

2016 Virginia Grain Sorghum Performance Tests



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2016

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Virginia Grain Sorghum Performance Tests 2016

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INTRODUCTION

The 2016 grain sorghum OVT tests contained 13 hybrids planted as a full season crop and 11 as double crop. Full season tests were conducted at three locations, the Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA, in a grower's field near Smithfield, VA, in Isle of Wight County, and in a grower's field in Dinwiddie County. The Dinwiddie County location consisted of irrigated and non-irrigated OVT trials. The double crop sorghum trials were conducted at two locations, the TAREC, and in a grower's field near Smithfield, VA, in Isle of Wight County.

MATERIALS AND METHODS

The experimental design for the OVT tests was a randomized complete block design with three replications for each location. Two tests were planted at Dinwiddie County, irrigated and non-irrigated. Detailed information on planting, crop maintenance, harvest, and irrigation treatment (where available) are presented within each location

RESULTS SUMMARY

With the exception of plots at Smithfield, the average full season yields at all locations were at least 72 bu/A. At Smithfield, average yields were just behind at 68 bu/A. Several varieties (DKS51-01, DKS53-53, DKS48-07, and 83P17) all had average yields of over 80 bu/A at the three locations. At Dinwiddie, DKS51-01, 83P17, and SH90G6 had the least reduction in yield when non-irrigated.

Average double crop yields at Suffolk were fair (61 bu/A), while average yields at Smithfield were much lower (41 bu/A). While these yields were poor, there were some varieties that performed well in double crop compared to others. Both SH94153 and SH65G6 had an average yield of over 55 bu/A at both locations.

The lower performing varieties were low mainly due to delayed harvest, as they were early maturing varieties in comparison to all the others.

When selecting a variety, it is recommended to not only look at the current year's data, but also how well a variety has performed over the past 2-3 years. Three year averages for varieties in both cropping systems are provided in this publication.

GRAIN SORGHUM PERFORMANCE MEASUREMENTS

Yield: Yields were calculated from the weight of the threshed grain from each plot and are expressed as bushels per acre (BU/A) at 14% moisture.

Grain Moisture: Expressed as percent moisture of grain at harvest.

Head Mold & Anthracnose: Head mold and anthracnose was rated at Suffolk and Smithfield full season and double crop tests. Head Mold was rated as the percentage of total grain with signs of fungal colonization. Leaf anthracnose was rated on a percentage scale from 0-100% within a plot with 0 being no lesions of anthracnose and 100% being most severe.

Table 1. Performance of Full Season Grain Sorghum Hybrids, TAREC, Suffolk, VA. 2016

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)	Head Date	Head Mold (%)	Anthracnose (%)
DEKALB	DKS48-07	81.3	a	17.7	49.8	8/4	2.3	35.0
DEKALB	DKS51-01	83.5	a	16.8	54.8	8/10	1.3	5.00
DEKALB	DKS53-53	78.2	ab	18.8	49.3	8/4	2.3	38.3
DEKALB	DKS54-00	79.2	ab	19.1	50.5	8/10	1.0	3.67
Dyna-Gro	M60GB31	77.2	ab	15.9	49.9	8/5	2.0	45.0
Dyna-Gro	M75GR47	87.0	a	16.2	50.3	8/2	2.0	30.0
Dyna-Gro	765B	68.5	ab	21.6	47.7	8/10	1.3	1.33
Dyna-Gro	M71GR75	74.0	ab	22.7	41.7	8/12	1.0	8.33
Pioneer	84P80	63.4	a-c	15.6	52.9	8/2	3.3	51.7
Pioneer	83P17	77.0	ab	20.7	49.0	8/10	1.7	22.3
Southern Harvest	SH90G6	73.4	ab	21.5	44.9	8/6	1.0	3.00
Southern States	SS655	54.4	bc	17.9	48.2	8/3	1.7	65.0
Southern States	SS800	42.0	c	17.0	48.8	7/30	1.7	41.7
Averages		72.2		18.6	49.1	8/5	1.7	26.9
LSD		26.1		2.4	7.1		1.6	9.7
CV%		2.1		2.1	2.1		52.8	21.4

Soil Series Dragston, Eunola
 Soil pH 6.2
 Previous Crop Peanuts
 Conventional
 Tillage Tillage
 Row Width 36"
 Planting Date June 9, 2016
 Fertilizer 375 lb/ac 15-10-15 (June 1, 2016)
 60 lbs N as 24-0-0-3 (June 9, 2016)
 Herbicides 28 oz/ac Roundup (April 6, 2016)
 4 pt/ac Bicep, 1 qt/ac Intrro (June 11, 2016)
 Insecticides 2 oz/ac Karate (July 12, 2016)
 1.5 pt/ac Lanate (July 21, 2016)
 9 oz/ac Beseige (August 9, 2016)
 7 oz/ac Sivanto (August 9, 2016)
 Fungicides 8 oz/ac Priaxor (August 5, 2016)
 Desiccation 22 oz/ac Roundup (September 27, 2016)
 Harvest Date October 4, 2016

Table 2. Performance of Double Crop Grain Sorghum Hybrids, TAREC, Suffolk, VA. 2016

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)	Head Mold ¹ (%)	Anthracnose ¹ (%)
Dyna-Gro	M60GB31	61.5	ab	19.4	45.7	4.7	33.3
Dyna-Gro	M75GR47	60.3	ab	20.1	42.9	7.3	13.3
Dyna-Gro	M71GR75	63.0	ab	19.8	49.8	2.0	16.7
Pioneer	84P80	65.6	a	19.6	43.3	5.0	41.7
Pioneer	83P17	48.4	b	22.2	43.0	5.7	30.0
Southern Harvest	SH65G6	61.8	ab	18.5	50.1	13.3	2.30
Southern Harvest	SH47G4	32.0	c	17.3	36.3	45.0	26.7
Southern Harvest	SH59G4	52.2	ab	19.5	45.6	15.0	2.00
Southern Harvest	SH80G4	55.3	ab	19.8	48.4	2.7	35.0
Southern Harvest	SH94153	65.8	a	19.2	48.0	6.3	4.30
Southern States	SS540	54.4	ab	18.5	50.4	13.3	2.00
Averages		56.4		19.4	45.8	10.9	18.8
LSD		16.1		1.9	7.2	4.0	4.2
CV%		2.1		2.1	2.1	21.6	13.2

¹Rated on 11/1/2016

Soil Series Dragston, Eunola
 Previous Crop Wheat
 Tillage Conventional Tillage
 Row Width 36"
 Planting Date July 1, 2016
 Fertilizer 350 lb/ac 15-10-15 (July 11, 2016)
 60 lbs N as 24-0-0-3 (July 1, 2016)
 Herbicides 4 pt/ac Bicep, 1 qt/ac Intrro (July 9, 2016)
 Insecticides 2 oz/ac Karate (July 12, 2016)
 1.5 pt/ac Lanate (July 21, 2016)
 9 oz/ac Beseige (August 9, 2016)
 7 oz/ac Sivanto (August 9, 2016)
 Fungicides 8 oz/ac Priaxor (August 5, 2016)
 Desiccation None
 Harvest Date November 10, 2016

Table 3. Performance of Full Season Grain Sorghum Hybrids, Smithfield, VA. 2016

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)	Head Date	Head Mold ¹ (%)	Anthracnose ¹ (%)
DEKALB	DKS48-07	72.0	ab	16.8	52.0	8/18	13.3	33.3
DEKALB	DKS51-01	78.5	a	14.7	57.6	8/20	7.3	15.0
DEKALB	DKS53-53	74.2	ab	15.7	54.9	8/16	16.7	41.7
DEKALB	DKS54-00	52.8	c	18.8	50.8	8/23	8.0	12.7
Dyna-Gro	M60GB31	74.5	ab	16.2	55.5	8/15	7.3	45.0
Dyna-Gro	M75GR47	56.6	bc	16.0	51.7	8/18	13.3	3.70
Dyna-Gro	765B	66.3	a-c	16.9	56.3	8/20	5.7	1.00
Dyna-Gro	M71GR75	66.9	a-c	18.1	54.8	8/24	4.7	1.30
Pioneer	84P80	69.6	a-c	16.3	52.9	8/18	7.3	36.7
Pioneer	83P17	75.7	a	16.7	54.3	8/15	8.0	26.7
Southern Harvest	SH90G6	63.2	a-c	18.1	55.2	8/25	3.3	0.30
Averages		68.2		16.8	54.2	8/19	8.6	19.8
LSD		18.2		2.0	4.3		5.4	8.4
CV%		2.0		2.0	2.0		36.5	24.8

¹ Rated on 10/16/2016

Previous Crop Soybeans
Tillage Conventional Tillage
Row Width 36"
Planting Date June 14, 2016
Fertilizer 60 lbs N as 24-0-0-3 (June 14, 2016)
60 lbs N as 24-0-0-3 (August 6, 2016)
Herbicides 1.5 qt/ac Bicep (June 14, 2016)
Insecticides 6 oz/ac Brigrade (July 11, 2016)
6 oz/ac Brigrade (July 21, 2016)
7 oz/ac Sivanto, 9 oz/ac Beseige (August 6, 2016)
1 oz/ac Transform, 3 oz/ac Belt (September 15, 2016)
Fungicides 8 oz/ac Priaxor (August 6, 2016)
Desiccation 22 oz/ac Roundup (October 31, 2016)
Harvest Date November 8, 2016

**Table 4. Performance of Double Crop Grain Sorghum Hybrids,
Smithfield, VA. 2016**

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)	Head Mold¹ (%)	Anthracnose¹ (%)
Dyna-Gro	M60GB31	22.5	f	15.6	40.3	4.0	35.0
Dyna-Gro	M75GR47	38.2	c-e	20.2	51.9	6.0	2.00
Dyna-Gro	M71GR75	35.1	ef	23.5	53.4	6.0	4.00
Pioneer	84P80	44.8	b-d	16.5	54.1	5.0	42.5
Pioneer	83P17	56.0	a	19.8	55.2	4.0	25.0
Southern Harvest	SH65G6	51.5	ab	20.3	57.6	6.0	0.50
Southern Harvest	SH47G4	29.1	ef	13.2	46.6	35.0	27.5
Southern Harvest	SH59G4	45.1	b-d	20.0	56.4	8.5	0.00
Southern Harvest	SH80G4	46.4	a-c	19.0	57.1	2.0	6.50
Southern Harvest	SH94153	51.9	ab	19.2	56.4	4.0	1.00
Southern States	SS540	35.1	de	21.7	54.5	4.5	0.00
Averages		41.4		19.0	53.0	7.7	13.1
LSD		10.8		2.4	2.8	3.8	7.2
CV%		2.0		2.0	2.0	22.0	24.8

¹ Rated on 11/1/2016

Previous Crop Soybeans
Tillage Conventional Tillage
Row Width 36"
Planting Date June 30, 2016
Fertilizer 60 lbs N as 24-0-0-3 (June 30, 2016)
 60 lbs N as 24-0-0-3 (August 6, 2016)
 1.5 qt/ac Bicep (June 30,
Herbicides 2016)
Insecticides 6 oz/ac Brigade 6 oz/ac (July 11, 2016)
 6 oz/ac Brigade 6 oz/ac (July 21, 2016)
 7 oz/ac Sivanto, 9 oz/ac Beseige (August 6, 2016)
Fungicides 8 oz/ac Priaxor (August 6, 2016)
Desiccation None
Harvest Date November 17, 2016

Table 5. Performance of Full Season Irrigated Grain Sorghum Hybrids, Dinwiddie, VA. 2016

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
DEKALB	DKS48-07	104.2	a	10.9	55.8
DEKALB	DKS51-01	83.6	a-d	12.0	56.7
DEKALB	DKS53-53	94.7	ab	13.7	51.4
DEKALB	DKS54-00	90.6	a-c	11.8	55.9
Dyna-Gro	M60GB31	44.4	e	12.5	46.9
Dyna-Gro	M75GR47	51.1	e	11.9	46.4
Dyna-Gro	765B	96.0	ab	11.8	58.8
Dyna-Gro	M71GR75	66.6	b-e	13.1	57.6
Pioneer	84P80	61.0	c-e	13.3	47.6
Pioneer	83P17	87.3	a-c	12.7	54.0
Southern Harvest	SH90G6	95.1	ab	12.7	56.9
Southern States	SS655	54.2	de	13.5	47.4
Southern States	SS800	70.0	b-e	11.4	53.0
Averages		76.8		12.4	53.0
LSD		32.0		3.2	9.6
CV%		2.1		2.1	2.1

Tillage Conventional Tillage
 Row Width 36"
 Planting Date June 13, 2016
 Fertilizer 60 lbs N as 24-0-0-3 (June 13, 2016)
 Irrigation 1.2" on July 11, 23, 29, 2016 for a total of 2.6"
 60 lbs N as 24-0-0-3 (August 5, 2016)
 Herbicides 1.5 qt/ac Bicep (June 13, 2016)
 Insecticides 3 oz/ac Belt (July 7, 2016)
 6 oz/ac Brigade (July 21, 2016)
 7 oz/ac Sivanto, 9 oz Beseige (August 5, 2016)
 Fungicides 8 oz/ac Priaxor (August 5, 2016)
 Desiccation 22 oz/ac Roundup (October 10, 2016)
 Harvest Date October 26, 2016

Table 6. Performance of Full Season Non-Irrigated Grain Sorghum Hybrids, Dinwiddie, VA. 2016

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
DEKALB	DKS48-07	72.3	a-c	14.3	46.4
DEKALB	DKS51-01	90.0	a	12.0	54.2
DEKALB	DKS53-53	85.4	ab	14.4	47.7
DEKALB	DKS54-00	76.0	a-c	12.8	50.3
Dyna-Gro	M60GB31	44.1	d	11.8	47.1
Dyna-Gro	M75GR47	74.3	a-c	10.8	48.2
Dyna-Gro	765B	77.4	ab	13.8	51.4
Dyna-Gro	M71GR75	57.6	cd	14.4	53.6
Pioneer	84P80	77.0	a-c	12.1	51.9
Pioneer	83P17	88.7	ab	12.2	53.7
Southern Harvest	SH90G6	90.4	a	11.9	55.3
Southern States	SS655	44.7	d	13.7	49.4
Southern States	SS800	70.3	bc	10.1	47.1
Averages		72.9		12.6	50.5
LSD		19.6		2.6	8.5
CV%		2.1		2.1	2.1

Tillage	Conventional Tillage
Row Width	36"
Planting Date	June 13, 2016
Fertilizer	60 lbs N as 24-0-0-3 (June 13, 2016) 60 lbs N as 24-0-0-3 (August 5, 2016)
Herbicides	1.5 qt/ac Bicep (June 13, 2016)
Insecticides	3 oz/ac Belt (July 7, 2016) 6 oz/ac Brigade (July 21, 2016) 7 oz/ac Sivanto, 9 oz Beseige (August 5, 2016)
Fungicides	8 oz/ac Priaxor (August 5, 2016)
Desiccation	22 oz/ac Roundup (October 10, 2016)
Harvest Date	October 26, 2016

Table 7. Yield ranking of full season grain sorghum hybrids at all locations in Virginia.

Relative Maturity	Company or Brand Name	Hybrid	Yield (BU/A)		Relative Ranking ¹
Medium Full	DEKALB	DKS51-01	83	a	1.00
Medium Full	DEKALB	DKS53-53	82	a	0.99
Late	Pioneer	83P17	81	ab	0.98
Medium	DEKALB	DKS48-07	81	ab	0.98
Medium Late	Southern Harvest	SH90G6	78	a-c	0.94
Full	Dyna-Gro	765B	75	a-d	0.90
Medium Full	DEKALB	DKS54-00	71	a-e	0.86
Late	Pioneer	84P80	68	b-e	0.82
Medium Full	Dyna-Gro	M71GR75	66	c-e	0.80
Medium	Dyna-Gro	M75GR47	66	c-e	0.80
Medium-Early	Dyna-Gro	M60GB31	62	d-f	0.75
Medium	Southern States	SS800	61	ef	0.73
Medium	Southern States	SS655	51	f	0.61

¹Relative rankings are calculated by dividing each variety's yield by the highest yielding variety.

Table 8. Yield ranking of double crop grain sorghum hybrids at all locations in Virginia.

Relative Maturity	Company or Brand Name	Hybrid	Yield (BU/A)		Relative Ranking ¹
Medium	Southern Harvest	SH94153	57	a	1.00
Medium-Early	Southern Harvest	SH65G6	55	a	0.96
Late	Pioneer	83P17	53	ab	0.93
Late	Pioneer	84P80	53	ab	0.93
Medium	Southern Harvest	SH80G4	50	a-c	0.88
Medium-Early	Southern Harvest	SH59G4	48	a-c	0.84
Medium	Dyna-Gro	M75GR47	46	a-c	0.81
Medium-Full	Dyna-Gro	M71GR75	46	a-c	0.81
Medium-Early	Southern States	SS540	42	b-d	0.74
Medium-Early	Dyna-Gro	M60GB31	37	cd	0.65
Early	Southern Harvest	SH47G4	30	d	0.53

¹Relative rankings are calculated by dividing each variety's yield by the highest yielding variety.

Table 9. Yield Percentage Ranking of Full Season Grain Sorghum Hybrids at all Locations in Virginia with Three-Year Comparisons

Company or Brand Name	Hybrid	Suffolk	Smithfield	Dinwiddie	2016 All Locations	2015 All Locations	2014 All Locations
DEKALB	DKS51-01	0.96	1.00	0.94	1.00	0.95	0.86
DEKALB	DKS53-53	0.90	0.95	0.97	0.99	1.00	0.75
Pioneer	83P17	0.89	0.96	0.95	0.98	0.87	0.81
DEKALB	DKS48-07	0.93	0.92	0.95	0.98		
Southern Harvest	SH90G6	0.84	0.81	1.00	0.94		
Dyna-Gro	765B	0.79	0.84	0.93	0.90		
DEKALB	DKS54-00	0.91	0.67	0.90	0.86	0.99	
Pioneer	84P80	0.73	0.89	0.74	0.82	0.83	1.00
Dyna-Gro	M71GR75	0.85	0.85	0.67	0.80		
Dyna-Gro	M75GR47	1.00	0.72	0.68	0.80		
Dyna-Gro	M60GB31	0.89	0.95	0.48	0.75		
Southern States	SS800	0.48		0.76	0.73	0.88	0.76
Southern States	SS655	0.63		0.53	0.61	0.96	0.80

Table 10. Yield Percentage Ranking of Double Crop Grain Sorghum Hybrids at all Locations in Virginia with Three-Year Comparisons

Company or Brand Name	Hybrid	Suffolk	Smithfield	2016 All Locations	2015 All Locations	2014 All Locations
Southern Harvest	SH94153	1.00	0.93	1.00		
Pioneer	84P80	0.99	0.80	1.00	0.96	
Dyna-Gro	M71GR75	0.96	0.63	0.95		
Southern Harvest	SH65G6	0.94	0.92	0.94		
Dyna-Gro	M60GB31	0.93	0.40	0.92		
Dyna-Gro	M75GR47	0.92	0.68	0.91		
Southern Harvest	SH80G4	0.84	0.83	0.83	0.81	0.89
Southern States	SS540	0.83	0.63	0.82	0.88	0.93
Southern Harvest	SH59G4	0.79	0.81	0.79	0.88	0.90
Pioneer	83P17	0.74	1.00	0.73	0.99	
Southern Harvest	SH47G4	0.49	0.52	0.48		

Seeding Rate Tests Performance

A full season and a double crop seeding rate test was performed at Suffolk, VA in 2016. Each test had four varieties, DKS 4420, DKS 5101, DKS5353, and DKS5400; and three seeding rates, 48,916 seeds/ac, 73,364 seeds/ac, and 107,000 seeds/ac. When examining each cropping system individually, there was no significant difference between the three seeding rates (Table 1).

Table 1. Average yield of seeding rates for full season and double crop cropping systems

Full Season		Double Crop	
Seeding Rate	Yield (bu/ac)	Seeding Rate	Yield (bu/ac)
48,916	71.8 a	48,916	36.1 a
73,364	72.9 a	73,364	36.4 a
107,000	63.6 a	107,000	31.9 a

However, the highest seeding rate of 107,000 seeds had a lower numerical yield than the two lower seeding rates. Since there was no significant rate x cropping system interaction, full season and double crop tests were combined. Once combined, the 107,000 seeding rate had a significantly lower yield than the two lower seeding rates (Table 2).

Table 2. Average yield of seeding rates for both cropping systems combined

Combined FS & DC	
Seeding Rate	Yield (bu/ac)
48,916	54.5 a
73,364	54.1 a
107,000	47.8 b

There was no interaction variety x seeding rate interaction. Therefore, all varieties were combined when examining the seeding rates. This data suggests that reducing seeding rates can increase sorghum yields for both full season and double crop cropping systems.