Grain Sorghum
Hybrid Tests in Tennessee

2007

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Variety test results are posted on UT's website at:

http://varietytrials.tennessee.edu/
and
www.utcrops.com

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County Standard Grain Sorghum Tests

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County	Agent	Producer
Dyer	**Tim Campbell**	**Jay & Ted Johnson**
Henry	**Ken Goddard**	**Tosh Farms**
Lake	**Greg Allen**	**Hopper Farms**
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2007 PERFORMANCE OF GRAIN SORGHUM HYBRIDS IN TENNESSEE RESEARCH AND EDUCATION CENTERS & COUNTY STANDARD TESTS

Experimental Procedures:

The grain sorghum variety trial was conducted in each of the physiographic regions of the state. The trial was conducted at the East Tennessee, Knoxville; Highland Rim, Springfield; and Milan Research and Education Centers (REC). The trial contained 14 hybrids at each location. The tests were fertilized with 90 pounds of nitrogen per acre. A portion of the nitrogen was applied prior to seeding and the remainder was applied as a side-dress. The plot size was two rows, 30 feet in length with 30 inch row spacing. Plots were replicated three times at each location in a randomized complete block design. Plots were seeded at the rate of approximately 87,600 seed per acre (approx. 7 lbs/a). Table 1 contains the test location information on planting and harvest dates and soil types. Tables 2 and 3 contain the **Research and Education Center Test** data for 2007. Tables 4 and 5 contain the two-year data, Tables 6 and 7 contain the three-year data. The **County Standard Test** data on eight hybrids from seven counties are reported in Table 8. Table 9 contains the data on the grain sorghum hybrids that were common in the County and REC tests and Table 10 contains the phenotypic trait data for the grain sorghum hybrids tested in 2007. The contact information for sorghum seed companies is listed in Table 11.

Interpretation of Data:

The tables on the following pages have been prepared with the entries listed in order of performance, the highest-yielding entry being listed first. **All yields presented have been adjusted to 14% moisture.** At the bottom of the tables, **LSD** values stand for **Least Significant Difference**. The mean yields of any two varieties being compared must differ by at least the amount shown in order to be considered different in yielding ability at the 5% level of probability of significance. For example, given that the LSD for a test is 850 lbs/a and the mean yield of Hybrid A was 4200 lbs/a and the mean yield of Hybrid B was 5000 lbs/a, then the two hybrids are not statistically different in yield because the difference of 800 lbs/a is less than the minimum of 850 lbs/a required for them to be significant. Similarly, if the average yield of Hybrid C was 5900 lbs/a then it is significantly higher yielding than both Hybrid B and Hybrid A, because the difference between B and C (900 lbs) and the difference between A and C (1700 lbs) exceeds the LSD value of 850 lbs.

Also, the **coefficient of variation (C.V.)** values are shown at the bottom of each table. This value is a measure of the error variability found within each experiment. It is the percentage that the square root of error mean square is of the overall test mean yield at that location. For example, a C.V. of 10% indicates that the size of the error variation is about 10% of the size of the test mean. Similarly, a C.V. of 30% indicates that the size of the error variation is nearly one-third as large as the test mean. A goal in conducting each yield test is to keep the C.V. as low as possible, preferably below 20%.

Growing Season: The 2007 growing season was one characterized by extremes. A late frost and very low temperatures in the first portion of April caused wheat and corn crop damage. The remainder of the season was characterized by record setting heat and drought which lowered yields. Daytime temperatures were high (several 100+ F days) during flowering and seed fill periods at some locations.

Table 1. Location information from Research and Education Centers where the grain sorghum hybrid tests were conducted in 2007.

Research & Education Center	Location	Planting Date	Harvest Date	Seeding Rate	Soil Type
East Tennessee	Knoxville	May 8, 2007	September 20, 2007	87,600	Stasser Silt Loam
Highland Rim	Springfield	May 21, 2007	October 2, 2007	87,600	Hamblen Silt Loam
Milan	Milan	May 8, 2007	September 4, 2007	87,600	Grenada Silt Loam

Table 2. Mean yields of 14 grain sorghum hybrids evaluated in three environments in Tennessee during 2007.

Brand	Hybrid	Avg. Yield† ± Std. Err. (n=3)	Avg. Yield† ± Std. Err. (n=3)	Knoxville	Springfield	Milan
		bu/a	---------- lbs/a----------			
Asgrow	A603	98 ± 5	5385 ± 274	6741	2881	6534
Dekalb	DKS53-67	97 ± 5	5329 ± 274	5954	3613	6420
Pioneer	84G62	93 ± 5	5134 ± 274	6200	3195	6007
Pioneer	83G66	93 ± 5	5102 ± 274	6314	2936	6055
Pioneer	82G10	89 ± 5	4915 ± 274	5725	3204	5816
DeKalb	DKS53-11	89 ± 5	4874 ± 274	4907	3306	6409
Crow's	590	88 ± 5	4825 ± 274	5571	2616	6290
Asgrow	A571	87 ± 5	4806 ± 274	5756	2763	5898
DeKalb	DKS37-07	87 ± 5	4780 ± 274	5877	2876	5586
DeKalb	DKS54-00	87 ± 5	4764 ± 274	5328	2577	6388
Dyna-Gro	772B	87 ± 5	4758 ± 274	6577	3016	4682
Dyna-Gro	754B	85 ± 5	4693 ± 274	6564	2810	4704
Dyna-Gro	751B	83 ± 5	4579 ± 297	5186	1859	6693
Dyna-Gro	780B	82 ± 5	4528 ± 274	5749	1985	5849
Avg. (lbs/a)		**89**	**4878**	**5889**	**2831**	**5938**
L.S.D..05 (lbs/a)		**14**	**774**	**1742**	**523**	**1581**
C.V. (%)		**16.8**	**16.8**	**17.6**	**11.0**	**15.6**

† All yields adjusted to 14%; lbs / ac ÷ 55 = bushels per acre

Table 3. Overall mean yields and agronomic characteristics of 14 grain sorghum hybrids evaluated in three environments in Tennessee during 2007.

Brand	Hybrid	Avg. Yield ± Std. Err. (n=3)	Moisture at Harvest (n=3)	Test Weight (n=3)	Head Blast† (n=1)	Height (n=3)	Lodging‡ (n=2)	Bird Damage§ (n=2)	Head Type ¶ (n=1)
		bu/a	%	lbs/bu	score	in.	score	score	score
Asgrow	A603	98 ± 5	13.3	57.3	1.7	48	1.1	1.4	1.7
Dekalb	DKS53-67	97 ± 5	13.7	58.4	1.5	48	1.0	1.5	5.0
Pioneer	84G62	93 ± 5	13.3	57.6	1.7	47	1.1	1.8	1.0
Pioneer	83G66	93 ± 5	13.2	56.9	1.8	51	1.0	1.4	2.7
Pioneer	82G10	89 ± 5	14.0	57.9	2.0	51	1.0	1.6	2.3
DeKalb	DKS53-11	89 ± 5	13.7	57.9	1.5	50	1.0	1.4	1.8
Crow's	590	88 ± 5	13.2	56.6	1.5	44	1.0	1.3	2.2
Asgrow	A571	87 ± 5	13.3	55.9	1.7	47	1.0	1.6	4.3
DeKalb	DKS37-07	87 ± 5	13.3	58.2	1.5	48	1.0	1.8	4.3
DeKalb	DKS54-00	87 ± 5	13.3	55.8	1.7	49	1.0	1.7	2.2
Dyna-Gro	772B	87 ± 5	13.2	57.1	1.8	47	1.0	1.8	3.0
Dyna-Gro	754B	85 ± 5	13.4	55.9	1.7	44	1.0	2.0	1.0
Dyna-Gro	751B	83 ± 5	13.5	57.8	1.7	47	1.4	1.5	2.2
Dyna-Gro	780B	82 ± 5	13.3	58.7	1.7	50	1.3	1.8	4.8
	Average	**89**	**13.4**	**57.3**	**1.7**	**48**	**1.1**	**1.6**	**2.8**

Bushel weight of No. 2 sorghum equals 55 lbs.

† Head blast = 1 to 5 scale; where 1 = 95+% of florets on the head are filled with grain and no mold; 5 = 95+% of florets unfilled grain or moldy or both.

‡ Lodging = 1 to 5 scale; where 1 = 95% of plants errect; 2.5 = ~50% of plants leaning at an angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

§ Bird damage = 1 to 5 scale; where 1 = no bird feeding; 5 = 95+% of grain removed by birds.

¶ Head Type - 1 to 5 scale; where 1 = compact head; 5 = open head.

Table 4. Mean yields of six grain sorghum hybrids evaluated in three environments for two years (2006-2007) in Tennessee.

Brand	Hybrid	Avg. Yield† ± Std. Err. (n=6)	Avg. Yield† ± Std. Err. (n=6)	Knoxville	Springfield	Milan
		bu/a	---------- lbs/a----------			
Pioneer	84G62	101 ± 3	5531 ± 164	7771	2938	5884
DeKalb	DKS37-07	96 ± 3	5297 ± 164	6771	3402	5717
Dyna-Gro	780B	93 ± 3	5099 ± 164	7134	2500	5665
DeKalb	DKS54-00	93 ± 3	5093 ± 164	7043	2299	5938
Asgrow	A571	92 ± 3	5066 ± 164	6957	2761	5482
Dyna-Gro	751B	90 ± 3	4973 ± 172	6792	2300	5826
Avg. (lbs/a)		**94**	**5177**	**7078**	**2700**	**5752**
L.S.D..05 (lbs/a)		**11**	**608**	**1199**	**904**	**1094**
C.V. (%)		**13.5**	**13.5**	**11.0**	**20.9**	**12.8**

† All yields adjusted to 14%; lbs / ac ÷ 55 = bushels per acre

Table 5. Overall mean yields and agronomic characteristics of six grain sorghum hybrids evaluated in three environments for two years (2006-2007) in Tennessee.

Brand	Hybrid	Avg. Yield ± Std. Err. (n=6)	Moisture at Harvest (n=6)	Test Weight (n=6)	Head Blast† (n=1)	Height (n=6)	Lodging‡ (n=4)	Bird Damage§ (n=3)	Headtype¶ (n=3)
		bu/a	%	lbs/bu	score	in.	score	score	score
Pioneer	84G62	101 ± 3	14.0	57.6	1.7	49	1.0	1.7	1.9
DeKalb	DKS37-07	96 ± 3	13.6	57.8	1.5	49	1.0	1.7	2.8
Dyna-Gro	780B	93 ± 3	13.8	58.3	1.7	53	1.2	1.7	3.4
DeKalb	DKS54-00	93 ± 3	13.7	55.5	1.7	52	1.0	1.7	2.9
Asgrow	A571	92 ± 3	13.7	55.8	1.7	50	1.0	1.6	2.7
Dyna-Gro	751B	90 ± 3	13.8	57.0	1.7	51	1.2	1.6	2.7
Average		**94**	**13.8**	**57.0**	**1.6**	**51**	**1.1**	**1.6**	**2.7**

Bushel weight of No. 2 sorghum equals 55 lbs.

† Head blast = 1 to 5 scale; where 1 = 95+% of florets on the head are filled with grain and no mold; 5 = 95+% of florets unfilled with grain or moldy or both.

‡ Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at an angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

§ Bird damage = 1 to 5 scale; where 1 = no bird feeding; 5 = 95+% of grain removed by birds.

¶ Head type = 1 to 5 scale; where 1 = compact head; 5 = open head.

Table 6. Mean yields of four grain sorghum hybrids evaluated in three environments for three years (2005-2007) in Tennessee.

Brand	Hybrid	Avg. Yield† ± Std. Err. (n=9)	Avg. Yield† ± Std. Err. (n=9)	Knoxville	Springfield	Milan
		bu/ac	---------- lbs/a----------			
Pioneer	84G62	109 ± 2	6006 ± 130	8285	3435	6298
DeKalb	DKS54-00	100 ± 3	5525 ± 152	7762	2438	6374
Dyna-Gro	780B	99 ± 2	5455 ± 134	7440	3159	5766
Dyna-Gro	751B	98 ± 2	5411 ± 134	7339	2876	6019
Avg. (lbs/a)		**102**	**5599**	**7706**	**2977**	**6114**
L.S.D..05 (lbs/a)		**11**	**585**	**1141**	**957**	**1005**
C.V. (%)		**12.3**	**12.3**	**9.7**	**19.7**	**11.7**

† All yields adjusted to 14%; lbs / ac ÷ 55 = bushels per acre

Table 7. Overall mean yields and agronomic characteristics of four grain sorghum hybrids evaluated in three environments for three years (2005-2007) in Tennessee.

Brand	Hybrid	Avg. Yield ± Std. Err. (n=9)	Moisture at Harvest (n=9)	Test Weight (n=9)	Head Blast† (n=1)	Height (n=9)	Lodging‡ (n=6)	Bird Damage§ (n=3)	Headtype¶ (n=5)
		bu/a	%	lbs/bu	score	in.	score	score	score
Pioneer	84G62	109 ± 2	14.2	58.2	1.7	51	1.0	1.7	2.2
DeKalb	DKS54-00	100 ± 3	14.2	56.6	1.7	53	1.0	1.7	2.7
Dyna-Gro	780B	99 ± 2	14.1	58.6	1.7	54	1.1	1.7	3.4
Dyna-Gro	751B	98 ± 2	14.2	57.7	1.7	53	1.1	1.6	2.9
	Average	**102**	**14.2**	**57.8**	**1.7**	**52**	**1.1**	**1.7**	**2.8**

Bushel weight of No. 2 sorghum equals 55 lbs.

† Head blast = 1 to 5 scale; where 1 = 95+% of florets on the head are filled with grain and no mold; 5 = 95+% of florets unfilled with grain or moldy or both.

‡ Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at an angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

§ Bird damage = 1 to 5 scale; where 1 = no bird feeding; 5 = 95+% of grain removed by birds.

¶ Head type = 1 to 5 scale; where 1 = compact head; 5 = open head.

Table 8. Yields of eight grain sorghum hybrids in seven County Standard Tests in Tennessee and Kentucky during 2007.†‡

MS	Hybrid	Avg. Yld	Avg. Yld	Moisture	Test Weight	Dyer	Henry	Lake	Madison	KY McCracken	REC @ Milan Gibson	Obion
		bu/a	lbs/a	%	lbs/bu	5/2 §	6/6	4/30	5/1	5/20	5/10	5/15
A	******Pioneer 84G62	125.0	6875	14.3	57.3	142	132	114	115	79	139	154
AB	Dekalb DKS53-67	119.9	6595	14.8	58.3	147	104	106	109	70	145	158
ABC	***Dekalb DKS53-11	118.6	6523	13.9	58.7	148	87	108	109	92	140	146
BCD	Crow's 590	111.5	6133	13.3	55.0	137	55	130	108	76	132	143
BCD	****Pioneer 83G66	107.1	5891	14.5	57.3	132	85	107	112	43	120	152
CD	Pioneer 82G10	106.3	5847	14.4	56.7	128	85	114	102	41	125	149
D	Dyna-Gro 751B	102.6	5643	14.8	56.3	123	87	124	84	35	113	154
D	Dyna-Gro 780B	102.2	5621	14.2	58.3	125	73	101	99	61	117	138
	Average	**111.6**	**6141**	**14.3**	**57.3**	**135**	**89**	**113**	**105**	**62**	**129**	**149**

Pounds per acre ÷ 55 = bushels per acre

MS = Hybrids that have any MS letter in common are not statistically different in yield at the 5% level of probability.

†Yields have been adjusted to 14% moisture. Each hybrid was evaluated in a large strip – plot at each location, thus each county test was considered as one replication of the test in calculating the average yield and in conducting the statistical analysis to determine significant differences (MS).

Test weight = average of three locations.

‡Data provided by Robert C. Williams, Ext. Area Specialist, Grain Crops, and extension agents in counties shown above.

§ Planting date.

*Hybrids denoted with an asterisk (*), (**), (***), (****), (*****), or (******) were in the top performing group in 2006, 2005, 2004, 2003, 2002 and/or 2001, respectively.

Table 9. Overall average yields and moistures of eight grain sorghum hybrids evaluated in county standard tests and Research and Education Center tests in Tennessee during 2007.†

		County Standard Tests			Experiment Station Tests		
Brand	**Hybrid**	**Avg. Yield (n=7)**	**Moisture (n=7)**	**Test Weight (n=3)**	**Avg. Yield (n=3)**	**Moisture (n=3)**	**Test Weight (n=3)**
		bu/a	%	lbs/bu	bu/a	%	lbs/bu
Pioneer	84G62	125	14.3	57.3	93	13.3	57.6
Dekalb	DKS53-67	120	14.8	58.3	97	13.7	58.4
DeKalb	DKS53-11	119	13.9	58.7	89	13.7	57.9
Crow's	590	111	13.3	55.0	88	13.2	56.6
Pioneer	83G66	107	14.5	57.3	93	13.2	56.9
Pioneer	82G10	106	14.4	56.7	89	14.0	57.9
Dyna-Gro	751B	103	14.8	56.3	83	13.5	57.8
Dyna-Gro	780B	102	14.2	58.3	82	13.3	58.7
Average (lbs/a)		**112**	**14.3**	**57.3**	**89**	**13.5**	**57.7**

† All yields adjusted to 14%, bushel weight of No. 2 sorghum equals 55 lbs.

Table 10. Characteristics of grain sorghum hybrids evaluated in yield tests in Tennessee during 2007.†

Brand	Hybrid	Grain Color	Maturity	Head Type	Green Bug Resistance	Released or Experimental	Comments
Asgrow	A571	Bronze	Med-Late	Open	---	R	---
Asgrow	A603	Red	Late	---	---	R	---
Crow's	590	Brown	109	---	---	R	---
DeKalb	DKS37-07	Bronze	Med-Early	---	---	R	---
DeKalb	DKS53-11	Bronze	110	Semi-Compact	C,E,I	R	For high yield environments
Dekalb	DKS53-67	Bronze	Med-Late	---	---	R	---
DeKalb	DKS54-00	Bronze	110	Semi-Compact	C,E,I	R	For high yield environments, residue proven
Dyna-Gro	751B	Bronze	105	Semi-Compact	---	R	Performace on all soil types; consistent high yields
Dyna-Gro	754B	Red	108	---	---	R	Very good drought and heat tolerant
Dyna-Gro	772B	Bronze	118	---	---	R	Excellent stalk strength and stress tolerance
Dyna-Gro	780B	Bronze	111	Compact	---	R	Very good standability; adapted to dryland
Pioneer	82G10	Bronze	128	---	---	R	---
Pioneer	83G66	Red	122	Semi-Compact	---	R	---
Pioneer	84G62	Bronze	124	Open	---	R	---

† Information on this table provided by the respective seed companies.

Table 11. Contact information for grain sorghum seed companies evaluated in yield tests in Tennessee during 2007.

Company	Contact	Phone	Email	Web site	Address
Monsanto (Asgrow, Dekalb)		800-335-2676		www.asgrow.com	
Crow's Hybrid Corn Company	Carl Gardner	731-431-6839	carl.gardner@crowshybrid.com	www.crowshybrid.com	3395 Leatherwood Rd Williamsport, TN 38487
United Agri Products (Dyna-Gro)	Larry Stauber	901-277-3261	larry.stauber@uap.com	www.dynagroseed.com	57 Germantown Ct Suite 200 Cordova, TN 38018
Pioneer Hi-Bred Int.	Michael Hughes	800-331-2475	michael.hughes@pioneer.com	www.pioneer.com	7501 Memorial Pkwy SW Suite 205 Suite 205, Huntsville, AL 35802