

2018 South Dakota Sunflower Hybrid Performance Trials

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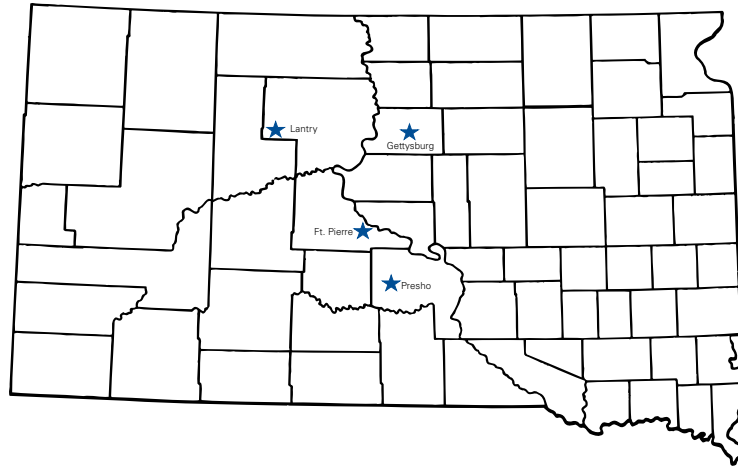
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Locations and Hybrids

In 2018, oilseed hybrid sunflower trials were planted at five locations in South Dakota (Gettysburg, Lantry, Fort Pierre, Onida, and Presho). Entries in the oilseed sunflower trials for the five locations included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted only at Fort Pierre and Onida. Test locations are indicated on the map. Lists of the hybrids tested in 2018 appear in Tables 1 and 2.



Experimental Methods

Plots at all locations consisted of four rows 20 feet long, with a 30-inch row spacing. The plot layout was in a randomized complete block design with four replications at each location.

Seed of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. The previous crop at all locations except Fort Pierre was corn. In Fort Pierre, the previous crop was wheat. Plots were seeded to approximately 18,000 plants/acre and planted with a Precision Planter (Almaco). Stands were good at all locations for both oilseed and confection trials. Lodging notes and days to flowering was taken at all locations before harvest.

The center two rows of each 4-row plot at all locations were harvested with a Kincaid 8-XP plot combine fitted with a two-row all row crop header and HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot. Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content.

Results

Data from each location are contained in Tables 2-3. The trial in Onida was lost to hail storm and hence the data for the variety trials (oilseed and confection) is not available. Yield results from Lantry (oilseed) and Fort Pierre (confection) had a CV greater than 20% and hence the information is not published here.

As for days to flowering across all hybrids, flowering was observed 60 days after planting.

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2. Fort Pierre oilseed trial
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Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2018.

Company/ Brand	Hybrid	Hybrid Type ¹	Gettysburg	Lantry	Ft. Pierre	Presho
Pioneer	P63HE90	HO,EX,DM	x		x	x
Pioneer	P64HE101	HO,EX,DM	x		x	x
Proseed	Proseed E-21 CL	NS, HO, CL, DM	x	x	x	x
Proseed	Proseed E-31 CL	NS, HO, CL, DM	x	x	x	x
Proseed	Proseed E-362436	NS, HO, DM	x	x	x	x
Proseed	Proseed E-50016 CL	NS, CL, DM	x	x	x	x
Proseed	Proseed E-71 CL	NS, HO, CL, DM	x	x	x	x
Proseed	4415 HO/CLP/DM	HO, DM, CLP	–	x	–	x
SunOpta	4425 CL	NS, CL, Conoil	–	x	–	x
SunOpta	EX725	NS, CL, Conoil	–	x	–	x
SunOpta	EX721	NS, CL, Conoil	–	x	–	x
SunOpta	EX72468	NS, CL, Conoil	–	x	–	x
Mycogen	MY8H456CL	HO,DM,CL	x	x	x	x
Mycogen	8H449CLDM	HO,DM,CL	x	x	x	x
Mycogen	MY8H477CL	HO,CL	x	x	x	x
Mycogen	Olga	HO,CL+	x	x	x	x
Croplan	3732	NS	x	x	x	x
Croplan	3845 HO	HO	x	x	x	x
Croplan	545 CL	NS, CL, DM	x	x	x	x
Croplan	549 CL	NS, CL, DM	x	x	x	x
Croplan	557 CL HO	CL,HO, DM	x	x	x	x
Croplan	568 CL HO	CL,HO, DM	x	x	x	x
Croplan	432 E	EX, NS, DM	x	x	x	x
Croplan	450E HO	EX, HO, DM	x	x	x	x
Croplan	455 E HO	EX, HO, DM	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-001HO	HO	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-002HO	HO	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-003HOCLP	HO, CLP	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-004HO	HO	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-005LN	Trad	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-006HO	HO	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-007LN	Trad	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-008HOCL	HO, CL	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-009LN	Trad	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-010LNCLP	Trad, CLP	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-011LN	Trad	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-012LNCLP	Trad, CLP	x	x	x	x
LimaGrain Cereal Seeds	LCSADVX18-013LN	Trad	x	x	x	x
Dyna Gro Seed	DG H42HO18 CL	HO, CL	–	x	–	x
Dyna Gro Seed	DG H49HO19 CL	HO, CL	–	x	–	x
Dyna Gro Seed	DG H45NS16 CL	NS,CL	–	x	–	x
Dyna Gro Seed	DG H49NS14 CL	NS,CL	–	x	–	x
Dyna Gro Seed	DG H44HO12 CL	HO, CL	–	x	–	x
Dyna Gro Seed	DG H48HO15 CL	HO, CL	–	x	–	x

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2018, continued.

Company/ Brand	Hybrid	Hybrid Type ¹	Gettysburg	Lantry	Ft. Pierre	Presho
Dyna Gro Seed	XH81N48EX	NS, EX	–	x	–	x
Dyna Gro Seed	XH81H50CL	HO, CL	–	x	–	x
Dyna Gro Seed	XH82N62EX	NS, EX	–	x	–	x
Dyna Gro Seed	XH82H63EX	HO, EX	–	x	–	x
Dyna Gro Seed	XH81H52CP	HO, CP	–	–	–	–
Dyna Gro Seed	XH81H53EX	HO, EX	–	–	–	–
Dyna Gro Seed	XH82N64EX	NS, EX	–	x	–	x
Dyna Gro Seed	XH82H65EX	HO, EX	–	x	–	x
Dyna Gro Seed	XH81H51EX	HO, EX	–	X	–	X
NuSeed	N4HP470	HO, CLP, DM	x	x	x	x
NuSeed	N4HE302	HO, EX	x	x	x	x
NuSeed	N4HM521	HO, CL, DM	x	x	x	x
NuSeed	Hornet	HO, CL, DM	x	x	x	x
NuSeed	N4HM354	NS, CL, DM	x	x	x	x
NuSeed	Falcon	NS, EX	x	x	x	x
NuSeed	Camaro II	NS, CL, DM	x	x	x	x
NuSeed	N5LM307	NS, CL, DM, Conoil	x	x	x	x
NuSeed	Badger DMR	NS, CL, DM, Conoil	x	x	x	x
AgVenture	AF3N692ES	NS, EX, DM	x	–	x	x
AgVenture	AF3H681ES	HO, EX, DM	x	–	x	x
AgVenture	AF3N94CD	NS, CL, DM	x	–	x	x
AgVenture	AF4H95CD	HO, CL, DM	x	–	x	x
AgVenture	XF422HC	HO, CL, DM	x	–	x	x
AgVenture	XF2N14CD	NS, CL, DM	x	–	x	x
AgVenture	XF2665HE	HO, EX, DM	x	–	x	x
Allegiant	65H81CL	HO, CL	x	x	x	x
Allegiant	70H51CL	HO, CL	x	x	x	x
USDA ²	894	–	x	x	x	x

¹Hybrid type provided by companies; some hybrids may have additional traits.

HO = high oleic, NS = NuSun, CON = ConOil, Trad. = traditional (linoleic), EX = ExpressSun, CL = Clearfield, CP = Clearfield plus, DM = downy mildew resistant.

²894 = Long-term hybrid check.

Table 2. 2018 - Sunflower - Oilseed – Fort Pierre, SD

Company/ Brand	Hybrid	Height (cm)	Rust Severity (%) ¹	Moisture (%)	Test Wt. (lb/bu)	Oil Content (%)	Seed Yield (lb/a)
Pioneer	P63HE90	150	0.5	11.0	25.0	32.3	1,643
Pioneer	P64HE101	129	0.4	10.9	25.2	30.5	1,837
Proseed	Proseed E-21 CL	133	0.5	11.4	24.2	23.5	1,501
Proseed	Proseed E-31 CL	134	0.8	11.4	24.4	34.6	2,144
Proseed	Proseed E-362436	148	0.4	10.7	25.7	33.9	2,065
Proseed	Proseed E-50016 CL	138	0.3	10.2	24.5	35.8	1,800
Proseed	Proseed E-71 CL	133	0.9	10.7	22.7	31.4	1,932
Mycogen	MY8H456CL	138	0.2	10.3	24.6	35.8	2,013
Mycogen	8H449CLDM	130	0.2	11.1	26.5	36.1	2,214
Mycogen	MY8H477CL	136	0.5	11.3	22.1	30.5	1,855
Mycogen	MY8H460CP	134	0.2	10.1	23.5	33.8	1,090
Croplan	3732	140	0.4	11.0	25.9	32.5	2,095
Croplan	3845 HO	146	0.7	10.5	26.1	36.6	2,098
Croplan	545 CL	126	0.3	10.5	27.5	35.2	2,015
Croplan	549 CL	154	0.7	10.5	24.5	35.1	2,323
Croplan	557 CL HO	140	0.5	11.6	25.0	34.8	2,183
Croplan	568 CL HO	122	0.3	11.3	24.1	34.7	2,039
Croplan	432 E	142	0.5	10.7	26.8	31.6	2,438
Croplan	455 E HO	146	0.5	11.1	22.8	32.7	2,248
Croplan	450E HO	150	0.5	10.8	24.4	32.5	1,945
LimaGrain Cereal Seeds	LCSADVX18-001HO	151	0.6	11.5	24.6	37.9	2,301
LimaGrain Cereal Seeds	LCSADVX18-002HO	152	0.9	11.2	24.7	37.2	2,345
LimaGrain Cereal Seeds	LCSADVX18-003HOCLP	146	1.3	11.2	23.6	29.5	1,533
LimaGrain Cereal Seeds	LCSADVX18-004HO	144	1.3	11.2	23.2	33.3	1,541
LimaGrain Cereal Seeds	LCSADVX18-005LN	141	0.5	10.7	23.5	31.0	1,582
LimaGrain Cereal Seeds	LCSADVX18-006HO	150	0.4	10.6	25.8	36.4	2,464
LimaGrain Cereal Seeds	LCSADVX18-007LN	157	0.6	10.7	27.6	36.6	2,508
LimaGrain Cereal Seeds	LCSADVX18-008HOCL	138	1.0	10.1	27.3	35.1	2,049
LimaGrain Cereal Seeds	LCSADVX18-009LN	160	0.6	10.4	23.4	30.3	2,078
LimaGrain Cereal Seeds	LCSADVX18-010LNCLP	146	0.5	10.5	27.5	35.7	1,888
LimaGrain Cereal Seeds	LCSADVX18-011LN	140	1.3	10.7	23.6	34.0	2,265
LimaGrain Cereal Seeds	LCSADVX18-012LNCLP	117	0.1	10.8	24.5	34.5	1,831
LimaGrain Cereal Seeds	LCSADVX18-013LN	162	0.7	10.5	25.8	31.9	1,961
NuSeed	N4HP470	134	0.3	11.4	27.5	37.7	2,313
NuSeed	N4HE302	136	0.6	9.6	29.4	34.3	1,945
NuSeed	N4HM521	129	0.4	11.6	25.3	35.3	2,336
NuSeed	Hornet	111	0.5	10.7	25.2	35.0	2,027
NuSeed	N4HM354	119	0.8	10.7	25.2	36.5	2,173
NuSeed	Falcon	124	0.5	9.7	27.0	36.0	2,069
NuSeed	Camaro II	137	0.5	11.2	27.7	35.5	2,313
NuSeed	N5LM307	130	0.7	10.7	23.6	33.9	2,258
NuSeed	Badger DMR	153	0.7	9.8	21.8	34.9	1,891

Table 2. 2018 - Sunflower - Oilseed – Fort Pierre, SD, continued.

Company/ Brand	Hybrid	Height (cm)	Rust Severity (%) ¹	Moisture (%)	Test Wt. (lb/bu)	Oil Content (%)	Seed Yield (lb/a)
Ag Venture	AF3N692ES	148	0.5	11.3	23.0	35.4	2,344
Ag Venture	AF3H681ES	157	0.5	11.3	27.4	33.4	1,874
Ag Venture	AF3N94CD	149	0.5	10.9	25.4	32.9	2,142
Ag Venture	AF4H95CD	131	0.5	11.2	25.2	36.1	2,180
Ag Venture	XF422HC	120	0.5	11.1	25.6	33.5	2,229
Ag Venture	XF2N14CD	134	0.8	10.4	25.3	36.4	2,487
Ag Venture	XF2665HE	155	0.6	10.3	28.1	36.8	2,136
Allegiant	65H51CL	135	0.3	10.6	26.6	37.0	2,066
Allegiant	70H81CL	129	0.2	10.3	25.7	38.7	2,090
USDA	–	120	1.0	10.0	23.7	29.4	1,367
	P-value	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
	CV %	8.0	44.9	3.9	5.8	5.0	12.1
	LSD 0.05	22.2	0.3	0.9	3.0	3.5	493.4
	LSD 0.10	18.5	0.3	0.7	2.5	2.9	411.8

¹Rust severity is the mean percent disease severity on the upper four leaves of 10 plants that were randomly selected in the center two rows (Shtienberg 1995).

Planted: June 29.

Harvested: November 14.

Table 3. 2018 - Sunflower - Oilseed – Presho, SD

Company/ Brand	Hybrid	Height (cm)	Moisture (%)	Test Wt. (lb/bu)	Oil Content (%)	Seed Yield (lb/a)
Pioneer	P63HE90	152	14.4	28.7	34.3	2,287
Pioneer	P64HE101	146	16.0	29.0	33.4	2,065
Proseed	Proseed E-21 CL	153	13.9	28.5	30.3	1,764
Proseed	Proseed E-31 CL	145	12.6	31.0	35.9	2,415
Proseed	Proseed E-362436	147	14.3	29.8	36.5	2,176
Proseed	Proseed E-50016 CL	157	12.3	30.7	37.9	2,564
Proseed	Proseed E-71 CL	163	12.4	30.8	36.0	2,263
SunOpta	4415 HO/CLP/DM	135	13.9	30.3	34.7	2,374
SunOpta	4425 CL	152	12.3	30.0	34.6	2,041
SunOpta	EX725	151	13.0	31.1	37.5	1,961
SunOpta	EX721	150	12.5	28.1	35.8	1,772
SunOpta	EX72468	154	13.2	27.4	39.8	2,069
Mycogen	MY8H456CL	146	13.0	28.9	38.8	2,269
Mycogen	8H449CLDM	128	13.7	31.9	41.4	2,404
Mycogen	MY8H477CL	154	18.2	30.7	37.6	2,030
Mycogen	MY8H460CP	138	14.6	29.8	42.3	2,368
Croplan	3732	127	13.3	31.6	38.5	2,434
Croplan	3845 HO	135	12.2	31.9	40.9	2,462
Croplan	545 CL	111	16.0	30.4	35.5	2,179
Croplan	549 CL	171	14.1	32.0	37.8	2,882
Croplan	557 CL HO	139	15.1	30.9	36.9	2,377
Croplan	568 CL HO	136	15.5	31.8	37.7	2,183
Croplan	432 E	137	12.5	29.9	35.3	2,444
Croplan	455 E HO	127	13.0	30.8	34.7	2,157
Croplan	450E HO	133	12.5	29.5	37.5	2,440
LimaGrain Cereal Seeds	LCSADVX18-001HO	161	14.8	30.0	38.6	2,479
LimaGrain Cereal Seeds	LCSADVX18-002HO	161	12.7	28.8	36.6	2,367
LimaGrain Cereal Seeds	LCSADVX18-003HOCLP	163	13.5	30.9	36.9	2,169
LimaGrain Cereal Seeds	LCSADVX18-004HO	160	14.4	30.0	36.8	2,254
LimaGrain Cereal Seeds	LCSADVX18-005LN	163	16.2	32.0	37.4	2,519
LimaGrain Cereal Seeds	LCSADVX18-006HO	152	12.5	29.4	35.4	1,981
LimaGrain Cereal Seeds	LCSADVX18-007LN	151	12.6	29.4	37.4	2,267
LimaGrain Cereal Seeds	LCSADVX18-008HOCL	156	12.9	32.1	34.9	2,408
LimaGrain Cereal Seeds	LCSADVX18-009LN	178	14.7	31.5	35.4	2,698
LimaGrain Cereal Seeds	LCSADVX18-010LNCLP	151	12.5	32.3	39.4	2,637
LimaGrain Cereal Seeds	LCSADVX18-011LN	169	14.4	31.3	39.1	2,511
LimaGrain Cereal Seeds	LCSADVX18-012LNCLP	162	11.8	29.6	34.7	2,168
LimaGrain Cereal Seeds	LCSADVX18-013LN	157	11.3	28.2	36.5	2,061
Dyna Gro Seed	DG H42HO18 CL	124	12.9	29.3	36.7	2,097
Dyna Gro Seed	DG H49HO19 CL	134	16.9	29.6	35.8	2,300
Dyna Gro Seed	DG H45NS16 CL	141	12.6	32.3	39.3	2,925
Dyna Gro Seed	DG H49NS14 CL	136	15.7	31.2	36.8	2,217
Dyna Gro Seed	DG H44HO12 CL	143	11.9	28.8	39.1	2,341

Table 3. 2018 - Sunflower - Oilseed – Presho, SD, continued.

Company/ Brand	Hybrid	Height (cm)	Moisture (%)	Test Wt. (lb/bu)	Oil Content (%)	Seed Yield (lb/a)
Dyna Gro Seed	DG H48HO15 CL	147	12.4	28.1	40.7	2,091
Dyna Gro Seed	XH81N48EX	123	13.0	31.5	38.6	2,433
Dyna Gro Seed	XH81H50CL	129	14.4	29.2	38.0	2,433
Dyna Gro Seed	XH82N62EX	162	14.3	31.2	38.9	2,565
Dyna Gro Seed	XH82H63EX	164	15.5	31.5	36.6	1,833
Dyna Gro Seed	XH82N64EX	144	12.4	29.1	35.1	2,196
Dyna Gro Seed	XH82H65EX	159	12.8	30.5	37.5	2,836
Dyna Gro Seed	XH81H51EX	113	9.5	22.5	36.1	987
NuSeed	N4HP470	141	16.2	30.5	39.6	2,606
NuSeed	N4HE302	147	11.9	29.5	36.8	2,266
NuSeed	N4HM521	129	15.4	29.7	41.1	2,423
NuSeed	Hornet	137	14.8	32.1	37.8	2,331
NuSeed	N4HM354	125	12.5	31.1	39.3	2,432
NuSeed	Falcon	134	12.6	32.1	37.6	2,359
NuSeed	Camaro II	150	14.6	32.6	37.7	2,669
NuSeed	N5LM307	153	13.6	33.9	34.3	2,308
NuSeed	Badger DMR	153	12.2	28.2	30.6	1,712
Ag Venture	AF3N692ES	163	13.6	27.6	38.2	2,368
Ag Venture	AF3H681ES	160	13.8	29.7	36.0	2,387
Ag Venture	AF3N94CD	149	12.3	30.8	37.0	2,144
Ag Venture	AF4H95CD	140	14.4	30.0	36.5	2,642
Ag Venture	XF422HC	134	14.7	31.9	37.5	2,957
Ag Venture	XF2N14CD	122	12.5	31.3	39.0	2,939
Ag Venture	XF2665HE	153	12.5	29.4	38.5	2,925
USDA	–	132	11.7	31.5	36.2	2,050
Allegiant	65H81CL	158	12.5	30.0	36.9	2,212
Allegiant	70H51CL	139	12.5	29.4	39.1	2,528
	P-value	<0.001	<0.001	<0.001	<0.001	<0.001
	CV %	10.6	10.6	8.3	5.5	17.8
	LSD 0.05	21.5	2.0	3.5	2.8	576.9
	LSD 0.10	18.05	1.67	2.92	2.37	760.73

Planted: June 29.

Harvested: November 15.