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Grain Sorghum Variety Trial Archive

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Recommended Citation

Rickertsen, John; Swan, Bruce; Mueller, Nathan; Graham, Christopher; Kleinjan, Jonathan; Kirby, Kevin; Beck, Dwayne; and Swan, Michael, "Grain Sorghum Variety Trial Archive" (2017). *SDSU Extension Publications Archive*. 9.
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2011 South Dakota Grain Sorghum Yield Trials

John Rickertsen | Agronomy Field Specialist
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Grain sorghum production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as yield potential, maturity, test weight, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called “yield stability.”

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at one location but ranks in the lower 40% at the other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If the yield of hybrid A exceeds hybrid B by more than the LSD value, you can conclude that under like environmental conditions, hybrid A is expected to significantly out-yield hybrid B. The LSD value allows you to separate hybrid yields, or any other variable and determine whether or not they are actually different.

For example, at Dakota Lakes, the hybrid Pioneer-8925 averaged 142 bu/a in 2011 compared to Sorghum Partners-KS310 at 120 bu/a. Did the yield difference between these varieties differ significantly? Compare the yield difference of 22 bu/a between the varieties (142–120) to the LSD value of 18 bu/a. Since the 22 bu/a difference is more

than the LSD value of 18 bu/a, the varieties do differ significantly in yield. If the difference between these two hybrids would have been 12 bu/a, their difference would have been less than 18 bu/a; therefore, the yield difference between these hybrids would then not be significant.

The coefficient of variation (CV) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Yield tests with CV values of 15% or higher contain a higher level of experimental error than tests with a CV of 10% or less. Generally, trials with CV less than 15% are considered reliable.

Maturity

Longer season hybrids generally yield higher than early hybrids. Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs.

Procedures

The trials were no-till planted with a Kinze 2100 two row plot

planter with 30 inch spacing and equipped with residue managers. The plots were two rows wide and 25 feet long and the experimental design was a randomized complete block with four replications. The sorghum was planted at 60,000 seeds per acre. The trial was harvested with a Wintersteiger Delta plot combine equipped with a GrainGage weigh system. Flowering notes (50% bloom) were taken at the Wall location, with height and lodging notes being taken prior to harvest at all locations. Location information is presented in Table 1 below.

Summary of 2011 Trials

Yield trials were initiated in 2010 to restart the grain sorghum testing program in South Dakota, which were last done in 1994. For 2011 we expanded to three locations to see how hybrids responded over diverse environments. Grain sorghum yields were excellent in 2011 because of good moisture conditions and a favorable fall allowing the crop to fully mature. Yield averaged 116 bu/ac at Dakota Lakes, 78 bu/ac at Kennebec and 64 bu/ac at Wall. Several hybrids yielded over 130 bu/ac at Dakota Lakes and over 90 bu/ac at Kennebec. These yields are competitive if not better than corn yields in those areas. Top performing hybrids in 2011

were DeKalb DKS 28-05, Pioneer Brand 8925, Pioneer Brand 88P68, DeKalb 37-07, DeKalb 29-28, Asgrow Pulsar and Golden Acres H-307. The Wall location suffered from deer feeding and they seemed to prefer a couple of the earlier maturing hybrids, Legend Seeds 5001T and Pioneer Brand 8925. Yields of these hybrids were probably reduced more than the others in the trial. Since we are on the northern fringe of viable grain sorghum production, producers should only consider planting the earliest maturing hybrids to help insure that their crop fully ripens before a killing frost.

Agronomic traits are presented in Table 2 and yields are presented in Tables 3 – 5. The Wall location suffered from deer feeding and they seemed to prefer a couple of the earlier maturing hybrids, Legend Seeds 5001T and Pioneer Brand 8925. So yields of these hybrids were probably reduced more than the others in the trial.

This research was funded through a grant from the United Sorghum Checkoff Program.

The cooperation and resources of these cooperators are gratefully acknowledged:

- Dwayne Beck – Dakota Lakes Research Farm
- Kim Halverson – Kennebec
- Dale Patterson – Wall

Location	Planting Date	Harvest Date	Nitrogen Applied	Herbicides Applied
Pierre (Dakota Lakes)	May 26	Oct. 18	60 lb/ac (Soil Test = 115 lb/ac)	Harness, Atrazine (pre), Glyphosate + 2,4-D (burndown)
Kennebec	June 6	Oct. 17	115 lb/ac	Atrazine, Warrant, Roundup (pre)
Wall	June 7	Oct. 20	80 lb/ac	Atrazine (fall) Glyphosate (burndown) Aim (post)

Table 2. Grain Sorghum Agronomic Traits

Company – Hybrid	Maturity	Height	Test Weight	Grain Color	Panicle Type	Greenbug Resistance Biotype
Asgrow – Pulsar	M-E	51	55.4	B	SO	E,I
DeKalb – DKS 28-05	E	48	56.1	B	SC	E,I
DeKalb – DKS 29-28	E	42	56.4	B	SO	E
DeKalb – DKS 36-06	M-E	55	53.2	B	SO	E,I
DeKalb – DKS 37-07	M-E	52	55.3	B	SO	E
DeKalb – DK 39y	M-E	44	53.6	Y	SO	C,E,I
Legend Seeds – 5001	E	46	57.0	R	SC	–
Legend Seeds – 5009	E	45	55.7	R	SC	–
Sorghum Partners – 251	E	41	58.4	R	SO	N
Sorghum Partners – KS310	E	48	56.1	B	SO	C,E
Sorghum Partners – K35-Y5	M-E	45	54.6	C	SO	C,E
Sorghum Partners – SP3303	E	44	53.0	C	SC	C
Pioneer Brand – 88P68	E	47	57.8	R	SC	N
Pioneer Brand – 8925	E	44	58.0	R	SC	C
Triumph – TR420	E	44	56.7	B	SC	N
Triumph – TR424	E	42	53.5	B	SO	N
Golden Acres – H-307	M-E	53	52.3	R	SO	C,E
Golden Acres – 5745	M	51	50.7	R	SO	C,E

Maturity: E=Early, M=Medium
 Grain Color: B=Bronze, C=Cream, R=Red, Y=Yellow
 Panicle Type: SO=Semi-open, SC=Semi-closed

Table 3. Grain Sorghum Yield Trial – Pierre, SD (Dakota Lakes Research Farm) – 2011

Company – Hybrid	Height (in.)	Lodging* (0-9)	Moisture (%)	Test Wt (lb/bu)	Yield (bu/a)
Asgrow – Pulsar	57	0	14.8	58.2	128
DeKalb – DKS 28-05	52	0	13.5	59.2	138
DeKalb – DKS 29-28	45	0	14.6	59.4	126
DeKalb – DKS 36-06	60	0	17.8	59.1	127
DeKalb – DKS 37-07	54	0	15.9	58.3	130
DeKalb – DK 39y	45	0	13.6	56.7	96
Legend Seeds – 5001	47	0	14.2	59.3	123
Legend Seeds – 5009	47	0	14.4	59.3	111
Sorghum Partners – 251	43	0	14.9	59.2	92
Sorghum Partners – KS310	51	0	14.4	59.5	120
Sorghum Partners – K35-Y5	50	0	14.7	59.4	116
Sorghum Partners – SP3303	47	0	13.5	58.3	104
Pioneer Brand – 88P68	50	0	16.5	59.6	135
Pioneer Brand – 8925	47	0	14.4	59.2	142
Triumph – TR420	48	0	14.5	58.7	93
Triumph – TR424	46	0	13.6	57.6	111
Golden Acres – H-307	57	0	15.1	54.4	129
Golden Acres – 5745	55	0	17.3	53.4	118
Average	49	0.0	14.8	58.2	116
LSD (P=.05)	4	0.0	1.3	–	18
CV	4.6	0.0	6.1	–	11.2

* 0 = no lodging, 9 = 100% lodged.

Table 3. Grain Sorghum Yield Trial – Kennebec, SD – 2011

Company – Hybrid	Height (in.)	Lodging* (0-9)	Moisture (%)	Test Wt (lb/bu)	Yield (bu/a)
Asgrow – Pulsar	49	0	11.3	53.1	80
DeKalb – DKS 28-05	49	0	12.1	54.2	99
DeKalb – DKS 29-28	42	0	11.5	55.6	97
DeKalb – DKS 36-06	56	0	11.9	51.9	79
DeKalb – DKS 37-07	52	0	12.1	52.7	82
DeKalb – DK 39y	44	0	13.8	50.4	59
Legend Seeds – 5001	46	1	12.4	56.8	75
Legend Seeds – 5009	45	3	12.5	52.7	60
Sorghum Partners – 251	42	1	14.7	57.8	84
Sorghum Partners – KS310	48	0	11.6	56.5	90
Sorghum Partners – K35-Y5	46	0	12.4	50.5	71
Sorghum Partners – SP3303	44	0	11.4	49.0	70
Pioneer Brand – 88P68	48	0	15.1	57.0	86
Pioneer Brand – 8925	44	0	13.8	57.4	93
Triumph – TR420	45	3	13.9	55.4	58
Triumph – TR424	43	0	11.1	52.0	74
Golden Acres – H-307	54	0	11.8	53.3	80
Golden Acres – 5745	51	0	11.4	48.6	69
Average	47	0.4	12.5	53.6	78
LSD (P=.05)	3	0.5	0.9	–	12
CV	4.0	98.7	5.0	–	10.8

* 0 = no lodging, 9 = 100% lodged.

Table 4. Grain Sorghum Yield Trial – Wall, SD – 2011

Company – Hybrid	Height (in.)	Flower (50% bloom)	Lodging* (0-9)	Moisture (%)	Test Wt (lb/bu)	Yield (bu/a)
Asgrow – Pulsar	46	July 20	0	20.2	54.9	83
DeKalb – DKS 28-05	42	July 16	0	18.4	55.0	88
DeKalb – DKS 29-28	39	July 18	0	18.8	54.1	69
DeKalb – DKS 36-06	50	July 23	0	20.6	48.5	65
DeKalb – DKS 37-07	49	July 24	0	20.6	54.9	81
DeKalb – DK 39y	42	July 21	0	20.8	53.6	60
Legend Seeds – 5001	44	July 11	0	18.8	54.9	44
Legend Seeds – 5009	43	July 18	0	17.9	55.2	63
Sorghum Partners – 251	39	July 13	0	16.3	58.2	54
Sorghum Partners – KS310	45	July 22	0	20.3	52.4	52
Sorghum Partners – K35-Y5	39	July 21	0	20.5	54.0	57
Sorghum Partners – SP3303	42	July 19	0	20.6	51.8	48
Pioneer Brand – 88P68	42	July 19	0	20.4	56.8	73
Pioneer Brand – 8925	41	July 14	0	17.8	57.3	66
Triumph – TR420	40	July 23	0	19.1	55.9	54
Triumph – TR424	38	July 20	0	20.0	50.9	65
Golden Acres – H-307	47	July 27	0	20.8	49.3	77
Golden Acres – 5745	46	July 29	0	20.8	50.0	79
Average	42	–	0.0	19.6	53.6	64
LSD (P=.05)	3	–	0.0	–	–	15
CV	4.7	–	0.0	–	–	11.5

* 0 = no lodging, 9 = 100% lodged.



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Funded by the United Sorghum Checkoff
<http://sorghumcheckoff.com/>

Trial Summary

Weather affected yield to a much greater extent as the trials moved west. Wall, for example, was impacted by a heavy snow storm in early October which caused significant lodging that impacted yield and variability. Moisture content and test weight were both highly correlated to yield. Higher moisture content, which may be an indicator of relative maturity, was negatively correlated. The sorghum trials had a wide range of maturity ratings and thus some varieties would likely have benefitted from a longer growing season. Since grain sorghum prices have been similar to corn the last few years and typically would have less input costs and have better drought tolerance than corn, grain sorghum is a favorable cropping option for producers in western South Dakota. Since we are on the northern fringe of viable grain sorghum production, producers should only consider planting the earlier maturing hybrids to help insure that their crop fully ripens before a killing frost.

Practices and Methods

The trials were no-till planted with a Kinze 2100 two row plot planter with 30 inch spacing. The plots were two rows wide and 30 feet long and the experimental design was a randomized complete block with four replications. The sorghum was planted at 60,000 seeds per acre. The trial was harvested with a Wintersteiger Delta plot combine equipped with a GrainGage weigh system. Height, shatter, and lodging notes were taken just prior to harvest.

Dakota Lakes Research Farm: Located (44°17'25.92" N 99°59'19.84" W, elevation 1,510 ft) in Hughes County on a Dorna silt loam soil. The plot was planted on June 3 and harvested on October 24. A pre-emergence

herbicide application of Roundup (26 oz), 2, 4-D (2 oz), Bronate (12 oz), and Atrazine (6 oz) and post-emergence herbicide application of Buctril (16 oz) applied were used. A nitrogen rate of 45 lbs N per acre was applied using 28% UAN. The previous crop was wheat.

Kennebec: Located (43°49'58.28" N 99°47'37.19" W, elevation 1,819 ft) in Lyman County on a Millboro silty clay soil. The plot was planted May 24 and harvested on October 28. A pre-emergence Roundup (32 oz) and Atrazine (16 oz) was applied and 100 lbs nitrogen per acre as Ammonium Nitrate + Ammonium Sulfate was applied. The previous crop was wheat.

Wall: Located (44°05'26.15" N 102°14'56.19" W, elevation 2,844 ft) in eastern Pennington County on a Blackpipe silty clay loam soil. The plot was planted on May 28 and harvested on October 26. An early post emergence application of Atrazine (16 oz.), Paramount (8 oz) and 10% 28-0-0 + 32 oz/Acre Crop Oil Concentrate was used. No nitrogen was applied at Wall because of high residual soil nitrate. The previous crop was wheat.

Acknowledgments

The efforts of the following SDSU staff are gratefully appreciated: Amanda Kammerer, Charlie Ellis, and Bob Fanning. The cooperation and resources of these cooperators are appreciated: D. Beck and Staff (Dakota Lakes Research Farm), K. Halverson (Kennebec), and D. Patterson (Wall).

2013 Grain Sorghum Hybrid Trial Results

Table 1a. 2013 Sorghum Performance – Average yield (13% moisture, 56 lbs/bu) and test weight (harvest moisture) arranged by company.								
Brand & Hybrid	Location							
	Dakota Lakes		Kennebec		Wall		Trial Average	
	Yield	Test Wt.	Yield	Test Wt.	Yield	Test Wt.	Yield	Test Wt.
Browning 775W	105	51.6	95	56.1	40	42.2	80	49.9
Browning Challenger BMX	121	54.5	96	50.1	43	37.9	91	47.3
Browning X-1001	54	51.3	11	38.0	14	48.7	32	46.3
DEKALB Asgrow_Pulsar	99	47.3	61	52.6	47	46.7	69	48.8
DEKALB DKS26-60	110	51.1	84	51.1	49	50.4	91	50.9
DEKALB DKS28-05	121	49.5	73	48.7	44	47.1	79	48.4
DEKALB DKS29-28	107	50.9	70	52.2	57	48.3	78	50.5
MONSANTO MSK180	115	49.4	81	54.7	42	45.3	79	49.8
MONSANTO MSK181	124	49.7	88	50.3	58	45.0	90	48.3
Fontanelle G2203	108	50.7	85	50.1	51	49.1	81	50.0
Fontanelle G3472	109	51.5	58	54.2	53	51.7	73	52.5
Fontanelle G4223	109	49.8	83	52.8	46	45.9	83	49.8
Fontanelle G4282	97	48.2	72	52.7	48	43.4	72	48.1
Fontanelle W4525	101	47.1	74	50.2	39	42.4	71	46.6
Gayland GW 9417	98	51.9	72	55.0	36	43.3	69	50.0
Gayland GW 9480	108	51.5	66	53.1	33	49.0	73	51.4
Gayland exp 8015	105	51.2	77	51.0	38	47.0	77	50.0
Gayland exp 8017	109	52.1	67	50.7	37	49.5	71	50.8
Gayland exp 9010	112	48.8	72	53.6	44	41.7	76	48.0
Gayland exp 9011	100	52.0	58	50.0	49	46.6	69	49.5
Gayland exp 9058	113	53.8	46	48.2	42	48.2	67	50.0
Gayland exp 9059	108	52.8	56	49.4	35	48.3	66	50.2
Hoegemeyer 6020	110	51.0	70	51.8	51	48.0	77	50.2
Hoegemeyer 6037	109	52.5	69	54.5	54	50.0	77	52.3
Hoegemeyer 6064	106	53.0	92	54.7	41	47.0	80	51.6
Legend LGS 5001T	106	51.5	71	51.3	53	52.4	82	51.7
Legend LGS 5009T	103	52.9	70	51.6	34	48.2	69	50.9
Mycogen 1G557	107	49.4	81	51.7	51	45.7	80	48.9
Mycogen 1G600	129	48.0	98	49.0	46	38.1	89	44.6
Mycogen E32294	118	53.6	84	52.4	43	43.7	82	49.9
Trial Average	104	50.4	76	51.7	42	45.7	75	49.3
LSD (0.05)†	15	2.1	19	3.0	18	3.4	25	3.4
TPG value‡	114	54.2	88	53.1	40	49.0	67	49.9
C.V. §	15	6.5	29	6.2	34	10.6	41	9.3

† Yield or test weight required (\geq LSD) to determine if hybrids are different from each other with confidence,

‡ Minimum value required to be in the top performance group (TPG) of varieties,

§ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Grain Sorghum Hybrid Trial Results

Table 1b. 2013 Sorghum Performance – Average yield (13% moisture, 56 lbs/bu) and test weight (harvest moisture) arranged by company.

Brand & Hybrid	Location							
	Dakota Lakes		Kennebec		Wall		Trial Average	
	Yield	Test Wt.	Yield	Test Wt.	Yield	Test Wt.	Yield	Test Wt.
Richardson 10413	92	53.4	49	53.2	40	47.0	62	51.0
Richardson 11043	107	52.1	87	53.3	44	49.2	80	51.2
Richardson 49473	95	50.3	80	51.0	22	43.6	74	49.2
Richardson 50113	92	50.0	52	49.9	20	32.9	55	44.2
Richardson 91743	100	52.8	76	53.4	46	49.1	74	51.7
Richardson 99773	115	52.8	95	52.1	37	52.1	83	52.4
Sorghum Partners 251	80	54.1	50	54.5	28	51.3	53	53.3
Sorghum Partners K35-Y5	93	45.7	80	52.4	36	48.9	69	49.0
Sorghum Partners KS310	114	49.1	86	49.7	49	44.4	83	47.7
Sorghum Partners KS585	118	48.9	106	54.0	54	49.6	92	50.8
Sorghum Partners NK4420	86	43.4	75	52.8	41	45.9	67	47.4
Sorghum Partners NK5418	91	43.6	90	52.6	49	46.6	77	47.6
Sorghum Partners SP3303	99	53.6	61	53.0	46	51.3	69	52.6
Sorghum Partners SP3425	99	48.8	70	53.8	45	47.6	71	50.1
Sorghum Partners X445	115	56.3	90	53.4	42	43.7	82	51.1
Sorghum Partners X446	105	53.9	68	51.0	41	48.8	71	51.2
Warner W494-A	107	52.6	90	52.7	31	47.7	76	51.0
Warner W528-W	100	40.1	90	45.2	42	34.4	78	39.9
Warner W614-W	101	44.4	87	52.2	37	38.6	75	45.1
Warner W624-Y	108	51.3	85	50.2	35	41.3	76	47.6
Warner W625-Y	114	52.8	85	49.8	33	43.0	77	48.5
Warner W632-W	99	49.2	68	51.8	24	34.2	64	45.1
Warner W638-W	84	47.7	107	54.0	39	45.6	77	49.1
Trial Average	104	50.4	76	51.7	42	45.7	75	49.3
LSD (0.05)†	15	2.1	19	3.0	18	3.4	25	3.4
TPG value‡	114	54.2	88	53.1	40	49.0	67	49.9
C.V. §	15	6.5	29	6.2	34	10.6	41	9.3

† Yield or test weight required (\geq LSD) to determine if hybrids are different from each other with confidence,

‡ minimum value required to be in the top performance group (TPG) of varieties,

§ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Grain Sorghum Hybrid Trial Results

Brand & Hybrid	Location								
	Dakota Lakes			Kennebec			Wall		
	Height (Inches)	Lodging (0-9)*	Moisture (%)	Height (Inches)	Lodging (0-9)*	Moisture (%)	Height (Inches)	Lodging (0-9)*	Moisture (%)
Browning 775W	49	1	21.4	49	0	18.8	40	1	16.1
Browning Challenger BMX	52	0	26.4	51	0	20.3	44	1	18.9
Browning X-1001	51	1	28.8	51	0	29.5	-	-	-
DEKALB Asgrow Pulsar	49	1	19.8	47	0	17.1	39	2	15.9
DEKALB DKS26-60	47	1	17.9	44	0	15.0	38	4	15.3
DEKALB DKS28-05	52	1	16.4	49	0	14.6	41	3	16.0
DEKALB DKS29-28	44	0	17.7	42	0	15.6	39	3	15.0
MONSANTO MSK180	54	1	21.0	48	0	17.7	40	3	14.9
MONSANTO MSK181	52	0	22.6	48	0	16.7	42	1	16.4
Fontanelle G2203	45	1	17.9	44	0	15.0	40	4	15.5
Fontanelle G3472	52	4	21.6	51	0	19.1	46	3	18.6
Fontanelle G4223	53	3	23.6	52	0	19.8	45	0	17.8
Fontanelle G4282	51	5	24.7	52	0	20.4	45	3	19.1
Fontanelle W4525	47	0	19.5	49	0	16.1	41	2	14.8
Gayland GW 9417	55	2	25.5	58	0	19.7	41	1	20.5
Gayland GW 9480	53	1	23.1	53	0	20.1	43	2	21.1
Gayland exp 8015	52	0	26.3	51	0	20.9	47	3	19.7
Gayland exp 8017	51	0	26.8	51	0	19.6	42	2	19.7
Gayland exp 9010	56	1	22.0	54	0	20.2	46	2	16.6
Gayland exp 9011	54	1	23.7	53	0	18.7	44	2	17.4
Gayland exp 9058	50	0	24.5	50	0	18.9	45	1	17.6
Gayland exp 9059	50	1	24.8	48	0	16.2	43	2	17.0
Hoegemeyer 6020	51	2	19.2	49	0	17.8	42	3	17.5
Hoegemeyer 6037	46	1	20.3	46	0	18.8	42	3	17.4
Hoegemeyer 6064	52	1	24.1	52	0	20.2	46	5	20.3
Legend LGS 5001T	53	1	16.8	50	0	15.4	43	2	17.9
Legend LGS 5009T	53	2	18.1	55	0	16.2	41	5	16.5
Mycogen 1G557	44	1	16.8	44	0	15.1	39	2	16.0
Mycogen 1G600	52	0	19.7	49	0	18.4	41	2	15.4
Mycogen E32294	52	1	20.3	47	0	17.9	43	3	16.6
Trial Average	50	1	20.9	49	0	17.9	42	2	17.1
LSD (0.05)†	4	1.5	1.6	4	ns	1.6	4	1.5	2.1
TPG value‡	-	-	-	-	-	-	-	-	-
C.V. §	9	-	-	9	-	-	8	-	-

*Lodging score: 0= no lodging, 9 = completed lodged.

† Height, lodging or moisture value required (\geq LSD) to determine if hybrids are different from each other with confidence,

‡ Minimum value required to be in the top performance group (TPG) of varieties,

§ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Grain Sorghum Hybrid Trial Results

Table 2b. 2013 Sorghum Performance – Height, lodging, and moisture (arranged by company)

Brand & Hybrid	Location								
	Dakota Lakes			Kennebec			Wall		
	Height (Inches)	Lodging (0-9)*	Moisture (%)	Height (Inches)	Lodging (0-9)*	Moisture (%)	Height (Inches)	Lodging (0-9)*	Moisture (%)
Richardson 10413	48	0	19.9	44	0	19.4	41	1	17.3
Richardson 11043	51	2	20.2	51	0	16.3	42	2	18.5
Richardson 49473	54	3	17.8	54	0	15.1	46	6	17.2
Richardson 50113	48	0	23.7	46	0	19.2	40	1	17.1
Richardson 91743	55	2	18.4	52	0	16.8	46	6	15.8
Richardson 99773	53	1	16.5	51	0	15.3	42	4	16.6
Sorghum Partners 251	45	1	20.0	43	0	18.9	38	3	16.6
Sorghum Partners K35-Y5	45	1	15.8	47	0	15.6	39	3	15.0
Sorghum Partners KS310	48	1	16.6	48	0	15.2	41	2	15.7
Sorghum Partners KS585	49	0	18.8	50	0	18.6	42	1	16.6
Sorghum Partners NK4420	47	3	17.7	47	0	18.5	41	1	16.4
Sorghum Partners NK5418	45	3	17.8	50	0	17.2	41	2	17.0
Sorghum Partners SP3303	47	0	18.1	45	0	16.7	38	1	14.9
Sorghum Partners SP3425	45	1	18.2	43	0	17.8	37	2	15.7
Sorghum Partners X445	51	1	22.2	50	0	20.5	41	1	18.3
Sorghum Partners X446	46	0	22.3	47	0	20.6	39	2	18.7
Warner W494-A	56	1	20.0	53	0	16.3	45	1	18.1
Warner W528-W	49	1	16.8	46	0	18.8	40	1	16.6
Warner W614-W	48	0	14.5	49	0	18.3	40	2	17.8
Warner W624-Y	50	0	25.2	52	0	17.4	44	1	18.6
Warner W625-Y	57	0	23.9	51	0	16.6	42	0	18.3
Warner W632-W	53	0	24.9	49	0	20.3	40	1	16.8
Warner W638-W	56	4	21.2	58	1	18.0	44	2	17.4
Trial Average	50	1	20.9	49	0	17.9	42	2	17.1
LSD (0.05)†	4	1.5	1.6	4	ns	1.6	4	1.5	2.1
TPG value‡	-	-	-	-	-	-	-	-	-
C.V. §	9	-	-	9	-	-	8	-	-

*Lodging score: 0= no lodging, 9 = completed lodged.

† Height, lodging or moisture value required (\geq LSD) to determine if hybrids are different from each other with confidence,

‡ Minimum value required to be in the top performance group (TPG) of varieties,

§ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Grain Sorghum Hybrid Trial Results

Table 3a. 2013 Sorghum seed treatment and hybrid traits reported by company.

Brand & Hybrid	Treatment or Rating				
	Seed Treatment (Yes or No)	Maturity Group (E, ME, M, L)†	Grain Color (B, C, R, W, Y)‡	Panicle Type (SC or SO)§	Resistance to greenbug biotype (C, E, I, K, or none)
Browning 775W	Yes	ME	C	SC	-
Browning Challenger BMX	Yes	ME	B	SO	-
Browning X-1001	Yes	E	B	SO	-
DEKALB Asgrow_Pulsar	Yes	ME	B	SO	E, I
DEKALB DKS26-60	Yes	E	B	SO	-
DEKALB DKS28-05	Yes	E	B	SC	E, I
DEKALB DKS29-28	Yes	E	B	SO	E, I
MONSANTO MSK180	Yes	E	B	SO	-
MONSANTO MSK181	Yes	E	B	SC	-
Fontanelle G2203	Yes	E	B	SO	-
Fontanelle G3472	Yes	E	B	SO	none
Fontanelle G4223	Yes	ME	B	SC	E, I
Fontanelle G4282	Yes	ME	B	SC	none
Fontanelle W4525	Yes	ME	W	SO	C
Gayland GW 9417	Yes	M	R	SC	C, E
Gayland GW 9480	Yes	L	R	SO	C, E
Gayland exp 8015	Yes	-	-	-	-
Gayland exp 8017	Yes	-	-	-	-
Gayland exp 9010	Yes	-	-	-	-
Gayland exp 9011	Yes	-	-	-	-
Gayland exp 9058	Yes	-	-	-	-
Gayland exp 9059	Yes	ME	B	SO	C, E
Hoegemeyer 6020	Yes	ME	R	SO	none
Hoegemeyer 6037	Yes	ME	R	SO	none
Hoegemeyer 6064	Yes	M	R	SO	none
Legend LGS 5001T	Yes	E	R	SC	none
Legend LGS 5009T	Yes	E	R	SC	none
Mycogen 1G557	Yes	E	B	SO	none
Mycogen 1G600	Yes	ME	B	SC	none
Mycogen E32294	Yes	ME	B	SO	C, E

† Maturity rating by company: E – Early, ME – Medium to Early maturity, M – Medium, L – Late.

‡ Grain color reported by company: B – Bronze, C – Cream, R – Red, W – White, Y – Yellow

§ Panicle type reported by company: SC – semi-closed, SO – semi-open.

2013 Grain Sorghum Hybrid Trial Results

Table 3b. 2013 Sorghum seed treatment and hybrid traits reported by company.

Brand & Hybrid	Treatment or Rating				
	Seed Treatment (Yes or No)	Maturity Group (E, ME, M, L)†	Grain Color (B, C, R, W, Y)‡	Panicle Type (SC or SO)§	Resistance to greenbug biotype (C, E, I, K, or none)
Richardson 10413	Yes	M	W	SC	C, E
Richardson 11043	Yes	E	R	SC	C, E
Richardson 49473	Yes	E	R	SC	C, E
Richardson 50113	Yes	M	W	SC	C, E
Richardson 91743	Yes	E	R	SO	C, E
Richardson 99773	Yes	E	R	SO	C, E
Sorghum Partners 251	Yes	E	-	-	-
Sorghum Partners K35-Y5	Yes	ME	C	-	C, E
Sorghum Partners KS310	Yes	E	B	-	C, E
Sorghum Partners KS585	Yes	M	B	-	C, E
Sorghum Partners NK4420	Yes	ME	B	-	C, E
Sorghum Partners NK5418	Yes	M	B	-	C, E
Sorghum Partners SP3303	Yes	ME	C	-	C
Sorghum Partners SP3425	Yes	ME	B	-	-
Sorghum Partners X445	Yes	M	B	-	-
Sorghum Partners X446	Yes	M	B	-	-
Warner W494-A	Yes	E	R	SC	C
Warner W528-W	Yes	ME	C	SO	C
Warner W614-W	Yes	M	C	SO	C
Warner W624-Y	Yes	M	Y	SO	C, E
Warner W625-Y	Yes	M	Y	SO	C, E
Warner W632-W	Yes	M	C	SO	C
Warner W638-W	Yes	ME	C	SO	none

† Maturity rating by company: E – Early, ME – Medium to Early maturity, M – Medium, L – Late.

‡ Grain color reported by company: B – Bronze, C – Cream, R – Red, W – White, Y – Yellow .

§ Panicle type reported by company: SC – semi-closed, SO – semi-open.

2013 Grain Sorghum Hybrid Trial Results

Table 4. List of participating companies or brands in the 2013 grain sorghum hybrid trials.

Company or Brand Name	Website
Browning Seed, Inc.	http://www.browningseed.com
DEKALB	http://www.aganytime.com
MONSANTO	http://www.monsanto.com
Fontanelle Hybrids	http://www.fontanelle.com
Gayland Ward Seed Co., Inc.	http://www.gaylandwardseed.com
Hoegemeyer Hybrids	http://therightseed.com
Legends Seeds, Inc.	http://www.legendseeds.net
Mycogen	http://www.mycogen.com
Richardson Seeds, Ltd.	http://www.richardsonseeds.com
Sorghum Partners LLC	http://www.chromatininc.com/seed.html
Warner Seeds, Inc.	http://www.warnerseeds.com/

ARCHIVE

Nathan Mueller | Agronomy Specialist, Brookings
Bruce Swan | Ag Research Manager/Specialist, Rapid City

Objective:

To evaluate standard and experimental grain sorghum hybrids for yield, agronomic characteristics and adaptation to west central South Dakota.

Procedure:

The trial was no-till planted with a Kinze 2100 two row plot planter with 30 inch spacing. The plots were two rows wide and 30 feet long and the experimental design was a randomized complete block with four replications. The sorghum was planted at 80,000 seeds per acre. The trial was harvested with a Wintersteiger Delta plot combine equipped with a GrainGage weigh system. Height, shatter, and lodging notes were taken just prior to harvest.

Location Summary

Hughes County – Dakota Lakes Research Farm (Pierre)

Planting Date: May 22, 2012
Herbicides applied: Parallel (1.5 pt/A) + 2,4-D (6 oz/A)
Nitrogen applied: 100 lbs/A
Harvest Date: Sept. 17, 2012

The main factor limiting yields in 2012 was the lack of rainfall. Yields at Dakota Lakes averaged 46 Bu/A with decent test weights of 57.7 lbs/bu. The hybrids Pioneer 88P68, Pioneer 8925, DeKalb DKS 28-05, DeKalb 29-28, DeKalb 39y and Asgrow Pulsar had the highest two year average yields. Since grain sorghum prices have been similar to corn the last few years, typically would have less input costs and have better drought tolerance than corn, grain sorghum is a favorable cropping option for producers in south central South Dakota. Since we are on the northern fringe of viable grain sorghum production, producers should only consider planting the earliest maturing hybrids to help insure that their crop fully ripens before a killing frost. Results are presented in the following table.

2012 Grain Sorghum Hybrid Trial Results

Grain Sorghum Yield Trial – Hughes County (Dakota Lakes Research Farm) – 2012.						
Brand & Hybrid	Height (in.)	Lodging* (0-9)	Moisture (%)	Test Wt. (lbs/bu)	Yield (bu/ac)	
					2012	2-Year Avg.
DEKALB Asgrow _Pulsar	36	0	13.7	57.9	49	88
DEKALB DKS 28-05	38	0	11.8	59.3	53	96
DEKALB DKS 29-28	34	0	12.5	60.3	52	89
DEKALB DKS 36-06	38	0	18.4	53.6	35	81
DEKALB DKS 37-07	40	0	16.5	54.4	45	88
DEKALB DKS 39y	36	0	12.8	59.7	46	72
Legend Seeds LGS 5001	37	0	11.5	58.9	52	87
Legend Seeds LSS 5009	38	0	11.5	59.3	55	83
Sorghum Partners 251	34	0	11.1	58.9	45	68
Sorghum Partners SP3303	37	0	12.2	60.2	43	74
Sorghum Partners KS310	37	0	14.6	56.6	38	79
Sorghum Partners K35-Y5	36	0	12.9	60.4	56	86
Pioneer 88P68	41	0	12.6	59.7	59	97
Pioneer 8925	37	0	12.2	60.2	50	96
Triumph TR420	41	0	14.9	57.3	34	-
Triumph TR424	36	0	11.7	59.0	54	82
Golden Acres H-390W	39	0	22.2	51.6	28	-
Golden Acres 5725	38	0	17.3	51.6	31	75
Average	37	0.0	13.9	57.7	46	84
LSD (P = 0.05)	3		1.3	1.6	9	10
CV	4.7		6.4	2.0	13.3	12.4
* 0 = no lodging, 9 = lodged						

Nathan Mueller | Agronomy Specialist, Brookings
Bruce Swan | Ag Research Manager/Specialist, Rapid City

Objective:

To evaluate standard and experimental grain sorghum hybrids for yield, agronomic characteristics, and adaptation to South Dakota.

Procedure:

The trial was no-till planted with a Kinze 2100 two row plot planter with 30 inch spacing. The plots were two rows wide and 30 feet long and the experimental design was a randomized complete block with four replications. The sorghum was planted at 60,000 seeds per acre. The trial was harvested with a Wintersteiger Delta plot combine equipped with a GrainGage weigh system. Height, shatter, and lodging notes were taken just prior to harvest.

Location Summary

Lyman County – Kennebec (Farmer Cooperator)

Planting Date: June 17, 2010
Herbicides applied: Dual (pre) & Paramount (post)
Nitrogen applied: 100 lbs/A
Harvest Date: Nov. 2, 2010

This trial was initiated to restart the grain sorghum testing program in South Dakota, which was last done in 1994. The trial was planted later than ideal because of wet conditions in early June. Fortunately fall conditions were warm through the end of October, so all the entries did fully ripen before harvest. Some of the plots had less than ideal stands due to pheasants digging the seeds out of the ground after planting. The variable stands certainly led to a higher than ideal CV of 14.9. Otherwise growing conditions were excellent throughout the season with adequate moisture and heat units which resulted in an average yield of 77 bu/ac. We plan on continuing and expanding grain sorghum testing in 2011. Results are presented in the following table.

2010 Grain Sorghum Hybrid Trial Results

Grain Sorghum Yield Trail – Lyman County, Kennebec w/Farmer Cooperator – 2010.					
Brand & Hybrid	Height (in.)	Lodging* (0-9)	Moisture (%)	Test Wt. (lbs/bu)	Yield (bu/ac) 2012
Syngenta H-307	50	0	16.9	50.6	82
Syngenta 5745	48	0	16.7	50.5	96
Syngenta 5875	37	0	16.7	53.6	71
Pioneer Brand 8925	45	0	15.5	54.2	86
Pioneer Brand 88P68	50	0	15.5	54.8	92
Sorghum Partners 251	41	0	15.5	55.3	66
Sorghum Partners SP3303	45	0	15.5	52.5	80
Sorghum Partners K35-Y5	44	0	16.0	52.6	81
Sorghum Partners KS310	43	0	16.3	49.0	101
DEKALB DKS28-05	49	0	16.3	49.2	68
DEKALB DKS29-28	39	0	15.5	52.4	83
Channel 5B27	47	0	14.8	50.1	86
Channel 5C35	45	0	15.9	54.2	71
Triumph TR420	44	0	16.2	55.9	76
Triumph TR424	43	0	15.5	49.2	63
Triumph TRX00464	42	0	16.5	48.8	80
Legend LGS5001	45	0	16.1	52.8	51
Legend LGS5009	47	0	16.4	54.7	61
Average	45	0.0	16.0	52.2	77
LSD (P = 0.05)	3			2.5	16
CV	5.2			3.3	14.9

* 0 = no lodging, 9 = lodged



2014 South Dakota Grain Sorghum Variety Trial Results

A Service of SDSU Extension

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Dwayne Beck | Dakota Lakes Farm Manager, Pierre

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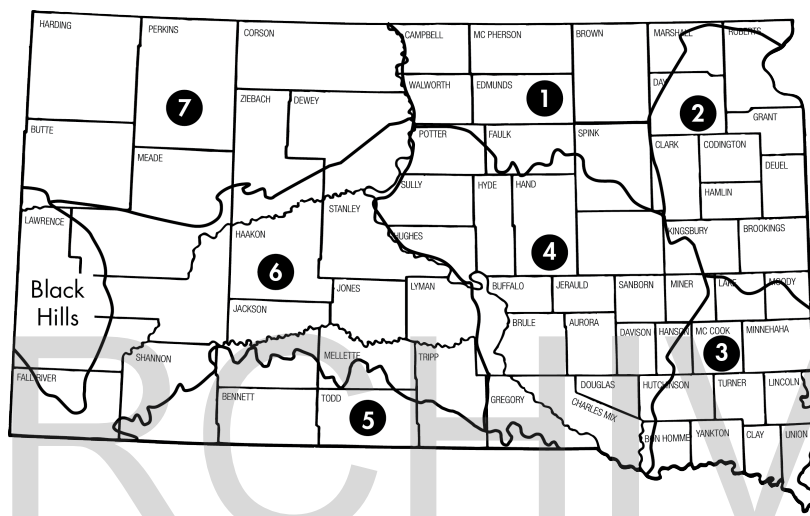


Table 1. List of 2014 Grain Sorghum Hybrids tested at four SD locations.

Company Name	Hybrid Name/Number	Agronomic Characteristics				
		Maturity Group (E, M/E, M, L)†	Germination (%)	Grain Color (B,C,R,Y,W)‡	Panicle Type (SC or SO)δ	Resistance to Greenbug biotype: C, E, I, K or none
Browning Seeds, Inc	Challenger BMX	M/E	85	B	SO	None
	Exp. Kiowa^	E	85	B	SO	C
Chromatin, Inc	251	E	85	R	SO	None
	KS310	E	85	B	SO	C,E
	SP3303	M/E	85	C	SC	C
	SP3425	M/E	85	B	SO	C,E
	K35-Y5	M/E	85	C	SO	C,E
KS585	M	85	B	SO	C,E	

Table 1 (continued). List of 2014 Grain Sorghum Hybrids tested at four SD locations.

Company Name	Hybrid Name/Number	Agronomic Characteristics				
		Maturity Group (E, M/E, M, L)†	Germination (%)	Grain Color (B,C,R,Y,W)‡	Panicle Type (SC or SO)§	Resistance to Greenbug biotype: C, E, I, K or none
Dupont Pioneer	Pioneer 8925 [^]	E	85	R	SC	None
	Pioneer 88P68 [^]	M/E	85	R	SO	None
	Pioneer 86P20 [^]	M	85	R	SC	None
	Pioneer 88Y41 [^]	M/E	85	W	SC	None
	Pioneer 87P06 [^]	M/E	85	R	SC	None
Hoegemeyer Hybrids	HPT H6020	M/E	85	R	SC	None
	HPT H6037	M/E	85	R	SC	None
	HPT H6064	M	85	B	SC	None
Mycogen Seeds	1G557	E	85	B	SO	None
	1G600	M/E	85	B	SC	None
	M3838 [^]	M/E	85	C	SO	E
	1G588 [^]	E	85	B	SO	E
Richardson Seeds, LTD	99773	E	-	R	SO	None
	49473 [^]	E	-	R	SC	None
	11043	M/E	-	R	SC	C,E
	91743 [^]	M/E	-	R	SO	None

[^] - New variety in trials

Contact information for participating suppliers:

Browning Seed, Inc.

3101 S. I-27
Plainview, TX 79072
Phone: 806.293.5271

Dupont Pioneer

41226 Raceview Dr
Mitchell, SD 57301
Phone: 605.354.1234

Mycogen Seeds

2925 Lakeview Dr
Yankton, SD 57078
Phone: 605.661.6100

Chromatin, Inc.

8509 Venita Ave
Lubbock, TX 79424
Phone: 806.790.6542

Hoegemeyer Hybrids

1755 Hoegemeyer Rd
Hooper, NE 68031
Phone: 402.654.3399

Richardson Seeds, LTD

115 N 3rd St
Breckenridge, MN 56520
Phone: 218.643.2410

Trial Highlights

Grain Sorghum variety trials were conducted at 4 locations across South Dakota in 2014 (Table 2). Additional variety information can be found in Table 1. The Wall location results were not published due to early season flooding and poor emergence/weed control.

Practices and Methods

Four replications of each variety were planted at each location. Locations were seeded at 60,000 seeds/acre with a John Deere 750 drill on 30 inch spacing. Plots were 25 ft long and 5 ft wide at harvest. The location at Beresford was seeded on 30 inch row spacing and plots were 13 ft long and 5 ft wide at harvest.

Table 2. Location name and county, previous crop, and planting date for each

Location Name	County	Previous Crop	Planting date
Beresford	Lincoln	Peas	June 6, 2014
Dakota Lakes	Hughes	Canola	May 29, 2014
Kennebec	Lyman	Wheat	May 22, 2014
Wall	Pennington	Fallow	May 21, 2014

Acknowledgements

The efforts of the following groups and people are gratefully appreciated: SDSU West River Staff – Michael Swan and Charlie Ellis, Beresford Research Farm Staff, K. Halvorson (Kennebec), D. Patterson (Wall), Dakota Lakes Research Farm – D. Beck and Staff (Pierre).

Crop Zone 1			Crop Zone 4				Crop Zone 6			
Beresford			Dakota Lakes				Kennebec			
Variety	Yield (bu/ac)	Test Wt	Variety	Yield (bu/ac)	Test Wt	2-Year Yield Average (bu/ac)	Variety	Yield (bu/ac)	Test	2-Year Yield Average (bu/ac)
Browning Challenger BMX	100	55.4	Browning Challenger BMX	119	43.6	120	Browning Challenger BMX	28	41.2	62
Browning EXP Kiowa	103	53.8	Browning EXP Kiowa	122	54.4	-	Browning EXP Kiowa	51	46.7	-
Chromatin 251	80	55.9	Chromatin 251	109	56.4	95	Chromatin 251	39	45.7	44
Chromatin K35-Y5	102	55.3	Chromatin K35-Y5	136	52.7	114	Chromatin K35-Y5	48	44.4	64
Chromatin KS 310	95	54.6	Chromatin KS 310	135	53.7	125	Chromatin KS 310	44	43.7	65
Chromatin KS 585	69	44.4	Chromatin KS 585	140	54.0	129	Chromatin KS 585	56	43.8	81
Chromatin SP 3303	90	53.4	Chromatin SP 3303	118	55.9	109	Chromatin SP 3303	47	49.0	54
Chromatin SP 3425	75	53.6	Chromatin SP 3425	135	53.0	117	Chromatin SP 3425	43	44.0	57
Hoegemeyer HPT H6020	111	51.5	Hoegemeyer HPT H6020	146	55.2	128	Hoegemeyer HPT H6020	53	43.9	75
Hoegemeyer HPT H6037	107	54.5	Hoegemeyer HPT H6037	145	55.4	127	Hoegemeyer HPT H6037	51	43.9	61
Hoegemeyer HPT H6064	80	55.7	Hoegemeyer HPT H6064	156	55.1	131	Hoegemeyer HPT H6064	58	49.1	60
Mycogen 1G557	86	51.3	Mycogen 1G557	126	52.5	116	Mycogen 1G557	46	46.4	64
Mycogen 1G588	94	51.0	Mycogen 1G588	150	52.1	-	Mycogen 1G588	52	43.1	-
Mycogen 1G600	83	56.1	Mycogen 1G600	149	49.1	139	Mycogen 1G600	35	33.9	64
Mycogen M3838	115	55.0	Mycogen M3838	129	50.8	-	Mycogen M3838	35	38.4	-
Pioneer 86P20	108	53.7	Pioneer 86P20	131	54.5	-	Pioneer 86P20	50	46.8	-
Pioneer 87P06	112	55.9	Pioneer 87P06	134	56.9	-	Pioneer 87P06	57	46.5	-
Pioneer 88P68	118	55.2	Pioneer 88P68	134	55.7	-	Pioneer 88P68	51	48.2	-

Crop Zone 1			Crop Zone 4				Crop Zone 6			
Beresford			Dakota Lakes				Kennebec			
Variety	Yield (bu/ac)	Test Wt	Variety	Yield (bu/ac)	Test Wt	2-Year Yield Average (bu/ac)	Variety	Yield (bu/ac)	Test	2-Year Yield Average (bu/ac)
Pioneer 88Y41	35	41.6	Pioneer 88Y41	126	59.0	-	Pioneer 88Y41	23	46.6	-
Pioneer 8925	107	58.4	Pioneer 8925	128	57.7	-	Pioneer 8925	45	45.7	-
Richardson 91743	67	51.0	Richardson 91743	128	53.2	-	Richardson 11043	50	46.2	69
Richardson 11043	101	54.9	Richardson 11043	138	55.6	122	Richardson 49473	20	33.6	-
Richardson 49473	35	42.3	Richardson 49473	119	41.4	-	Richardson 91743	45	44.9	-
Richardson 99773	96	54.6	Richardson 99773	131	56.6	123	Richardson 99773	29	41.2	62
Trial Average	90	52.8	Trial Average	133	53.4	121	Average	44	44.0	63
LSD	9	2.4	LSD	13	3.1	11	LSD	16	5.3	15
TPG value*	109	56.0	TPG value*	143	55.9	128	TPG value*	42	43.8	66
CV	25	8.5	CV	11	8.3	-	CV	32	12.4	-

* - Denotes the yield that is considered not statistically different from the highest yielding hybrid

Christopher Graham | Assistant Professor & SDSU Extension Agronomist
Bruce Swan | Agricultural Research Manager

Basic Agronomic Details

Locations:	Dakota Lakes Research Farm - Hughes County	Southeast of Kennebec - Lyman County	North of Wall - Pennington County
Cooperator:	Dwayne Beck - Dakota Lakes	Kim Halverson - Kennebec	Dale Patterson - Wall
Soil Type:	Silt Loam	Silty Clay	Clay Loam
Previous crop:	Soybeans	Winter Wheat	Winter Wheat
Tillage:	No-Till	No-Till	No-Till
Row spacing:	30 inches	30 inches	30 inches
Seeding Rate:	60,000 pure live seed/acre	60,000 pure live seed/acre	60,000 pure live seed/acre
Fertilizer:	75 lbs N/Acre as 28-0-0	100 lbs of N as urea plus 20 pounds of N as Ammonium Sulfate	80 lbs N/Acre as 32-0-0 (6-10-2015)
Herbicide:	2/3 rate of Harness Extra in November, 1/3 rate Harness Extra at planting, Roundup and 2,4 D in the spring application, Buctril also applied post emergence.	1 quart Atrazine plus Roundup last fall (downy brome control), roundup in early spring. Another quart of Atrazine plus generic Dual at planting time	32 oz Roundup/A (6-10-2015) Field Cultivated on July 13, 2015.
Date seeded:	5/28/15	5/27/15	6/8/15
Date harvested:	10/21/15	10/21/15	11/9/15

Trial Highlights

Sorghum variety trials were initiated at three sites across central and western South Dakota. These sites were located in Pierre, Kennebec and Wall. Agronomic practices are referenced in the Basic Agronomic Details section of this document. In total, there were 29 hybrids tested. Basic information on each hybrid can be found in Table 1. Dakota Lakes averaged 70 bu/acre with a range of 94 – 52 bu/ac while the average at Kennebec was 124 bu/ac with a range of 144-106 bu/ac. Full results can be found in Tables 2 & 3. The Dakota Lakes site had a large variation between replicated blocks. This is reflected in a higher Coefficient of Variation (CV). The rolling topography of the trial site likely played a role in this variation as a yield gradient could be seen from higher to lower elevations. The Wall site data is not published due to poor stands and unreliable data.

Another important note is the uncommonly long season that was experienced during the 2015 growing season. October was the fourth hottest on record over the last 120 years with an average temperature 3 °F above normal. This likely benefitted the longer maturity hybrids in the trial with a longer grain filling period and lack of a killing frost. At Kennebec, for example, regression analysis indicates that yields for later maturing hybrids increased by approximately 1 bu/ac per day based on days to 50% bloom. However, there are still large genetic variances even within similar maturing hybrids. Moreover, even the latest hybrids tested were only Medium relative maturity, which reflects the overall shorter growing season in South Dakota compared to more southerly regions. These trials will continue to highlight many of these differences across the various growing environments for sorghum production in South Dakota.

Acknowledgements

These trials are funded through entry fees from the companies entering hybrids. Additional thanks are extended to Dale Patterson, Kim Halverson and Dwayne Beck for donating land, fertility, herbicides and their time and to Michael Swan and Charles Ellis for fieldwork and lab assistance.

Table 1. 2015 SDSU Sorghum hybrid entry details

Variety Information		Agronomic Information			
Company Name	Hybrid Name	Grain Color (B, C, R, Y)‡	Maturity Group†	Days to 50% Bloom	Panicle Type (SC or SO)§
Alta Seeds	AG1101	R	E	55	SO
	AG1201	B	E	60	SO
	AG1203	B	M/E	63	SO
	AG1301	C	M/E	63	SC
	AG1401	W	E	61	SO
Browning Seeds	Lightning	B	E	57	SO
Channel	5C35	C	E	58	SO
	5B27	B	E	56	SO
Chromatin/Sorghum Partners	KS310	B	E	59	SO
	KS585	B	M	69	SO
	SPX11814	B	E	59	NA
	SPX15714	C	M	69	NA
Dekalb	DK28E	B	E	58	SO
	DKS28-05	B	E	57	SC
	DKS29-28	B	E	58	SO
	Pulsar	B	E	60	SO
Fontanelle	G3472	B	E	60	SC
Legend Seeds	LGS 5001	R	E	51	SO
	LGS EXP 1	R	E	55	SO
	LGS EXP 2	W	E	55	SO
	LGS EXP 3	W	M/E	65	SC
Monsanto	MSM171	B	E	58	SO
	MSM176	B	E	60	SC
	MSN185	C	E	59	SO
	MSN187	B	E	59	SC
	MSN189	B	E	60	SC
	MSN190	C	E	60	SC
Pioneer	8925	R	E	58	SC
	88P68	R	M/E	62	SO

‡ Grain color: B=Bronze, C = Cream, R = Red, W = White, Y = Yellow

§ Panicle type: SC = Semi-closed, SO = Semi-Open, NA = Not available

† Maturity: E = Early, M/E = Medium-Early, M = Medium

Table 2. 2015 Dakota Lakes Sorghum Hybrid Trial Results - Average yield (13% moisture), test weight and harvest moisture content.

Variety	Dakota Lakes			2-Yr Yield Average	3-Yr Yield Average
	Yield (bu/ac)	Test Wt.	Harvest Moisture (%)	Yield (bu/ac)	Yield (bu/ac)
	KS585	94	57.0	13.8	116
AG1301	93	57.2	14.2		
88P68	92	60.1	15.1		
DK28E	92	54.5	13.0		
MSN187	91	56.8	13.6	111	113
KS310	88	56.7	13.3		
SPX 11814	88	54.5	12.5		
Lightning	87	55.9	13.7		
MSN190	86	57.2	13.4	101	
5C35	85	55.4	13.0		
AG1203	83	58.8	16.4		
5B27	82	55.7	13.3		
DKS29-28	80	59.7	14.4	101	
8925	79	58.8	14.7		
MSM176	78	60.6	16.1		
AG1201	78	57.5	14.1		
MSN189	77	61.0	15.4		
MSM171	77	57.5	14.1		
LGS exp 3	77	61.3	14.8		
LGS exp 2	76	57.9	14.4		
LGS 5001	76	55.4	13.4		
AG1101	76	56.0	13.6		
DKS28-05	75	56.8	14.0		
Pulsar	68	56.3	14.3		
LGS exp 1	68	60.9	15.5		
MSN185	68	58.7	14.7		
G3472	63	62.7	15.8		
AG 1401	62	57.6	14.8		
SPX 15714	52	62.4	17.0		
Trial Average	79	57.8	14.4		
TPG value‡	72	60.3	-		
C.V.§	17	2.5	-		

‡ Minimum value required to be in the top yield group (TYG) of varieties.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Table 3. 2015 Kennebec Sorghum Hybrid Trial Results - Average yield (13% moisture), test weight and harvest moisture content.

Variety	Kennebec			2-Yr Yield Average	3-Yr Yield Average
	Yield (bu/ac)	Test Wt.	Harvest Moisture (%)	Yield (bu/ac)	Yield (bu/ac)
	AG1203	144	57.1	15.5	99
KS585	142	55.6	13.9		
AG1301	140	55.3	13.8		
MSN189	136	55.1	13.6		
MSN190	134	51.4	17.1	92	
Pulsar	134	52.2	15.1		
SPX15714	133	56.7	15.2		
88P68	132	57.4	15.0		
MSM171	132	54.0	13.0		
DKS29-28	130	55.8	12.4		
G3472	128	59.0	14.2		
DKS28-05	128	53.5	14.1		
MSN187	122	51.6	15.6	82	83
AG1201	121	56.2	13.0		
AG1401	120	49.5	18.0		
KS310	120	55.1	13.6		
Lightning	120	54.4	13.8		
SPX11814	120	55.0	12.5		
MSM176	119	60.4	14.8		
LGS EXP 3	117	57.8	13.0		
MSN185	117	55.5	14.2	80	
8925	116	56.9	12.6		
DK28E	115	54.2	15.7		
LGS 5001	114	54.2	15.4		
5C35	113	56.1	13.3		
LGS EXP 2	112	53.5	13.6		
LGS EXP 1	111	57.9	13.5		
5B27	110	53.7	12.6		
AG1101	106	55.0	12.8		
Trial Average	124	55.2	14.2		
TPG value‡	135	57.2	-		
C.V.§	6	4.1	-		

‡ Minimum value required to be in the top yield group (TYG) of varieties.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

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Crop Zones in South Dakota

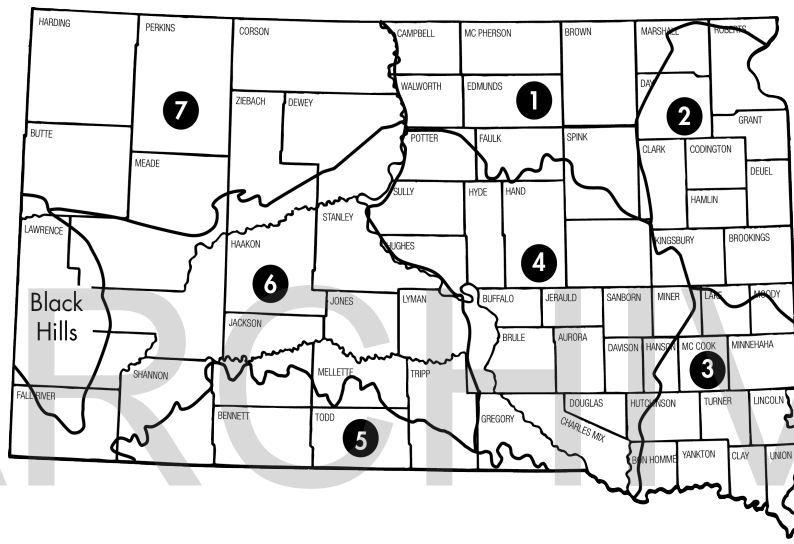


Table 1. Planting and harvest dates and previous crop.

Location	Planting Date	Harvest Date	Previous Crop	Crop Zone
Dakota Lakes	5/31/16	10/16/16	Wheat	4
Kennebec	6/2/16	10/17/16	Corn	6
Wall	6/1/16	11/3/16	Wheat	6
Location	N Fertility	Starter Fertilizer	Seeding Rate	Herbicides
Dakota Lakes	25 lb/ac (UAN)	10-25-0-5-.5 (Zn) - 6 gpa	60,000 pls/ac	Atrazine, Dual, Roundup Roundup, Sharpen
Kennebec	100 lb/ac (urea)	10-25-0-5-.5 (Zn) - 6 gpa	60,000 pls/ac	
Wall	80 lb/ac (UAN)	10-25-0-5-.5 (Zn) - 6 gpa	60,000 pls/ac	

Trial Highlights

The 2016 Grain Sorghum Hybrid Trials consisted of 3 sites (Dakota Lakes, Kennebec and Wall) across the central and western portions of South Dakota. In total, 29 hybrids were tested (Table 1). Planting and harvest dates can be found in Table 1. All planting was done with a no-till drill and a planting population of 60,000 seeds per acre. Fertilizer applied can also be found on Table 1. Plots were harvested using a Wintersteiger plot combine.

Across all sites, the trial average was 93 bu/ac with a range of 70 – 116 bu/ac. The highest yielding site was Dakota Lakes with a trial average of 114 bu/ac and a range of 88 -138 bu/ac (Table 3a). This range (50 bu/ac) highlights the fact that variety selection is incredibly important.

Tables 4 shows the 2-year averages for the sites and hybrids that have been available. Because weather plays such a significant role in crop development and varies greatly from year to year, longer term data is generally a better guideline when choosing an appropriate variety. For each table, the data are sorted by yield for ease of use. However, there are other factors to consider when choosing an appropriate hybrid (maturity, grain color, seed cost, etc)

Acknowledgements

We would like to thank Dr. Dwayne Beck at Dakota Lakes, Mr Kim Halverson at Kennebec and Mr. Dale Patterson at Wall for their generosity in offering land space as well herbicide control, fertility and updates on crop progress

Table 2. Grain Sorghum Hybrids included in 2016 Variety Trial

Variety	Company Name	Maturity Group (E, M/E, M) [†]	Days to 50% Bloom	Grain Color (B, C, R, Y) [‡]	Panicle Type (SC or SO) [§]
Arrow 216	Arrow Seed	E	52	R	SO
Arrow X1R	Arrow Seed	E	54	R	SC
Chromatin 0163	Chromatin, Inc	E	56	B	SC
Dekalb 28-05	Monsanto	E	58	B	SO
Dekalb 28E	Monsanto	E	57	B	SC
Dekalb 29-28	Monsanto	E	58	B	SO
Dekalb Pulsar	Monsanto	M/E	60	B	SO
Legend 5001	Legend Seed	E	51	R	SO
Legend EXP 1	Legend Seed	E	53	W	SO
Legend EXP 2	Legend Seed	M/E	60	W	SC
Legend EXP 3	Legend Seed	M/E	60	W	SO
Legend EXP 4	Legend Seed	E	57	R	SO
Legend EXP 5	Legend Seed	E	57	R	SC
Sorghum Partners 31A15	Sorghum Partners, LLC	E	58	B	SC
Sorghum Partners 3303	Sorghum Partners, LLC	M/E	60	W	SC
Sorghum Partners 33S40	Sorghum Partners, LLC	M/E	60	W	SC
Sorghum Partners 34A19	Sorghum Partners, LLC	M/E	60	B	SC
Sorghum Partners KS310	Sorghum Partners, LLC	E	58	B	SC
Sorghum Partners KS585	Sorghum Partners, LLC	M	66	B	SC
Ward 9058	Gaylon Ward	-	-	-	-
Ward 9059	Gaylon Ward	-	-	-	-
Ward 9076	Gaylon Ward	-	-	-	-
Ward 9108	Gaylon Ward	-	-	-	-
Ward 9125	Gaylon Ward	-	-	-	-
Ward 9131	Gaylon Ward	-	-	-	-
Ward 9134	Gaylon Ward	-	-	-	-
Ward 9135	Gaylon Ward	-	-	-	-
Ward 9138	Gaylon Ward	-	-	-	-
Ward 9139	Gaylon Ward	-	-	-	-

Table 3a. 2016 Dakota Lakes, SD Grain Sorghum Performance - Average yield, 95% CI, test weight, height. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 4				
	Dakota Lakes				
	Yield (bu/ac)	95% Confidence Interval [§]		Test Wt. (lb/bu)	Moisture (%)
Ward 9076	138	125	151	54.7	18.8
Ward 9135	133	120	146	55.2	17.6
Dekalb 28-05	133	119	146	55.9	15.6
Ward 9108	131	118	144	53.0	16.7
Ward 9125	129	116	142	51.5	17.4
Ward 9139	126	113	139	55.9	19.4
Dekalb 29-28	124	111	137	55.5	15.2
Ward 9134	122	109	135	54.0	18.8
Sorghum Partners 31A15	121	108	134	53.1	16.7
Sorghum Partners 34A19	121	107	134	52.5	15.2
Sorghum Partners KS585	120	107	134	57.4	17.9
Dekalb Pulsar	120	107	133	54.9	16.1
Legend EXP 4	117	104	131	55.7	17.2
Sorghum Partners KS310	116	103	129	53.5	16.1
Legend EXP 3	113	100	127	57.9	16.1
Ward 9131	111	98	124	52.7	17.4
Ward 9138	111	98	124	53.5	19.9
Legend EXP 5	111	98	124	56.4	16.8
Dekalb 28E	110	96	123	53.3	14.4
Legend 5001	105	91	118	53.0	14.8
Sorghum Partners 33S40	102	89	115	57.8	15.9
Ward 9059	101	88	114	51.3	21.4
Ward 9058	100	87	113	52.4	20.8
Legend EXP 2	96	83	109	56.8	16.5
Sorghum Partners 3303	91	78	104	55.2	16.2
Legend EXP 1	91	78	104	54.9	15.9
Chromatin 0163	88	75	101	53.6	17.5
Average	114	101	127	54.5	17.1
TYG [†]	125.0	-	-	56.5	

[†] Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

[§] The 95% confidence interval says that the true average will be within this interval with 95% certainty, based on the specific study site parameters

Table 3b. 2016 Kenebec, SD Grain Sorghum Performance - Average yield, 95% CI, test weight, height. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 6				
	Kenebec				
	Yield (bu/ac)	95% Confidence Interval [§]		Test Wt. (lb/bu)	Moisture (%)
Ward 9125	121	107	135	47.1	16.2
Ward 9135	119	105	133	51.6	18.4
Ward 9108	115	101	129	51.0	16.9
Ward 9139	114	100	128	52.9	19.9
Ward 9059	113	100	127	51.6	19.6
Sorghum Partners 34A19	113	99	127	47.1	17.0
Ward 9134	111	97	125	53.7	17.7
Legend EXP 5	110	96	124	54.6	15.9
Ward 9131	106	92	120	49.5	17.2
Dekalb 28-05	105	91	119	50.4	13.5
Sorghum Partners KS310	104	90	118	50.2	14.3
Legend EXP 4	104	90	118	55.7	16.6
Sorghum Partners KS585	103	89	117	52.9	18.4
Dekalb Pulsar	103	89	117	51.9	15.3
Sorghum Partners 31A15	100	86	114	48.2	14.4
Ward 9076	100	86	114	49.8	20.3
Arrow X1R	100	86	114	54.9	14.6
Ward 9138	97	83	111	54.3	17.6
Dekalb 29-28	95	82	109	51.4	14.7
Ward 9058	92	78	106	51.9	19.1
Sorghum Partners 33S40	91	77	105	55.0	14.6
Legend EXP 3	90	76	104	56.1	15.5
Legend EXP 1	90	76	104	53.0	14.1
Legend EXP 2	88	74	102	54.7	15.5
Sorghum Partners 3303	87	73	101	53.6	14.8
Dekalb 28E	86	73	100	51.1	12.9
Chromatin 0163	82	68	96	52.7	18.4
Legend 5001	79	65	93	53.1	14.4
Arrow 216	71	58	85	54.5	14.8
Average	100	86	114	52.2	16.3
TYG [†]	107.0	-	-	54.5	-

[†] Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

[§] The 95% confidence interval says that the true average will be within this interval with 95% certainty, based on the specific study site parameters

Table 3c. 2016 Wall, SD Grain Sorghum Performance - Average yield, 95% CI, test weight, height. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 6				
	Wall				
	Yield (bu/ac)	95% Confidence Interval [§]		Test Wt. (lb/bu)	Moisture (%)
Ward 9135	97	76	118	57.8	12.3
Ward 9138	85	64	107	58.0	12.8
Dekalb 28-05	84	63	105	56.9	12.8
Sorghum Partners 31A15	81	60	102	57.2	12.5
Dekalb Pulsar	79	58	100	55.9	13.2
Sorghum Partners 34A19	78	57	100	55.2	11.7
Legend EXP 5	76	54	97	58.5	13.0
Legend EXP 4	75	53	96	57.9	13.7
Legend EXP 2	72	50	93	57.3	12.7
Ward 9076	69	48	90	52.0	13.9
Sorghum Partners KS310	67	46	88	56.4	12.0
Sorghum Partners KS585	65	44	86	55.6	13.5
Ward 9139	65	44	86	55.9	12.1
Ward 9134	63	42	84	55.0	12.8
Dekalb 28E	63	35	91	58.7	12.0
Ward 9059	62	41	83	54.4	13.2
Ward 9131	62	41	83	56.7	13.8
Legend EXP 3	61	37	85	57.0	12.3
Dekalb 29-28	61	40	82	57.8	13.5
Ward 9058	60	39	81	54.6	13.3
Legend EXP 1	57	35	78	57.7	12.4
Chromatin 0163	55	32	79	57.5	14.3
Ward 9125	52	31	73	54.4	14.4
Ward 9108	50	28	71	54.9	13.8
Sorghum Partners 3303	39	18	60	55.4	12.7
Sorghum Partners 33S40	31	10	52	58.2	13.2
Legend 5001	21	0	49	52.5	12.8
Average	64	42	86	56.3	13.0
TYG [†]	76.3			56.1	

[†] Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

[§] The 95% confidence interval says that the true average will be within this interval with 95% certainty, based on the specific study site parameters

Table 4a. Two-year average (2015-2016) for Dakota Lakes, SD Grain Sorghum Performance - Average yield, and test weight. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4			
	Dakota Lakes			
	Yield (bu/ac)	95% Confidence Interval [§]		Test Wt. (lb/bu)
Sorghum Partners KS585	108	97	119	56.4
Dekalb 28-05	105	94	115	55.4
Dekalb 29-28	103	92	114	56.5
Sorghum Partners KS310	103	92	114	54.0
Dekalb 28E	101	91	112	53.0
Legend EXP 3	96	85	107	58.5
Dekalb Pulsar	95	84	106	54.6
Legend 5001	91	80	102	53.2
Legend EXP 2	87	76	98	56.4
Legend EXP 1	81	70	91	56.6
Average	97	86	108	55.5
TYG [†]	97.5			57.4

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4b. Two-year average (2015-2016) for Kennebec, SD Grain Sorghum Performance - Average yield, and test weight. All values are adjusted to 13% moisture where necessary

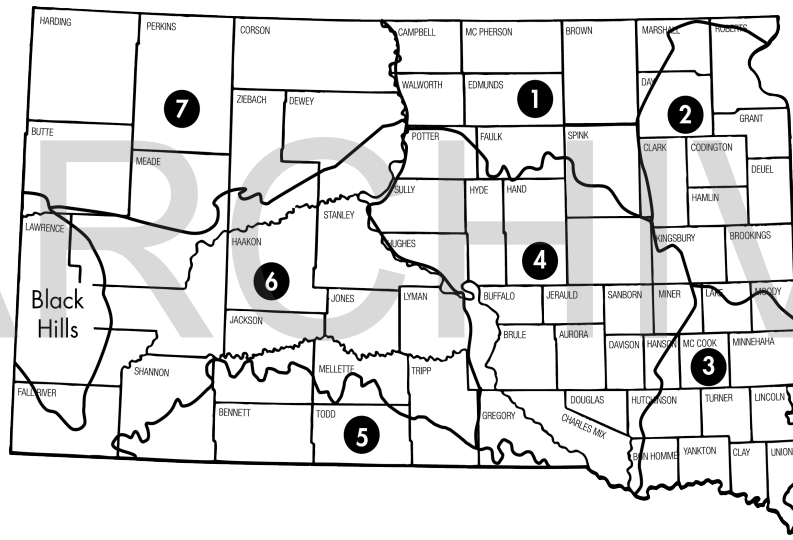
Variety	Crop Zone 6			
	Kennebec			
	Yield (bu/ac)	95% Confidence Interval [§]		Test Wt. (lb/bu)
Sorghum Partners KS585	123	113	132	56.4
Dekalb Pulsar	119	109	128	54.6
Dekalb 28-05	116	107	126	55.4
Dekalb 29-28	113	103	122	56.5
Sorghum Partners KS310	112	102	122	54.0
Legend EXP 3	104	94	113	58.5
Dekalb 28E	101	91	110	53.0
Legend EXP 1	101	91	110	56.6
Legend EXP 2	100	90	110	56.4
Legend 5001	96	87	106	53.2
Average	108	99	118	55.5
TYG [†]	113.8			57.4

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

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Crop Zones in South Dakota



Trial Highlights

The 2017 grain sorghum trials consisted of 3 sites (Dakota Lakes, Kennebec and Wall) across the central and western portions of South Dakota. In total, 31 hybrids were tested (Table 1). Planting and harvest dates can be found in Table 2. All planting was done with a no-till drill and a planting population of 60,000 seeds per acre. Nitrogen, phosphorus and sulfur was applied based on a pre-plant soil test along with any micronutrient deficiencies. Plots were harvested using a Wintersteiger plot combine.

Due to severe drought conditions across much of the western portion of the state, the Wall site is not reported due to poor stands. Between the two other sites, Dakota Lakes received some timely rains, which produced stronger yields with a trial average of 109 bu/ac and a wide range of 85-137 bu/ac (Table 3). This range (52 bu/ac) highlights the fact that variety selection is incredibly important. Hot, dry conditions during polination likely played a significant role in the decreased yields this year at Kennebec. The trial average at this site was 45 bu/ac, which was 55 bu/ac lower than 2016. The range at this site was 30-64 bu/ac.

Table 4 shows the 2-year averages for the sites and hybrids that have been available. Because weather plays such a significant role in crop development and varies greatly from year to year, these are generally better guidelines when choosing an appropriate hybrid.

Acknowledgements: A special thanks is extended to our cooperators for allowing space and time to conduct these trials. Specifically, we'd like to thank Dwayne Beck (Dakota Lakes), Kim Halverson (Kennebec) and Dale Patterson (Wall). Finally, we would like to thank all of the seed companies for participating in the trials.

Table 1. Grain sorghum hybrids included in 2017 hybrid trial

Hybrid	Company Name	Maturity Group (VE, E, ME, M) [†]	Days to 50% Bloom	Grain Color (B,C,R,W) [§]	Panicle Type (SO, SC) [¶]
9059	Gayland Ward	ME	60	B	SC
9135	Gayland Ward	ME	60	B	SC
9134	Gayland Ward	M	65	B	SC
9139	Gayland Ward	M	65	B	SC
9138	Gayland Ward	M	63	B	SC
9108	Gayland Ward	M	66	W	SO
9125	Gayland Ward	M	66	W	SO
9131	Gayland Ward	M	67	W	SO
9076	Gayland Ward	M	62	W	SC
GW-1160	Gayland Ward	ME	62	R	SC
GW-9135	Gayland Ward	M	62	B	SC
SP 25C10	Sorghum Partners	VE	52	W	O
SP 31A15	Sorghum Partners	E	58	B	SO
SP34A19	Sorghum Partners	ME	60	B	SO
K35-Y5	Sorghum Partners	ME	62	C	SO
KS585	Sorghum Partners	M	66	B	SO
SP 68M57	Sorghum Partners	M	66	B	SO
SPX15616	Sorghum Partners	M	67	B	SO
51B-18	Legend	VE	51	B	SO
57B-18	Legend	E	57	B	SO
72B-18	Legend	M	69	B	SO
AS216	Arrow	VE	52	B	SO
AS248FG-SC	Arrow	E	59	W	SO
AG1101	Advanta	E	55	B	SO
AG1201	Advanta	E	60	B	SC
AG2115	Advanta	M	65	B	SC
XG30001	Advanta	ME	63	R	SC
LGS 5001	Legend	VE	52	R	SO
LGS 5508	Legend	E	57	R	SC
LGS 5808	Legend	E	58	W	SO
88P68	Pioneer	-	-	-	-
8925	Pioneer	-	-	-	-

† Maturity Group: VE = very early, E = early, ME = medium-early, M = medium

§ Grain Color: B = bronze, C = cream, R = red, W = white

¶ Panicle type: SO = semi-open, SC = semi-closed

Table 2. Planting and harvest dates and previous crop.			
Location	Planting Date	Harvest Date	Previous Crop
Dakota Lakes	5/23/17	10/25/17	Winter Wheat
Kennebec	5/24/17	11/14/17	Corn
Wall	5/31/17	-	Winter Wheat

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Table 3a. 2017 Dakota Lakes, SD Grain Sorghum Performance - Average yield and test weight. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 4	
	Dakota Lakes	
	Yield (bu/ac)	Test Wt. (lb/bu)
K35-Y5	137	57.4
9134	132	56.5
9108	127	56.8
GW-9135	122	55.9
SP 34A19	121	54.7
9131	119	55.8
AG 1201	117	57.7
AG 2115	117	56.1
72B-18	116	54.6
LGS 5808	115	59.4
9139	115	56.8
9125	114	54.9
KS 585	112	56.0
9076	107	55.2
XG 30001	106	57.8
GW-1160	105	56.7
8925	103	59.0
9138	103	56.4
SP 31A15	101	57.6
SP 25C10	99	56.4
LGS 5001	97	57.2
9059	94	57.2
51B-18	91	56.9
LGS 5508	86	57.1
57B-18	85	56.8
AG 1101	85	57.9
Average	108.6	56.7
TYG [†]	112.8	57.8

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Table 3b. 2017 Kennebec, SD Grain Sorghum Performance - Average yield and test weight. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 6	
	Kennebec	
	Yield (bu/ac)	Test Wt. (lb/bu)
88P68	64	54.3
GW-1160	58	48.2
LGS 5808	57	51.0
LGS 5508	56	50.9
AG 1101	54	51.2
AG 1201	54	49.7
57B-18	51	46.0
88Y41	50	50.3
SP 68M57	50	47.6
51B-18	50	46.1
SP 31A15	50	41.2
9135	49	44.1
SP 25C10	48	43.2
SP 34A19	48	42.5
9059	46	46.3
AS216	45	48.5
AS248FG-SC	45	52.5
9139	45	48.2
LGS 5001	45	48.7
GW-9135	44	39.7
9134	42	45.7
K35-Y5	42	46.2
9138	41	51.2
72B-18	41	41.1
SPX15616	41	46.1
9108	40	45.3
XG 30001	39	44.8
9125	38	40.9
AG 2115	34	42.7
8925	34	49.2
9076	32	33.5
KS585	31	41.5
9131	30	39.4
Average	45.3	46.0
TYG [†]	48.7	47.3

[†] Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4a. Two-year average (2016-2017) for Dakota Lakes, SD Grain Sorghum Performance - Average yield and test weight. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 4	
	Dakota Lakes	
	Yield (bu/ac)	Test Wt. (lb/bu)
9108	129	54.9
9134	127	55.2
9076	122	54.9
9125	121	53.2
SP 34A19	120	53.6
9139	120	56.4
KS 585	116	55.8
9131	115	54.2
SP 31A15	113	55.2
XG 30001	110	56.5
9138	107	55.0
LGS 5001	101	55.0
9059	98	54.0
Average	115.3	54.9
TYG [†]	113.5	54.1

[†] Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

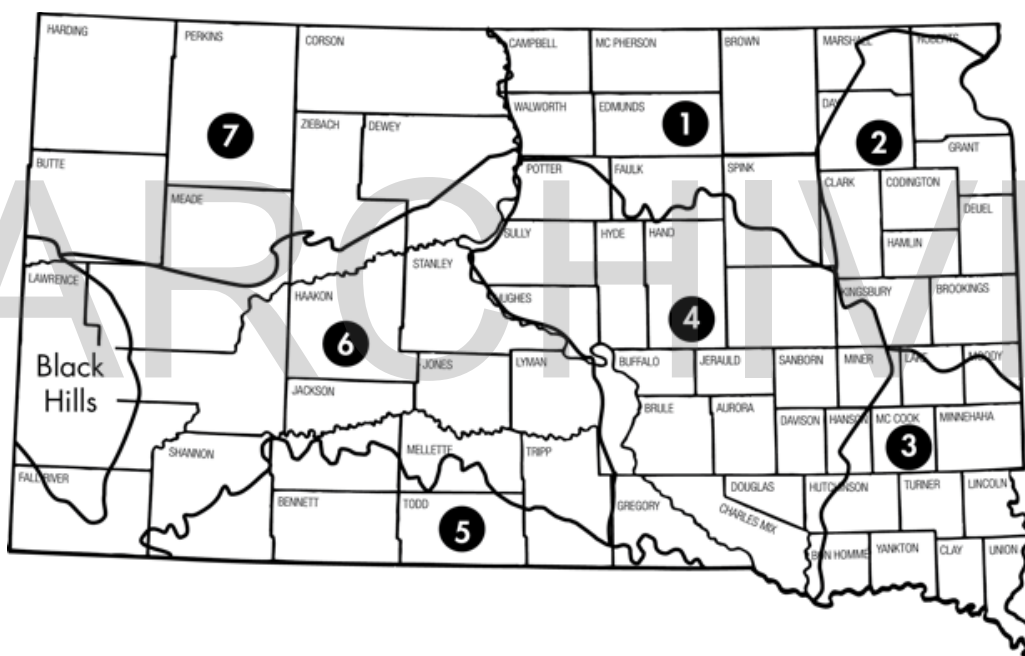
Table 4b. Two-year average (2016-2017) for Kennebec, SD Grain Sorghum Performance - Average yield and test weight. All values are adjusted to 13% moisture where necessary

Hybrid	Crop Zone 6	
	Kennebec	
	Yield (bu/ac)	Test Wt. (lb/bu)
9135	84	47.9
SP 34A19	80	44.8
9059	80	49.0
9139	80	50.5
9125	79	44.0
9108	78	48.2
9134	76	49.7
SP 31A15	75	44.7
9138	69	52.8
9131	68	44.5
KS585	67	47.2
9076	66	47.1
LGS 5001	62	50.9
AS216	58	51.5
Average	73.0	48.0
TYG [†]	70.4	49.9

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Crop Zones in South Dakota



Trial Highlights

The 2017 growing season marks the first year of forage sorghum hybrid testing at South Dakota State University. This work is a collaborative effort to replicate both irrigated and dryland trials across three states: South Dakota, Nebraska and Wyoming. The data presented below is from South Dakota and you can find the Nebraska and Wyoming data on their respective extension websites.

The South Dakota trials were held in the west-central portion of the state near the town of Vale. The irrigated and dryland trials were conducted side-by-side to maintain similar soils (silt-loam, pH 6.5) and growing conditions. Both trials were planted on May 25th, 2017 at a seeding rate of 80,000 pls and 60,000 pls for the irrigated and dryland trials, respectively. Harvest dates for each hybrid varied depending on maturity and are listed in Table 1 and Table 2. These dates along with harvest moisture give a sense of relative maturity and suitability for this climate.

Drought persisted for much of the growing season. In particular, May was an extremely dry month, causing very dry planting conditions (Figure 1). However, of greater concern was a very high rainfall event along with softball-sized hail, which occurred during the second week of July. As a result, the trial was nearly destroyed (Figure 2). Surprisingly, both the irrigated and dryland trials came back quite strong, perhaps with help from the substantial amount of rainfall that fell with the hail. Unfortunately, our corn check did not recover because it was at a later growth stage.

In total, we tested 26 irrigated hybrids and 19 dryland hybrids, with many of the same hybrids in both trials. Yields in the irrigated trials averaged 17.1 tons/ac, while yields in the dryland trial average 10.9 tons/ac. For the irrigated trial, all hybrids yielding above 18.3 tons/ac were not statistically different than the highest yielding hybrid. In the dryland trial this yield was 10.2 tons/ac. Tables 3 and 4 show the chemical analyses for both trials. These tables provide quality indicators that can be used to supplement basic yield measurements. In general higher crude protein and lower acid detergent fiber (ADF) and neutral detergent fiber (NDF) indicate higher quality feed. While more appropriate for legume-based hay, the relative feed value (RFV) gives a sense of digestibility and intake potential. It is derived from ADF and NDF with a value of 100 being equivalent to alfalfa at full bloom.

Acknowledgments: We would like to extend a special thanks to Darryl, Doug and Kyle Cox for allowing us to put these trials on their land and for their generous help in maintaining the plots. Additionally, thanks to all of the seed companies that participated in the trials.

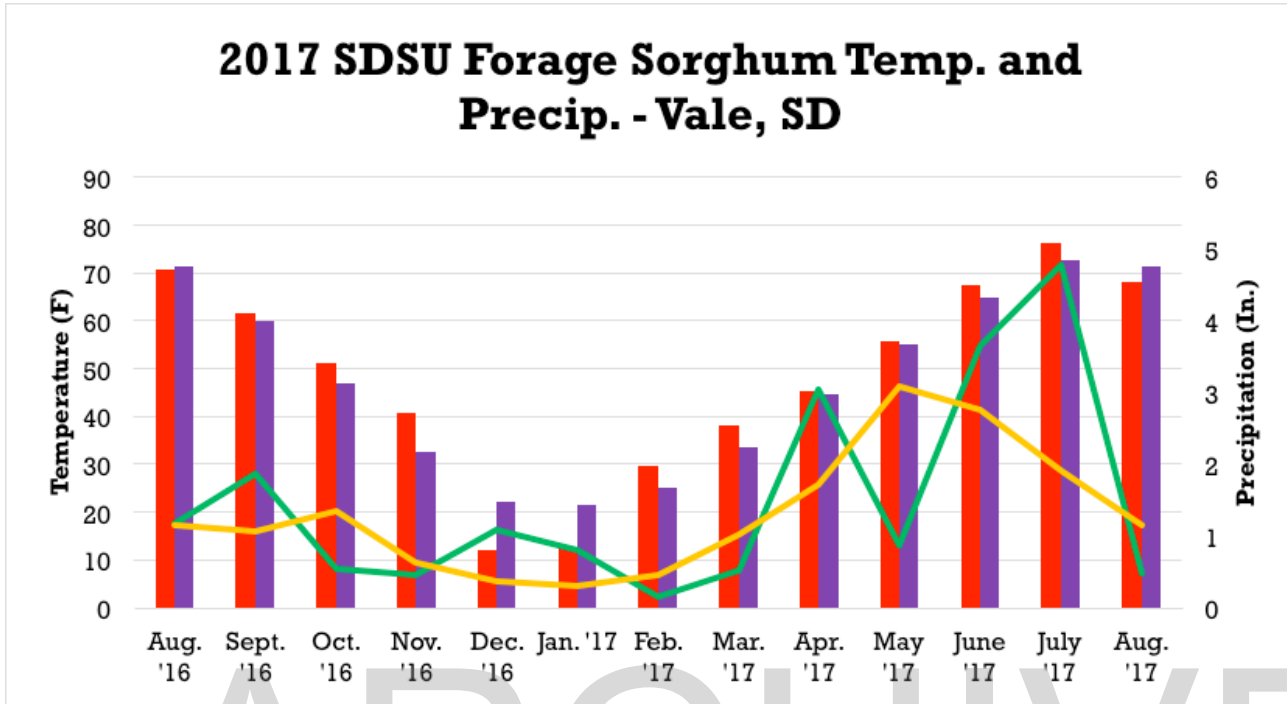


Figure 1. Temperature and precipitation for the 2017 forage sorghum trials. The bars represent the 2017 (red) and 30-yr temperature average (purple). The lines represent the 2017 (green) and 30-yr precipitation average.

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Figure 2. Picture showing severe hail damage to forage sorghum crop. Picture taken July 25, 2017.

Table 1. Yield adjusted to 65% moisture, height, harvest date and biomass moisture at harvest in irrigated forage sorghum trial.

SD Irrigated Forage Sorghum Trial				
Hybrid	Yield @65%(tons/ac)	Height (in.)	Harvest Date	Harvest Moisture
NK300	12.4	65	9/27/17	82%
Silo Pro BD BMR	13.9	60	10/5/17	74%
X5063	16.4	82	10/5/17	79%
EXP 15F1097 BMR	13.5	79	10/5/17	81%
SP4105	15.4	85	10/5/17	79%
X50610	17.5	60	9/18/17	74%
NUTRI-CANE II	16.2	80	10/5/17	79%
Nighthawk 6	16.0	73	10/5/17	75%
BlackHawk 12	20.1	96	10/5/17	75%
GW 400 BMR	16.7	84	9/12/17	80%
Pelican BD 6	16.5	76	10/5/17	77%
Sweet Forever BMR	16.7	99	10/5/17	80%
X51423	15.5	78	9/27/17	81%
GW 600 BMR	15.2	87	9/27/17	79%
SP4555	19.0	93	10/5/17	81%
X50712	17.2	82	10/5/17	75%
SP2774	19.5	91	9/27/17	79%
X50644	16.1	93	9/27/17	81%
Nutri King BMR	19.7	93	9/27/17	80%
GW 475 BMR	15.0	87	10/5/17	77%
GW 2120	18.1	81	9/18/17	80%
EXP 15F909	16.6	94	9/27/17	74%
X54243	20.3	120	9/27/17	73%
SeaHawk 6	16.9	92	10/5/17	77%
Super Sugar DM	21.6	97	10/5/17	78%
SWEETLEAF II	21.6	113	10/5/17	73%
Average	17.1	86		78%
LSD [†]	3.3	-		-
TYG	18.3	-		-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 2. Yield adjusted to 65% moisture, height, harvest date and biomass moisture at harvest in dryland forage sorghum trial.

SD Dryland Forage Sorghum Trial				
Hybrid	Yield @65%(tons/ac)	Height (in)	Harvest Date	Harvest Moisture
AF7101	6.6	44	9/27/17	79%
SP4555	8.4	62	9/12/17	77%
GW 400 BMR	8.8	65	9/27/17	81%
NK300	8.9	43	9/12/17	72%
AF7102	7.8	50	9/27/17	79%
Silo Mor II BMR	9.3	42	9/12/17	75%
GW 2120	7.7	46	9/18/17	73%
NUTRI-CANE II	13.1	61	9/18/17	74%
Sweet Forever BMR	13.4	77	9/18/17	78%
AS9302	10.7	61	9/7/17	73%
AS6504	15.0	71	9/27/17	80%
Nutri King BMR	10.2	70	9/18/17	82%
SP4105	10.1	58	9/12/17	80%
1st Choice BMR	7.0	65	9/27/17	76%
AS6402	11.2	57	9/7/17	75%
Super Sugar DM	12.9	77	10/3/17	75%
SP2774	14.2	75	9/27/17	76%
Honey Graze V	15.5	91	9/18/17	78%
SWEETLEAF II	15.6	85	10/3/17	70%
Average	10.9	63		77%
LSD	5.4	-		-
TYG	10.2	-		-

Table 3. Chemical quality parameters of forage sorghum hybrids in irrigated forage sorghum trial.

SD Irrigated Forage Sorghum Trial					
Hybrid	Crude Protein (%)	Acid Detergent Fiber (%)	Neutral Detergent Fiber (%)	Relative Feed Value	Total Digestible Nutrients (%)
NK300	9.2	32.7	66.8	88.7	65.3
Silo Pro BD BMR	11.3	34.4	57.9	100.0	63.3
X5063	9.6	37.8	59.4	93.7	59.4
EXP 15F1097 BMR	9.5	38.5	60.9	90.0	58.6
SP4105	11.0	38.9	61.1	89.3	58.2
X50610	10.8	38.9	63.0	86.7	58.2
NUTRI-CANE II	8.4	39.1	60.5	90.0	58.0
Nighthawk 6	11.7	39.1	61.3	88.7	58.0
BlackHawk 12	10.6	39.2	62.2	87.7	57.9
GW 400 BMR	9.3	39.2	58.3	93.0	57.8
Pelican BD 6	11.6	39.2	62.0	87.7	57.8
Sweet Forever BMR	8.8	39.4	62.5	86.3	57.7
X51423	11.8	39.4	61.8	88.3	57.7
GW 600 BMR	11.3	39.6	61.0	88.7	57.4
SP4555	11.1	39.6	61.5	87.7	57.3
X50712	8.1	40.1	61.0	89.3	56.9
SP2774	9.9	40.2	62.9	85.0	56.7
X50644	10.9	40.3	61.5	87.0	56.5
Nutri King BMR	10.5	40.5	61.7	86.3	56.3
GW 475 BMR	10.2	41.0	61.9	85.7	55.8
GW 2120	10.0	41.2	62.9	84.0	55.6
EXP 15F909	8.1	42.0	65.6	79.7	54.6
X54243	8.0	42.1	66.3	79.0	54.5
SeaHawk 6	9.7	42.5	63.7	81.7	54.1
Super Sugar DM	9.4	42.6	63.1	82.3	53.9
SWEETLEAF II	10.0	47.3	69.7	69.3	48.6
Average	10.0	39.8	62.3	86.8	57.2
LSD	1.7	3.7	4.2	10.0	4.2
TYG	10.0	36.4	62.1	90.0	61.1

Table 4. Chemical quality parameters of forage sorghum hybrids in dryland forage sorghum trial.

SD Dryland Forage Sorghum Trial					
Hybrid	Crude Protein (%)	Acid Detergent Fiber (%)	Neutral Detergent Fiber (%)	Relative Feed Value	Total Digestible Nutrients (%)
AF7101	12.6	26.1	56.0	114.7	72.7
SP4555	13.0	27.1	56.9	113.3	71.7
GW 400 BMR	9.7	28.0	56.8	110.7	70.6
NK300	13.0	28.0	53.5	117.3	70.6
AF7102	9.9	31.2	59.2	102.0	66.9
Silo Mor II BMR	11.5	32.0	58.7	101.3	66.1
GW 2120	10.7	32.1	57.3	104.3	65.9
NUTRI-CANE II	8.7	33.1	58.0	101.3	64.8
Sweet Forever BMR	10.0	33.4	59.0	99.3	64.5
AS9302	10.5	33.7	59.1	98.7	64.1
AS6504	11.2	34.2	58.5	99.7	63.6
Nutri King BMR	10.1	34.4	65.0	90.3	63.3
SP4105	13.0	35.1	60.6	94.7	62.5
1st Choice BMR	10.0	35.5	61.5	93.0	62.1
AS6402	10.7	35.6	61.5	92.7	62.0
Super Sugar DM	9.3	35.8	60.1	94.3	61.8
SP2774	10.0	36.2	60.4	94.3	61.3
Honey Graze V	9.8	37.9	62.5	89.0	59.3
SWEETLEAF II	9.4	41.2	66.8	79.3	55.5
Average	10.7	33.2	59.6	99.5	64.7
LSD	2.1	4.9	5.9	15.2	5.6
TYG	11.0	31.0	59.4	102.2	67.1