2017
Virginia Grain Sorghum Performance Tests

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2017

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INTRODUCTION

The 2017 grain sorghum OVT tests contained 25 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, and in a grower's field near Windsor, VA. The double crop sorghum trials were conducted at the same three locations as with the full season crop.

MATERIALS AND METHODS

The experimental design for the OVT tests was a randomized complete block design with three replications for each location. All tests in each location were rainfed.

RESULTS SUMMARY

The average grain yield for plots planted in early June (full season) were 132 bu/A at Suffolk, 106 bu/A at Smithfield, and 43 bu/A at Windsor (Tables 1, 3, qne 5). In Windsor, heavy rains during the growing season caused soil run off that might have affected yields. Caution is advised when using the data from this location for the full season planted grain sorghum. The average yields for July planted sorghums ranged from 114 bu/A in Suffolk, to 53 bu/A in Smithfield and 71 bu/A in Windsor (Tables 2, 4, and 6).

In average across all location the early plantings (full season) performers were Dyna-Gro GX16367, M60GB31, and 765B with over 160 bu/A each followed by Southern States SS800 and Gayland Ward GW1160 with yields at 155 bu/A, and Dyna-Gro GX16535 and M74GB17, and Gayland Ward EXP9139 with yields over 140 bu/A (Table 7). Best performer across locations when planting was in July (double crop) was Southern States SS540 with 117 bu/A. Hoover, all other tested hybrids had yields equal or over 80 bu/A in late plantings in 2018, which is a desirable sorghum yield for farmers growing a winter wheat crop on the same land (Table 8). Tables 9 and 10 show the relative yield ranking for the hybrids in 2017 and previous years of testing. Finally, results of a seeding rate test conducted at Suffolk in 2017 are presented on page 13. As in the past, doubling the seeding rate from 50,000 to 100,000 seeds per acre did not produced a yield increase under Virginian environmental conditions.

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.

Table 1. Performance of Full Season Grain Sorghum Hybrids, TAREC, Suffolk, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Dekalb	DKS51-01	170.7	a-c	14.1	54.2
Dekalb	DKS53-53	184.0	ab	12.7	53.4
Dekalb	DKS54-00	174.0	a-c	14.0	52.8
Dyna-Gro	765B	162.7	a-e	14.2	54.4
Dyna-Gro	GX15371	94.7	i	14.8	56.6
Dyna-Gro	GX16367	171.3	a-c	12.8	49.8
Dyna-Gro	GX16535	146.3	c-f	13.5	52.5
Dyna-Gro	GX16833	116.3	g-i	14.8	56.3
Dyna-Gro	GX16855	65.0	jk	14.6	52.0
Dyna-Gro	GX17818	94.3	i	14.0	55.2
Dyna-Gro	M60GB31	166.3	a-d	13.7	52.5
Dyna-Gro	M60GB88	118.7	f-i	12.9	51.1
Dyna-Gro	M68GR41	111.7	hi	13.1	50.1
Dyna-Gro	M73GR55	96.7	i	14.9	59.4
Dyna-Gro	M74GB17	142.0	d-g	13.7	55.2
Gayland Ward	EXP9134	58.7	k	13.9	52.5
Gayland Ward	EXP9135	137.3	e-h	12.7	50.6
Gayland Ward	EXP9138	39.3	k	15.2	47.9
Gayland Ward	EXP9139	141.0	d-g	13.2	50.6
Gayland Ward	GW1160	155.0	c-e	12.3	51.8
Pioneer	83P17	155.0	c-e	12.8	50.9
Pioneer	84P80	167.0	a-d	12.3	48.6
Southern Harvest	SH90G6	190.3	a	13.6	53.8
Southern States	SS655	93.0	ij	15.1	51.0
Southern States	SS800	156.0	b-e	12.6	50.7
Averages		**132.3**		**13.7**	**52.6**
LSD		**28.1**		1.4	4.0
CV%		**12.8**		6.2	4.6

Table 1. Performance of Full Season Grain Sorghum Hybrids, TAREC, Suffolk, VA. 2017 Continued

Soil Series	Eunola, Nasamond
Soil pH	6.2
Previous Crop	Peanuts
Tillage	Conventional Tillage
Row Width	36"
Planting Date	**June 9, 2017**
Fertilizer	385 lb/ac 13-15-20 May 25, 2017)
	60 lbs N as 24-0-0-3 (June 9, 2017)
	60 lbs N as 24-0-0-3 (August 4, 2017)
Herbicides	28 oz/ac Roundup (April 6, 2017)
	1.5qt/ac Bicep, 1 qt/ac Intrro (June 10, 2017)
Insecticides	8oz/ac Besiege (July 1, 2017)
	8 oz/ac Beseige (August 14, 2017)
	7 oz/ac Sivanto (August 16, 2017)
Fungicides	8 oz/ac Priaxor (August 14, 2017)
Dessication	22 oz/ac Roundup October 27, 2017)
Harvest Date	**November 16, 2017**

Table 2. Performance of Double Crop Grain Sorghum Hybrids, TAREC, Suffolk, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Pioneer	84P80	104.0	b	13.2	53.7
Pioneer	83P17	117.5	a	16.0	49.3
Southern Harvest	SH65G6	117.0	a	14.4	58.6
Southern Harvest	SH80G4	119.5	a	17.3	54.3
Gayland Ward	GW1160	111.3	ab	14.3	56.2
Southern States	SS540	117.0	a	14.4	56.7
Averages		**114.4**		**14.9**	**54.8**
LSD		**8.4**		2.0	6.9
CV%		**4.9**		8.8	8.4

Soil Series	Eunola, Nasamond
Previous Crop	Wheat
Tillage	Conventional Tillage
Row Width	36"
Planting Date	**July 5, 2017**
Fertilizer	375 lb/ac 13-15-20 May 25, 2017) 60 lbs N as 24-0-0-3 (July 5, 2017) 60 lbs N as 24-0-0-3 (August 4, 2017)
Herbicides	28 oz/ac Roundup (April 6, 2017) 1.5qt/ac Bicep, 1 qt/ac Intrro (July 5, 2017)
Insecticides	8oz/ac Besiege (July 1, 2017) 8 oz/ac Beseige (August 14, 2017) 7 oz/ac Sivanto (August 16, 2017)
Fungicides	8 oz/ac Priaxor (August 14, 2017)
Harvest Date	**November 17, 2017**

Table 3. Performance of Full Season Irrigated Grain Sorghum Hybrids, Smithfield, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Dekalb	DKS51-01	101.0	a	10.4	52.3
Dekalb	DKS53-53	102.8	a	11.0	55.1
Dekalb	DKS54-00	113.3	a	11.7	55.0
Pioneer	83P17	104.3	a	11.2	51.6
Pioneer	84P80	115.8	a	11.7	55.7
Southern Harvest	SH90G6	97.0	a	11.8	51.7
Averages		**105.7**		**11.3**	**53.6**
LSD		**39.2**		2.1	4.9
CV%		**25.0**		12.5	6.1

Tillage	Conventional Tillage
Row Width	36"
Planting Date	**June 16, 2017**
Fertilizer	60 lbs N as 24-0-0-3 (June 16, 2017) 60 lbs N as 24-0-0-3 (August 7, 2017)
Herbicides	1.5 qt/ac Bicep (June 16, 2017)
Insecticides	7 oz/ac Sivanto (August 17, 2017) 9 oz Beseige (August 17, 2017)
Fungicides	8 oz/ac Priaxor (August 17, 2017)
Harvest Date	**November 19, 2017**

Table 4. Performance of Double Crop Non-Irrigated Grain Sorghum Hybrids, Smithfield, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Gayland Ward	GW1160	39.3	b	14.5	49.8
Pioneer	83P17	59.0	ab	13.0	55.8
Pioneer	84P80	50.0	ab	13.4	49.6
Southern Harvest	SH65G6	52.0	ab	15.4	46.5
Southern Harvest	SH80G4	62.3	a	15.3	51.0
Averages		**52.5**		**14.3**	**50.5**
LSD		**22.2**		1.9	7.0
CV%		**23.2**		7.1	7.7

Tillage	Conventional Tillage
Row Width	36"
Planting Date	**July 12, 2017**
Fertilizer	60 lbs N as 24-0-0-3 (7/12/2017)
	60 lbs N as 24-0-0-3 (August 7, 2017)
Herbicides	1.5 qt/ac Bicep (July 12, 2017)
Insecticides	7 oz/ac Sivanto (August 17, 2017)
	9 oz Beseige (August 17, 2017)
Fungicides	8 oz/ac Priaxor (August 17, 2017)
Harvest Date	**November 19, 2017**

Table 5. Performance of Full Season Grain Sorghum Hybrids, Windsor, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Pioneer	83P17	35.3	ab	14.8	43.0
Pioneer	84P80	54.7	a	14.5	44.8
Dekalb	DKS51-01	42.7	ab	14.1	52.1
Dekalb	DKS53-53	28.7	b	11.7	48.1
Dekalb	DKS54-00	42.3	ab	14.1	52.2
Southern Harvest	SH90G6	53.7	a	14.2	54.4
Averages		**42.9***		**13.9**	**49.1**
LSD		**19.9**		3.3	7.1
CV%		**26.0**		13.3	8.2

***This field was affected by heavy rains and soil run off. The use of the yield values in this table might not be reliable.**

Previous Crop	Soybeans
Tillage	Conventional Tillage
Row Width	36"
Planting Date	**June 16, 2017**
Fertilizer	385 lb/ac 12-15-10 (June 10, 2017) 60 lbs N as 24-0-0-3 (June 16, 2017) 60 lbs N as 24-0-0-3 (August 7, 2017)
Herbicides	1.5 qt/ac Bicep (June 16, 2017)
Insecticides	7 oz/ac Sivanto (August 17, 2017) 9 oz Beseige (August 17, 2017)
Fungicides	8 oz/ac Priaxor (August 17, 2017)
Harvest Date	**November 19, 2017**

Table 6. Performance of Double Crop Grain Sorghum Hybrids, Windsor, VA. 2017

Company or Brand Name	Hybrid	Yield (BU/A)		Harvest Moisture (%)	Test Weight (LB/BU)
Pioneer	83P17	73.0	a	20.6	49.0
Pioneer	84P80	91.0	a	18.8	51.8
Southern Harvest	SH65G6	73.3	a	19.5	51.8
Southern Harvest	SH80G4	44.7	b	18.6	54.8
Averages		**70.5**		**19.4**	**51.8**
LSD		**17.3**		3.2	10.8
CV%		**23.0**		8.8	11.0

Previous Crop	Soybeans
Tillage	Conventional Tillage
Row Width	36"
Planting Date	**July 12, 2017**
Fertilizer	385 lb/ac 12-15-10 (June 10, 2017) 60 lbs N as 24-0-0-3 (July 12, 2017) 60 lbs N as 24-0-0-3 (August 7, 2017)
Herbicides	1.5 qt/ac Bicep (July 12, 2017)
Insecticides	7 oz/ac Sivanto (August 17, 2017) 9 oz Beseige (August 17, 2017)
Fungicides	8 oz/ac Priaxor (August 17, 2017)
Harvest Date	**November 19, 2017**

Table 7. Yield Ranking of Full Season Grain Sorghum Hybrids at all Locations in Virginia.

Company or Brand Name	Hybrid	Yield (BU/A)		Relative Ranking[1]
Dyna-Gro	765B	162.7	a-c	0.95
Pioneer	83P17	98.8	b-f	0.58
Pioneer	84P80	112.8	a-e	0.66
Dekalb	DKS51-01	104.4	a-f	0.61
Dekalb	DKS53-53	104.9	a-f	0.61
Dekalb	DKS54-00	110.2	a-e	0.64
Gayland Ward	EXP9134	58.7	e-f	0.34
Gayland Ward	EXP9135	137.3	a-d	0.80
Gayland Ward	EXP9138	39.3	f	0.23
Gayland Ward	EXP9139	141.0	a-d	0.82
Gayland Ward	GW1160	155.0	a-d	0.90
Dyna-Gro	GX15371	94.7	d-f	0.55
Dyna-Gro	GX16367	171.3	a	1.00
Dyna-Gro	GX16535	146.3	a-d	0.85
Dyna-Gro	GX16833	116.3	a-e	0.68
Dyna-Gro	GX16855	65.0	ef	0.38
Dyna-Gro	GX17818	94.3	d-f	0.55
Dyna-Gro	M60GB31	166.3	ab	0.97
Dyna-Gro	M60GB88	118.7	a-e	0.69
Dyna-Gro	M68GR41	111.7	a-e	0.65
Dyna-Gro	M73GR55	96.7	c-f	0.56
Dyna-Gro	M74GB17	142.0	a-d	0.83
Southern Harvest	SH90G6	112.0	a-e	0.65
Southern States	SS655	93.0	d-f	0.54
Southern States	SS800	156.0	a-d	0.91

[1]Relative 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.

Company or Brand Name	Hybrid	Yield (BU/A)		Relative Ranking[1]
Gayland Ward	GW1160	80.4	b	0.69
Pioneer	83P17	86.6	ab	0.74
Pioneer	84P80	83.9	b	0.72
Southern Harvest	SH65G6	84.4	b	0.72
Southern Harvest	SH80G4	79.9	b	0.68
Southern States	SS540	117.0	a	1.00

[1]Relative 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	Windsor	2017 All Locations	2016 All Locations	2015 All Locations
Dyna-Gro	765B	0.85			0.95	0.83	
Pioneer	83P17	0.81	0.90	0.65	0.58	0.95	0.85
Pioneer	84P80	0.88	1.00	1.00	0.66	0.84	0.71
Dekalb	DKS51-01	0.90	0.87	0.78	0.61	1.00	
Dekalb	DKS53-53	0.97	0.89	0.52	0.61	0.94	
Dekalb	DKS54-00	0.91	0.98	0.77	0.64	0.78	
Gayland Ward	EXP9134	0.31			0.34		
Gayland Ward	EXP9135	0.72			0.80		
Gayland Ward	EXP9138	0.21			0.23		
Gayland Ward	EXP9139	0.74			0.82		
Gayland Ward	GW1160	0.81			0.90		
Dyna-Gro	GX15371	0.50			0.55		
Dyna-Gro	GX16367	0.90			1.00		
Dyna-Gro	GX16535	0.77			0.85		
Dyna-Gro	GX16833	0.61			0.68		
Dyna-Gro	GX16855	0.34			0.38		
Dyna-Gro	GX17818	0.50			0.55		
Dyna-Gro	M60GB31	0.87			0.97	0.94	
Dyna-Gro	M60GB88	0.62			0.69		
Dyna-Gro	M68GR41	0.59			0.65		
Dyna-Gro	M73GR55	0.51			0.56		
Dyna-Gro	M74GB17	0.75			0.83		
Southern Harvest	SH90G6	1.00	0.84	0.98	0.65	0.83	
Southern States	SS655	0.49			0.54	0.68	1.00
Southern States	SS800	0.82			0.91	0.52	0.84

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	Windsor	2017 All Locations	2016 All Locations	2015 All Locations
Gayland Ward	GW1160	0.93	0.63		0.69		
Pioneer	83P17	0.98	0.95	0.80	0.74	0.96	1.00
Pioneer	84P80	0.87	0.80	1.00	0.72	0.95	0.95
Southern Harvest	SH65G6	0.98	0.83	0.81	0.72	1.00	
Southern Harvest	SH80G4	1.00	1.00	0.49	0.68	0.90	0.83
Southern States	SS540	0.98			1.00	0.77	0.85

Seeding Rate Tests Performance

A full season and a double crop seeding rate test was performed at Suffolk, VA in 2017. Each test had four varieties, DKS3816, DKS5101, DKS5353, and DKS5400; and three seeding rates, 50,000 seeds/ac, 75,000 seeds/ac, and 100,000 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)
50,000	159.6 a	50,000	103.2 a
75,000	162.2 a	75,000	104.5 a
100,000	162.1 a	100,000	100.6 a

However, the highest seeding rate of 100,000 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 100,000 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)
50,000	131.4 a
75,000	134.3 a
100,000	132.4 a

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.