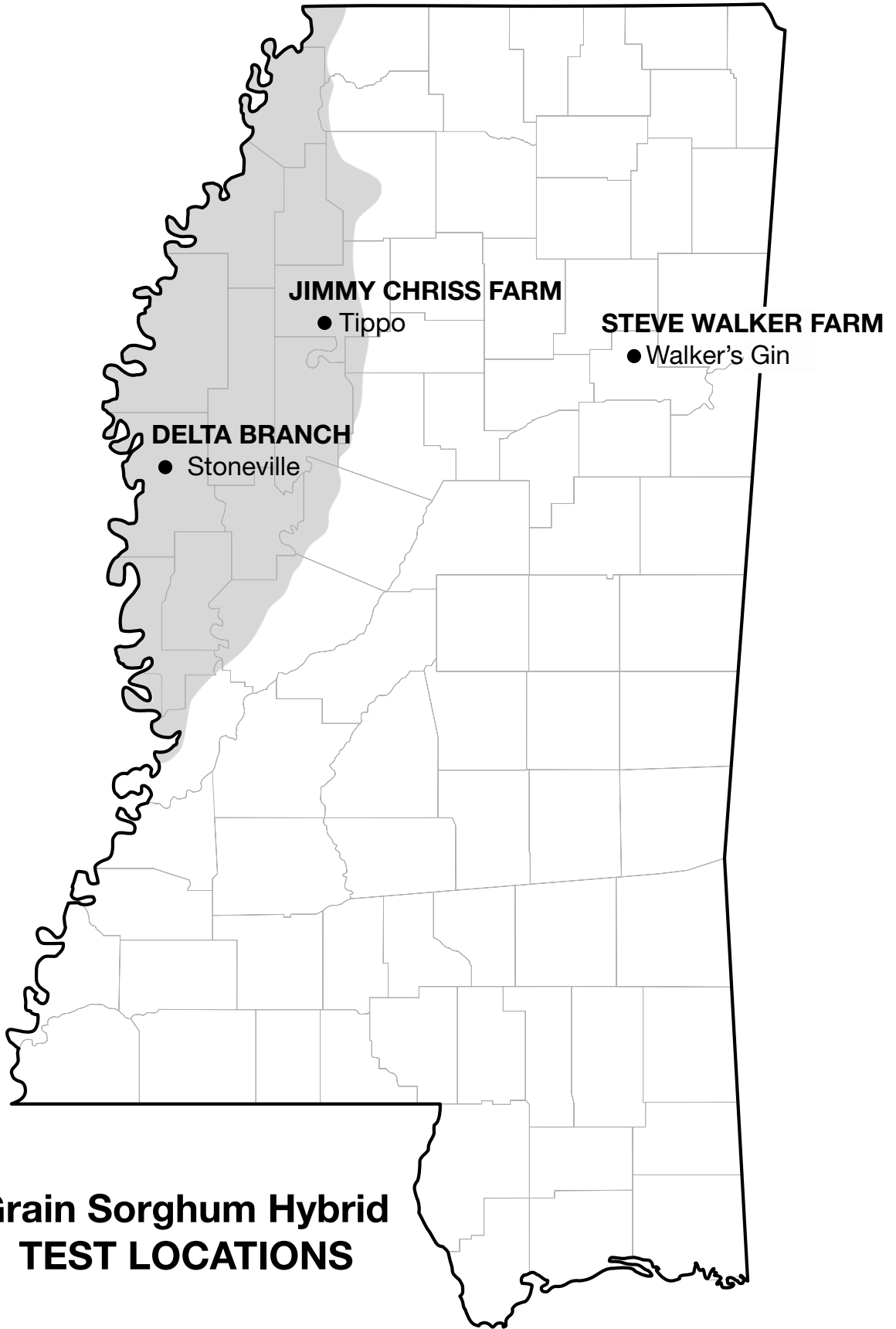
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Our website address is mafes.msstate.edu/variety-trials.



**Grain Sorghum Hybrid
TEST LOCATIONS**

Mississippi Grain Sorghum Hybrid Trials, 2016

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 various row patterns, depending on the location. Plot sizes were one of the following: (1) two 30-inch-wide, 16-foot-long rows; (2) two 40-inch-wide, 19-foot-long rows; or (3) three 19-inch-wide, 18-foot-long rows. These planting patterns were used to accommodate the producer at each location.

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 gener-

ally 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, 2016.

Company	Brand	Hybrid	Nonirrigated planting rate (x1000)	Irrigated planting rate (x1000)
Sorghum Partners	Sorghum Partners	SP7715	60	150
Sorghum Partners	Sorghum Partners	SP78M30	50	100
Sorghum Partners	Sorghum Partners	NK6638	60	150
Sorghum Partners	Sorghum Partners	SP7868	60	150
Sorghum Partners	Sorghum Partners	CHR0L2042	60	150
Sorghum Partners	Sorghum Partners	CHR0L0029	60	150
Dulaney Seed Inc.	AgVenture	Av6R71	100	100
Dulaney Seed Inc.	AgVenture	Av7R01	120	120
Dulaney Seed Inc.	AgVenture	Av7R21	120	120
Crop Production Services	Dyna-Gro	M60GB31	77	93
Crop Production Services	Dyna-Gro	M75GR47	77	93
Crop Production Services	Dyna-Gro	GX15371	77	93
Crop Production Services	Dyna-Gro	GX15672	77	93
Crop Production Services	Dyna-Gro	GX15484	77	93
Crop Production Services	Dyna-Gro	GX16675	77	93
Crop Production Services	Dyna-Gro	GX16973	77	93
Terral Seed Inc.	REV	9924	85	95
Terral Seed Inc.	REV	9782	85	95
Terral Seed Inc.	REV	9562	85	95
Monsanto	DEKALB	DKS54-00	90	90
Monsanto	DEKALB	DKS53-67	90	90
Monsanto	DEKALB	DKS53-53	90	90
Monsanto	DEKALB	DKS51-01	90	90
Monsanto	DEKALB	DKS49-45	90	90
DuPont Pioneer	Pioneer	84P80	90	90
DuPont Pioneer	Pioneer	83P99	90	90
DuPont Pioneer	Pioneer	83P17	90	90

Table 2. 2016 yield summary of grain sorghum hybrid trials in Mississippi.

Brand	Hybrid¹	Stoneville	Tippo	Delta average	Walker's Gin	Overall average
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>
AgVenture	Av7R01	95.6	72.9	84.3	99.0	89.2
AgVenture	Av7R21	103.5	75.2	89.4	97.9	92.2
AgVenture	Av6R71	97.2	87.3	92.2	124.1	102.9
DEKALB	DKS49-45	106.6	71.5	89.1	120.5	99.5
DEKALB	DKS51-01	95.7	86.2	90.9	112.4	98.1
DEKALB	DKS53-53	110.3	72.8	91.5	120.2	101.1
DEKALB	DKS53-67	99.4	58.5	79.0	134.0	97.3
DEKALB	DKS54-00	104.9	69.6	87.2	118.6	97.7
Dyna-Gro	GX15371 *	80.9	91.7	86.3	136.7	103.1
Dyna-Gro	GX15484 *	101.3	111.2	106.2	116.0	109.5
Dyna-Gro	GX15672 *	69.2	80.1	74.6	116.1	88.5
Dyna-Gro	GX16675 *	79.8	93.6	86.7	126.7	100.0
Dyna-Gro	GX16973 *	117.9	108.0	112.9	118.1	114.6
Dyna-Gro	M60GB31	78.9	116.5	97.7	108.5	101.3
Dyna-Gro	M75GR47	79.3	76.8	78.1	87.7	81.3
Pioneer	83P17	107.1	120.1	113.6	133.7	120.3
Pioneer	83P99	108.0	91.6	99.8	117.5	105.7
Pioneer	84P80	99.2	112.5	105.9	134.3	115.4
REV	9562	106.7	85.6	96.2	86.9	93.1
REV	9782	99.2	86.5	92.8	95.8	93.8
REV	9924	92.4	98.6	95.5	111.2	100.7
Sorghum Partners	CHROL0029	74.9	119.5	97.2	115.6	103.4
Sorghum Partners	CHROL2042	85.3	122.9	104.1	100.1	102.8
Sorghum Partners	NK6638	83.4	84.8	84.1	91.8	86.7
Sorghum Partners	SP7715	94.6	113.2	103.9	124.8	110.9
Sorghum Partners	SP7868	89.9	91.5	90.7	59.9	80.4
Sorghum Partners	SP78M30	75.2	94.2	84.7	106.4	91.9
Mean		93.4	92.3	92.85	111.6	99.1
LSD		13.7	11.4		14	
Error df		78	78		78	
CV		12.4	10.5		10.7	
R ²		62.2	82.3		75.6	

¹Hybrid followed by an asterisk indicates an experimental entry.

Table 3. Two-year summary of grain sorghum hybrid trials in Mississippi.

Brand	Hybrid	Stoneville	Tippo	Walker's Gin	Overall average
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>
AgVenture	Av7R01	108.2	78.7	131.5	106.1
AgVenture	Av7R21	114.7	90.9	126.4	110.7
AgVenture	Av6R71	90.9	87.9	136.5	105.1
Pioneer	83P17	108.7	117.9	152.0	126.2
Pioneer	83P99	109.7	75.9	144.5	110.1
Pioneer	84P80	97.0	93.1	145.6	111.9
REV	9562	110.0	78.8	121.0	103.3
REV	9782	116.4	84.0	126.3	108.9
REV	9924	99.8	84.1	131.5	105.1
Sorghum Partners	NK6638	93.9	92.5	113.3	99.9
Sorghum Partners	SP7715	98.7	118.3	136.9	118.0
Sorghum Partners	SP7868	98.1	77.0	94.2	89.8
Overall Mean		103.9	89.9	130.0	107.9

Table 4. Three-year average of grain sorghum hybrid trials in Mississippi.

Brand	Hybrid	Stoneville ¹	Tippo ¹	Walker's Gin
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>
Pioneer	83P17	—	—	137.5
Pioneer	83P99	—	—	125.5
Pioneer	84P80	—	—	127.4
REV	9562	—	—	108.0
REV	9782	—	—	116.6
REV	9924	—	—	117.8
Sorghum Partners	NK6638	—	—	103.0
Sorghum Partners	SP7868	—	—	91.2
Overall Mean				115.9
¹ No 3-year average.				

Table 5. Performance results for 27 hybrids grown without irrigation at Jimmy Chriss Farm, Tippo, 2016.

Brand	Hybrid ¹	2016 yield	2-year average	3-year average ²	Plant height	Head exertion	Head compactness	Moisture content
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>in</i>	<i>in</i>	<i>(1-5)</i>	<i>%</i>
Sorghum Partners	CHROL2042	122.9	—	—	54	1	1	11.6
Pioneer	83P17	120.1	117.9	—	53	4	1	11.8
Sorghum Partners	CHROL0029	119.5	—	—	53	1	1	11.4
Dyna-Gro	M60GB31	116.5	—	—	51	1	3	11.2
Sorghum Partners	SP7715	113.2	118.3	—	53	4	1	11.8
Pioneer	84P80	112.5	93.1	—	47	1	2	11.1
Dyna-Gro	GX15484 *	111.2	—	—	48	1	1	11.7
Dyna-Gro	GX16973 *	108.0	—	—	53	1	1	11.7
REV	9924	98.6	84.1	—	53	1	2	11.3
Sorghum Partners	SP78M30	94.2	—	—	51	1	1	11.5
Dyna-Gro	GX16675 *	93.6	—	—	58	3	1	12.6
Dyna-Gro	GX15371 *	91.7	—	—	51	2	2	11.5
Pioneer	83P99	91.6	75.9	—	43	1	1	11.5
Sorghum Partners	SP7868	91.5	77.0	—	54	2	2	11.5
AgVenture	Av6R71	87.3	87.9	—	52	2	3	11.6
REV	9782	86.5	84.0	—	51	3	2	11.9
DEKALB	DKS51-01	86.2	—	—	54	4	3	11.2
REV	9562	85.6	78.8	—	39	1	2	11.3
Sorghum Partners	NK6638	84.8	92.5	—	45	3	1	11.0
Dyna-Gro	GX15672 *	80.1	—	—	47	1	1	11.8
Dyna-Gro	M75GR47	76.8	—	—	48	2	3	11.2
AgVenture	Av7R21	75.2	90.9	—	33	1	1	11.9
AgVenture	Av7R01	72.9	78.7	—	46	3	1	10.9
DEKALB	DKS53-53	72.8	—	—	42	3	2	11.9
DEKALB	DKS49-45	71.5	—	—	48	5	2	11.2
DEKALB	DKS54-00	69.6	—	—	50	5	1	11.6
DEKALB	DKS53-67	58.5	—	—	46	5	1	11.9
Mean		92.3						
LSD		11.4						
Error df		78						
CV		10.5						
R ²		82.3						

¹Hybrid followed by an asterisk indicates an experimental entry.

²No 3-year average.

Table 6. Performance results of 27 hybrids grown with furrow irrigation at MAFES Delta Branch, Stoneville, 2016.

Brand	Hybrid ¹	2016 yield	2-year average	3-year average ²	Plant height	Head exertion	Head compactness	Moisture content
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>in</i>	<i>in</i>	<i>(1-5)</i>	<i>%</i>
Dyna-Gro	GX16973 *	117.9	—	—	55	3	1	13.6
DEKALB	DKS53-53	110.3	—	—	52	4	1	14.7
Pioneer	83P99	108.0	109.7	—	63	3	2	13.0
Pioneer	83P17	107.1	108.7	—	64	2	2	13.3
REV	9562	106.7	110.0	—	59	3	1	15.5
DEKALB	DKS49-45	106.6	—	—	59	4	3	11.6
DEKALB	DKS54-00	104.9	—	—	65	5	3	16.0
AgVenture	Av7R21	103.5	114.7	—	53	2	1	12.7
Dyna-Gro	GX15484 *	101.3	—	—	55	4	1	14.5
DEKALB	DKS53-67	99.4	—	—	51	2	2	13.1
Pioneer	84P80	99.2	97.0	—	61	4	2	14.7
REV	9782	99.2	116.4	—	57	6	3	13.1
AgVenture	Av6R71	97.2	90.9	—	54	4	2	12.9
DEKALB	DKS51-01	95.7	—	—	56	5	3	14.3
AgVenture	Av7R01	95.6	108.2	—	75	8	1	16.0
Sorghum Partners	SP7715	94.6	98.7	—	57	7	1	12.5
REV	9924	92.4	99.8	—	69	4	2	11.8
Sorghum Partners	SP7868	89.9	98.1	—	57	7	1	12.1
Sorghum Partners	CHROL2042	85.3	—	—	62	5	1	15.3
Sorghum Partners	NK6638	83.4	93.9	—	49	5	2	11.1
Dyna-Gro	GX15371 *	80.9	—	—	61	3	2	13.8
Dyna-Gro	GX16675 *	79.8	—	—	49	4	4	17.3
Dyna-Gro	M75GR47	79.3	—	—	55	4	1	15.4
Dyna-Gro	M60GB31	78.9	—	—	60	5	2	15.0
Sorghum Partners	SP78M30	75.2	—	—	54	2	2	13.5
Sorghum Partners	CHROL0029	74.9	—	—	56	2	1	15.9
Dyna-Gro	GX15672 *	69.2	—	—	48	4	1	13.7
Mean		93.4						
LSD		13.7						
Error df		78						
CV		12.4						
R ²		62.2						

¹Hybrid followed by an asterisk indicates an experimental entry.
²No 3-year average.

Table 7. Performance results for 27 hybrids grown without irrigation at Steve Walker Farm, Walker's Gin, 2016.

Brand	Hybrid ¹	2016 yield	2-year average	3-year average	Plant height	Head exertion	Head compactness	Moisture content
		<i>bu/A</i>	<i>bu/A</i>	<i>bu/A</i>	<i>in</i>	<i>in</i>	<i>(1-5)</i>	<i>%</i>
Dyna-Gro	GX15371 *	136.7	—	—	45	7	2	11.3
Pioneer	84P80	134.3	145.6	127.4	44	8	3	10.7
DEKALB	DKS53-67	134.0	—	—	43	8	2	11.0
Pioneer	83P17	133.7	152.0	137.5	52	2	3	12.5
Dyna-Gro	GX16675 *	126.7	—	—	50	7	1	11.3
Sorghum Partners	SP7715	124.8	136.9	—	41	2	1	11.6
AgVenture	Av6R71	124.1	136.5	—	42	3	2	10.9
DEKALB	DKS49-45	120.5	—	—	44	1	4	10.8
DEKALB	DKS53-53	120.2	—	—	45	9	3	11.2
DEKALB	DKS54-00	118.6	—	—	44	7	2	11.1
Dyna-Gro	GX16973 *	118.1	—	—	47	1	1	10.9
Pioneer	83P99	117.5	144.5	125.5	40	4	2	10.7
Dyna-Gro	GX15672 *	116.1	—	—	40	7	1	10.9
Dyna-Gro	GX15484 *	116.0	—	—	40	1	2	11.2
Sorghum Partners	CHROL0029	115.6	—	—	44	3	1	11.1
DEKALB	DKS51-01	112.4	—	—	39	3	2	10.4
REV	9924	111.2	131.5	117.8	40	1	2	11.0
Dyna-Gro	M60GB31	108.5	—	—	39	1	4	10.8
Sorghum Partners	SP78M30	106.4	—	—	42	7	2	10.8
Sorghum Partners	CHROL2042	100.1	—	—	40	2	2	11.6
AgVenture	Av7R01	99.0	131.5	—	38	2	2	10.8
AgVenture	Av7R21	97.9	126.4	—	38	1	2	11.7
REV	9782	95.8	126.3	116.6	43	7	3	11.9
Sorghum Partners	NK6638	91.8	113.3	103.0	37	3	2	10.2
Dyna-Gro	M75GR47	87.7	—	—	44	3	3	10.3
REV	9562	86.9	121.0	108.0	35	2	3	11.1
Sorghum Partners	SP7868	59.9	94.2	91.2	49	4	1	11.4
Mean		111.6						
LSD		14						
Error df		78						
CV		10.7						
R ²		75.6						

¹Hybrid followed by an asterisk indicates an experimental entry.



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