



2018 South Dakota Oat Variety Trial Results Regional Summaries

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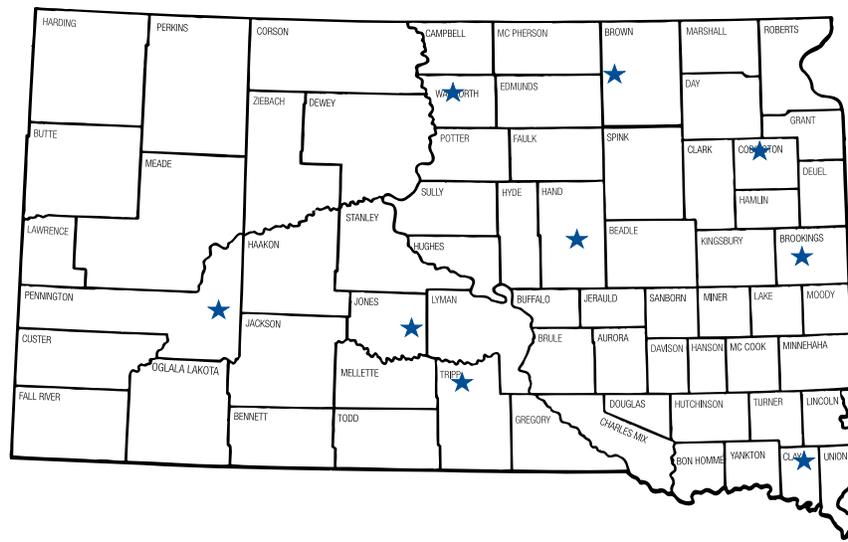
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Eastern trial locations: Beresford, South Shore, Volga

Central trial locations: Aberdeen, Miller, Selby

Western trial locations: Wall, Winner

Individual trial location results can be accessed online at:
<http://igrow.org/agronomy/other-crops/oat-variety-trial-results/>

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The 2018 oat growing season in South Dakota was characterized by a relatively late onset of spring planting followed by variable heat and precipitation patterns throughout the state. In general, yields in the northeast part of the state were affected by drought conditions and areas south of US Highway 12 were negatively impacted by heat during flowering and grain fill. No widespread disease pressure was noted, however crown rust was observed at some of the trial locations, most notably in Volga. In most cases, disease pressure was not enough to cause significant yield losses. Harvest progressed rapidly and produced below-average to average yields in most areas of the state. It is interesting to note that the latest planted trial location, South Shore (planted on May 14th), had some of the highest yields observed statewide in 2018.

Oat yields from the SDSU Extension CPT program averaged 98 bu/acre in the eastern trial locations, ranging from 61 bu/acre at Volga to 142 bu/acre at South Shore. Some of the top yielding varieties in the east in 2018 were **Deon, CS Camden, Saddle, Goliath, and Antigo**. Yields in the central part of South Dakota averaged 114 bu/acre, ranging from 70 bu/acre at Aberdeen to 166 bu/acre at Selby. Some of the top performing varieties in the central region in 2017 were **Hayden, CS Camden, Souris, Deon, and Natty**. Yields in western South Dakota averaged 74 bu/acre, with Wall averaging 60 bu/acre and Winner averaging 88 bu/acre. The best performers in 2018 for the western part of the state were **Hayden, Rockford, Deon, Souris, and CS Camden**. Detailed results for each trial location in South Dakota are available at: <http://igrow.org/agronomy/other-crops/oat-variety-trial-results/>

Consider as much performance information as possible when selecting a variety, and give more weight to information from trials close to home, as some varieties may be better suited to certain geographic areas. Also pay close attention to relative performance over many locations. This type of performance is an indication of "yield stability." Good yield stability refers to the ability of a variety exhibit high yield potential at many locations over years. For example, a variety that ranks in the upper 40% at all locations exhibits better yield stability than a variety that is number one for yield at one location but ranks in the lower 40% at some other locations. Performance over multiple years is also very important. Growing conditions in a single season may favor certain varieties, providing a poor representation of yield potential over time. For example, growing conditions in 2018 tended to favor later-maturing varieties. A good rule of thumb is to plant 65%-75% of your acres to varieties with a proven track record (i.e. a good multi-year average) and plant the remaining 25%-35% to a promising new variety.

It is important to remember that varieties may differ by 5 bu/acre or even more and still be statistically similar. This is due to inherent variability in the environment and the yield testing process. Varieties that are statistically similar to the top performing variety at each location can be calculated by subtracting the least significant difference (LSD) value from the top performing variety. The LSD is a statistic used to determine if varieties are truly different from one another.

The coefficient of variation (CV) listed at the bottom of each data column, which is often expressed as a percentage of a given trait mean, is a relative measure of the amount of test variation for that trait. Generally, in yield trials, a CV of 15% is considered acceptable and a CV of 10% or less indicates good quality data. Higher variability (and thus higher CVs) can be caused by several environmental factors, such as stand loss due to residue cover or heavy precipitation, and reduces the ability to detect true varietal differences.

Table 1. List of oat varieties tested in 2018 along with origin, agronomic, and grain quality characteristics.

Variety	Testing & Origin		Agronomic Characteristics			Grain Quality			Disease Ratings#			
	Years tested in SD trials	Origin†-Year	Rel. Hdg.‡ (days)	Rel. Height‡ (inches)	2018 Lodging Score§	Grain Color	2018 Test Wt. (lb/bu)#	2018 Protein (%)#	Smut	Stem Rust	Crown Rust	BYDV score
Antigo	2	WI-17	0	2	2.3	Yellow	35.4	15.4	S	-	MR	5
CS Camden	3	MS-16	6	3	2.2	White	30.1	13.5	R	(S)*	MS	8
Deon	5+	MN-13	6	6	2.2	Yellow	34.1	14.3	R	MR	R	4
Goliath	5+	SD-12	7	10	3.6	White	34.9	14.2	MR	R	S	2
Hayden	5+	SD-14	5	5	2.7	White	34.9	14.0	R	MS	S	3
Horsepower	5+	SD-11	2	-1	3.3	White	32.7	13.9	R	R	S	6
Jerry	5+	ND-94	4	5	3.0	White	34.2	14.6	S	MS	S	6
Jury	5+	ND-12	5	8	2.9	White	33.5	13.7	-	R	S	3
Natty	5+	SD-14	2	6	3.1	White	34.3	14.4	R	MS	MS	5
Newburg	5+	ND-11	5	8	3.3	White	31.9	13.7	-	R	S	4
Rockford	5+	ND-09	7	6	2.5	White	34.3	14.6	MR	S	S	4
Saddle	3	SD-17	0	0	2.0	White	33.0	13.6	R	S	R	2
Shelby427	5+	SD-09	2	4	2.4	White	34.8	14.2	R	MS	S	6
Souris	5+	ND-06	5	3	3.3	White	33.1	13.6	R	MS	S	6
Sumo	4	ALS-16	-1	2	2.5	White	34.4	14.3	R	-	MR	6

† ALS - Albert Lea Seed, MN - Minnesota, MS - Meridian Seeds, ND - North Dakota, SD - South Dakota, WI - Wisconsin; - (Year of Release)

‡ Days to heading and height as compared to Saddle (167 days Julian and 34 inches) statewide.

§ Lodging score: Rating scale 1-5 (1=Standing perfectly to 5=Completely flat) based on 2016 East River locations.

¶ Average of 2018 statewide test weight and protein.

Disease ratings: R - resistant, MR - moderately resistant, MS - moderately susceptible, S - susceptible, VS - very susceptible; BYDV scores: 1 (very tolerant) - 9 (very severe symptoms)

* Ratings (X) based on information supplied by the entity submitting the variety.

Table 2. Grain quality and milling characteristics.

Variety	% Plump	% Mid	% Thin	1000 Kernel Weight (g)	Groat %	NIR groat protein (%)	NIR groat beta-glucan (%)	NIR groat fat (%)
Antigo#	-	-	-	-	-	-	-	-
CS Camden	32.9	58.0	9.0	35.3	66.0	17.4	4.99	5.37
Deon	30.5	58.8	10.7	34.3	66.0	16.8	4.74	5.51
Goliath	33.6	55.0	11.5	33.2	69.9	17.4	4.74	5.44
Hayden	38.4	54.0	7.7	35.1	67.9	16.7	4.76	6.12
Horsepower	27.0	60.9	11.8	30.2	67.2	17.0	5.33	5.80
Jerry	42.5	52.3	5.2	35.0	67.3	18.5	4.31	4.45
Jury	26.1	58.6	15.2	32.4	69.3	16.9	5.17	6.04
Natty	44.8	46.6	8.5	34.5	70.0	16.8	4.04	3.96
Newburg	32.6	54.1	13.3	33.4	68.2	17.0	5.32	5.98
Rockford	27.9	60.9	11.3	32.0	67.2	17.1	4.75	6.62
Saddle	28.3	63.9	7.8	32.4	70.0	17.4	4.27	4.43
Shelby427	38.5	55.2	6.3	31.2	69.7	17.5	4.51	5.91
Souris	26.3	56.9	16.8	31.1	68.9	17.0	4.89	4.84
Sumo	52.2	43.8	4.1	35.6	69.2	18.6	4.04	4.16
Trial Average	35.0	55.7	9.3	33.1	68.2	17.3	4.64	5.26
LSD(0.05)†	6.1	5.3	2.6	2.0	2.3	0.5	0.19	0.23
C.V.%‡	20.6	11.4	32.7	7.3	3.9	3.7	4.77	5.21

Antigo was not tested in 2016 and therefore two-year quality data is not available.

† Value required (\geq LSD) to determine if varieties are significantly different from one another.

‡ C.V. is a measure of variability or experimental error

Table 3. 2016-2018 oat variety performance trial results for testing sites in eastern South Dakota. Varieties ranking in the top 1/3 of each trial category are shaded light blue.

Variety	2016 Yield (bu/a)	2017 Yield (bu/a)	2018		2-year Yield (bu/a)	3-year Yield (bu/a)
			Yield (bu/a)	Test Wt (lbs)		
Deon	114.6	142.2	113.8	33.1	132.4	127.5
CS Camden	115.1	138.2	109.1	28.4	127.0	123.3
Saddle	124.8	134.2	98.3	31.8	119.0	121.5
Natty	122.6	138.3	94.0	32.3	118.4	120.1
Hayden	120.6	142.0	85.5	33.0	116.6	117.1
Goliath	105.7	140.3	98.8	32.3	123.1	116.6
Newburg	105.1	139.1	87.1	30.4	115.8	111.6
Sumo	111.7	122.7	89.4	34.1	108.8	110.4
Jury	101.5	131.7	88.3	31.4	112.7	108.3
Shelby427	107.6	127.5	80.0	33.5	106.4	106.9
Souris	104.4	130.8	78.0	31.2	107.0	105.2
Horsepower	107.3	127.1	78.1	29.8	104.2	104.5
Jerry	107.7	123.3	74.0	33.3	100.6	102.9
Rockford	99.9	131.1	67.4	31.4	101.1	100.0
Antigo	-	118.9	95.1	34.1	109.5	-
Trial Average#	112.5	135.2	97.6	32.8	119.0	115.6
LSD(0.05)†	6.4	6.1	5.9	2.1	4.4	14.1
C.V.%‡	5.8	5.6	7.1	7.6	6.3	6.4

Trial averages may include values from experimental lines that are not reported.

† Value required (\geq LSD) to determine if varieties are significantly different from one another.

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

Table 4. 2016-2018 oat variety performance trial results for testing sites in central South Dakota. Varieties ranking in the top 1/3 of each trial category are shaded light blue.

Variety	2016 Yield (bu/a)	2017 Yield (bu/a)	2018		2-year Yield (bu/a)	3-year Yield (bu/a)
			Yield (bu/a)	Test Wt (lbs)		
Hayden	133.7	80.8	128.0	35.2	104.2	119.7
CS Camden	128.4	78.8	133.9	30.6	106.7	119.1
Souris	127.3	80.8	121.0	33.5	101.3	114.8
Newburg	122.0	78.6	114.6	31.5	97.1	110.2
Rockford	128.2	69.4	113.5	34.8	93.0	108.2
Deon	118.1	70.2	119.2	34.0	95.2	107.7
Goliath	116.8	72.4	116.2	35.1	94.1	107.2
Natty	118.5	71.0	116.3	34.8	93.6	107.1
Horsepower	118.9	71.2	114.7	34.1	93.8	106.5
Jury	112.4	77.7	111.3	33.5	94.2	106.1
Shelby427	100.6	80.6	103.4	34.8	91.4	101.0
Saddle	118.7	55.8	100.6	33.1	77.7	96.8
Jerry	99.0	63.5	97.4	33.7	79.8	92.0
Sumo	100.4	57.8	82.4	33.8	68.8	85.9
Antigo	-	61.9	87.5	35.4	74.1	-
Trial Average#	118.7	71.7	113.9	34.1	96.0	105.0
LSD(0.05)†	4.9	5.8	4.5	0.6	9.9	5.7
C.V.%‡	5.2	8.2	4.9	2.1	5.9	5.4

Trial averages may include values from experimental lines that are not reported.

† Value required (\geq LSD) to determine if varieties are significantly different from one another.

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

Table 5. 2016-2018 oat variety performance trial results for testing sites in western South Dakota. Varieties ranking in the top 1/3 of each trial category are shaded light blue.

Variety	2016 Yield (bu/a)	2017 Yield (bu/a)	2018		2-year Yield (bu/a)	3-year Yield (bu/a)
			Yield (bu/a)	Test Wt (lbs)		
Hayden	87.8	77.8	81.4	36.4	70.3	81.7
Rockford	70.6	72.7	86.5	36.8	70.4	76.1
Natty	77.4	73.2	75.2	35.8	65.0	74.7
Deon	70.5	75.9	79.2	35.3	68.4	74.6
Horsepower	78.6	70.2	71.2	34.0	61.5	72.9
Souris	69.1	71.9	78.7	34.5	66.2	72.6
CS Camden	68.8	66.7	77.8	31.4	63.3	71.0
Newburg	71.5	69.1	72.1	33.9	61.3	70.5
Jury	72.9	70.5	70.9	35.6	61.4	70.2
Goliath	71.6	58.2	76.3	37.3	58.2	68.3
Saddle	77.3	68.9	59.9	34.2	55.2	68.2
Jerry	61.2	69.0	66.6	35.7	58.5	65.0
Shelby427	62.4	65.5	62.9	36.0	55.4	63.7
Sumo	67.3	55.4	61.1	35.2	49.7	60.9
Antigo		64.9	60.7	36.8	54.2	
Trial Average#	72.0	68.5	73.9	35.6	70.0	70.8
LSD(0.05)†	8.6	9.5	7.7	0.8	7.2	5.3
C.V.%‡	11.9	17.2	10.5	2.2	14.7	14.2

Trial averages may include values from experimental lines that are not reported.

† Value required (\geq LSD) to determine if varieties are significantly different from one another.

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