

List of Tables

- 1 Oilseed hybrid list and test sites**
Page 5
- 2 Confection hybrid list and test sites**
Page 7
- 3 Climate Summary**
Page 8
- 4 Bison oilseed trial**
Page 9
- 5 Harrold oilseed trial**
Page 11
- 6 Onida oilseed trial**
Page 13
- 7 Presho oilseed trial**
Page 15
- 8 Harrold confection trial**
Page 17
- 9 Onida confection trial**
Page 18
- 10 Confection trial averaged over 2 locations**
Page 19
- 11 Oilseed trial averaged over 3 locations**
Page 20

2013 South Dakota Sunflower Hybrid Performance Trials

Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Select hybrids with traits that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Consider information from trials close to your production area, but give more weight to relative hybrid performance over many locations and years. Performance averaged over many tests (locations and years) 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 two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, 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 two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Presho oilseed test (Table 7) could be repeated in 2014 exactly as it was in 2013, the yield ranking of a hybrid that yielded 2288 lbs/A and one that yielded 2095 lbs/A might change ranking since their yield difference (193 lbs/A) is less than the indicated yield LSD value of 218 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Presho in 2013. In contrast, a hybrid that yielded 2029 lbs/A at Presho in 2013 would likely be lower yielding than one that yielded 2288 lbs/A if the two hybrids were grown again under similar conditions, because their difference in 2013 (2288 – 2029 = 259 lbs/A) exceeded the LSD value of 218 lbs/A.

The coefficient of variability (C.V.) 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. Generally, trials with low C.V. rates (low variability) are

more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-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, oil content 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. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Hybrid disease ratings may be included with some performance trial results. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for

crushing, hulling, or birdfeed.

2013 Trial Procedures Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Harrold, Eureka, Onida, and Presho) in 2013. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, high stearic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted at Harrold and Onida. Test locations are indicated on the map in Figure 1. Trial sites for each of the hybrids tested in 2013 appear in Tables 1 and 2.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, with a 30 inch row spacing. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was sent pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding date at Bison was June 5th. Eureka was planted on June 11th, Presho and Harrold on June 14th and Onida on June 15th. The previous crop at Eureka and Harrold was corn. At all other locations, the previous crop was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were

good at all locations. The Eureka site was later abandoned due to severe lodging and bird damage.

Areas of stunted plants (from unknown causes) in the oilseed trial at Onida became obvious as the plants approached flowering. Stunting was most severe in the first replication, so that rep was excluded from all analyses, as were any stunted plots in the other three replications. Hybrids that did not have at least two good replications of data were also excluded. Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Plant height and lodging notes were taken at all locations immediately before harvest. At all locations except Bison, the center two rows of each 4-row plot 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. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGage. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot for oil analysis.

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. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens. A one-pint sub-sample of seed from

each plot of the Harrold and Onida confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Climate

A summary of climate conditions near the sunflower test sites is presented in Table 3. The closest weather station to the Presho sunflower plots was at Kennebec and the station closest to Harrold was located 1 mile west of Highmore. The 2013 growing season was generally cooler than the 30-year average in May through July at all locations. August had a cooler maximum temperature but a warmer minimum temperature than normal and September was much warmer than normal at all sites, while October was cooler (Table 3). All locations had above normal precipitation in May, but below normal precipitation in June. Bison remained drier than average in July but then was wetter than average for the remainder of the season. Both July and August were wetter than normal at Onida, Presho, and Harrold, while September was drier. Eureka had below normal precipitation in August and above normal in September. October was extremely wet at all locations. Several of the storm systems in September, October, and early November brought wind gusts close to 50 or 60 mph at some locations. The first killing frost (<24°F) occurred about October

24th at all locations.

Results

Data from each location are contained in Tables 4- 9 and across locations in Tables 10 and 11. There was considerable lodging at all sites, probably due to a combination of stalk disease (Phomopsis and Phoma), wind, and snow. Eureka was not harvested because of severe lodging. Seed yields at Bison were too variable to report due to a combination of lodging and bird damage, but other data collected

at that location are contained in Table 4. Oilseed yields were highest at Harrold, where 51 hybrids averaged 2006 lbs/acre, with 42.2% oil (Table 5). The lowest oilseed yields (1648 lbs/A) were recorded at Onida (Table 6). Confection hybrid yields were slightly higher at Harrold than at Onida, averaging 1689 lbs/acre across the 37 hybrids tested (Table 8). In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report

on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

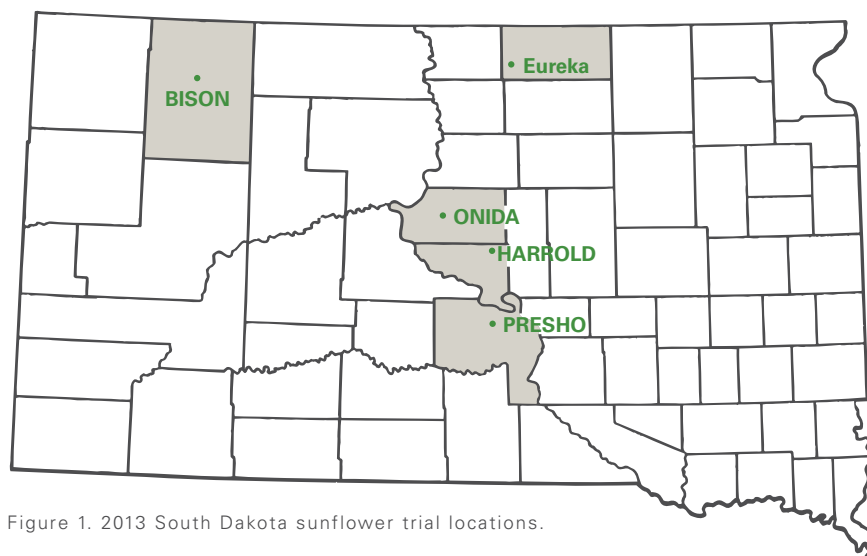


Figure 1. 2013 South Dakota sunflower trial locations.

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type ¹	Location				
			Bison	Eureka	Harrold	Onida	Presho
Advanta Semillas SAIC	MS9024	HS,DM	X	X		X	X
AgVenture Scherr Seed	AVF3H93CL/DM	HO,CL,DM	X	X			
AgVenture Scherr Seed	AVF3H95CL	HO,CL	X	X	X	X	
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	X	X	X	X	
AgVenture Scherr Seed	AVF3N97CL	NS,CL	X	X	X	X	
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	X	X	X	X	X
Winfield Solutions	Croplan 3080	NS	X	X	X	X	X
Winfield Solutions	Croplan 432 E	NS,EX,DM	X	X	X	X	X
Winfield Solutions	Croplan 460 E	NS,EX	X	X	X	X	X
Winfield Solutions	Croplan 548 CL	NS,CL,DM	X	X	X	X	X
Winfield Solutions	Croplan 559 CL	NS,CL,DM	X	X	X	X	X
Sunopta/Dahlgren	4421	ConOil	X	X	X	X	X
Sunopta/Dahlgren	4421CL	CL,ConOil	X	X	X	X	X
Genosys	11G08	NS		X		X	
Genosys	12E06	HO,DM		X		X	
Genosys	12E12	HO,CL,DM		X		X	
Genosys	12E13	HO,CL,DM		X		X	
Genosys	12E14	HO,CL,DM		X		X	
Genosys	12G20	HO,CL		X		X	
Legend Seeds	LSF 318NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9302HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9418HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9426NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9468NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9501	Trad.	X	X	X	X	X
Legend Seeds	LSF 9505NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9534NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9536HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9801NCL	NS,CL	X	X	X	X	X
Mycogen Seeds	8D310CL	ConOil,CL		X		X	
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X		X	
Mycogen Seeds	8D417	ConOil,SS		X	X	X	
Mycogen Seeds	8N421CLDM	NS,CL,DM	X	X	X	X	X
Mycogen Seeds	8N510	NS			X	X	X
Mycogen Seeds	8N668S	NS,SS			X	X	X
Mycogen Seeds	E82558CP	NS,CP			X	X	X
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	X	X	X	X	X
Proseed	E-21 CL	HO,CL	X	X	X	X	X
Proseed	E-31 CL	HO,CL	X	X	X	X	X
Proseed	E-362436	HO	X	X	X	X	X
Proseed	E-85 CL	HO,CL	X	X	X	X	X
Nuseed/Seeds 2000	Badger	ConOil,CL	X	X	X	X	X
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	X	X	X	X	X

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type ¹	Location				
			Bison	Eureka	Harrold	Onida	Presho
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Daytona	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Durango	NS,EX	X	X	X	X	X
Nuseed/Seeds 2000	Falcon	NS,EX	X	X	X	X	X
Nuseed/Seeds 2000	Hornet	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NHK12M141	HO,CL	X	X	X	X	X
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	X	X	X	X	X
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	X	X	X	X	X
Nuseed/Seeds 2000	Torino	NS,CL,DM	X	X	X	X	X
Syngenta	3733 NS/DM	NS,DM	X	X	X	X	X
Syngenta	3845 HO	HO	X	X	X	X	X
Syngenta	3158 NS/CL/DM	NS,CL,DM	X	X	X	X	X
USDA	RSSW-Exp 227/464					X	
USDA	RSSW-Exp 227/468					X	
USDA	RSSW-Exp 231/464					X	
USDA	RSSW-Exp 237/464					X	
USDA	RSSW-Exp 237/468					X	
USDA	RSSW-Exp 243/464					X	
USDA	RSSW-Exp 243/468					X	
USDA	RSSW-Exp 245/464					X	
USDA	RSSW-Exp 245/468					X	
USDA	894 (check)	Trad.	X	X	X	X	X
USDA	cms HA465/RHA 439	NS		X			
USDA	cms HA465/RHA 468	NS		X			

¹Type: HO=High Oleic, NS=NuSun, Trad.=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type ¹	Location	
			Harrold	Onida
CHS	10EXP01	CL	X	X
CHS	12EXP01	EX	X	X
CHS	13EXP02	CL	X	X
CHS	13EXP03	EX	X	X
Genosys	12GCF05		X	X
Genosys	12GCF12		X	X
Mycogen Seeds	8C451CP	CL	X	X
Nuseed Global	5009		X	X
Nuseed Global	NHW10403		X	X
Nuseed Global	NHW11904	DM	X	X
Nuseed Global	NHW11915		X	X
Nuseed Global	NHW11921		X	X
Nuseed Global	NHW11928		X	X
Nuseed Global	NHW12706	DM	X	X
Nuseed Global	NHW12709		X	X
Nuseed Global	NHW12717		X	X
Nuseed Global	NHW12725	DM	X	X
Nuseed Global	X3939		X	X
Nuseed Global	X4417		X	X
Nuseed Global	X98578		X	X
Red River Commodities	RRC 2215		X	X
Red River Commodities	RRC 2215 CL	CL	X	X
Red River Commodities	RRC 2217	CP	X	X
Red River Commodities	RRC 8015		X	X
Nuseed/Seeds 2000	Jaguar	CL	X	X
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	X	X
Nuseed/Seeds 2000	Jaguar II	CL	X	X
Nuseed/Seeds 2000	Jaguar XL	CL	X	X
Nuseed/Seeds 2000	NSK12M048	CL,DM	X	X
Nuseed/Seeds 2000	X4334	CL	X	X
Sunopta/Dahlgren	9506CL	CL	X	X
Sunopta/Dahlgren	9521		X	X
Sunopta/Dahlgren	9530CL	CL	X	X
Sunopta/Dahlgren	9579		X	X
Sunopta/Dahlgren	9589CL	CL	X	X
Sunopta/Dahlgren	9592CL+	CL+	X	X
USDA	924 (check)		X	X

¹Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Table 3. Climate summary for weather stations nearest to 2013 South Dakota hybrid sunflower test sites and departures from normal.

Location-Month	2013 Temperature			Total Precip (in.)	Departure from Normal ¹			
	Avg Max.	Avg Min.	Mean		Max Temp	Min Temp	Avg Temp	Precip %
	----- (°F) -----				----- (°F) -----			
Bison*								
May	66.9	42.1	54.6	6.03	-1.9	-1.2	-1.5	195
June	74.0	51.3	63.1	1.84	-4.0	-1.1	-2.1	63
July	84.4	56.7	70.3	1.04	-2.1	-2.0	-2.3	44
August	83.6	58.0	69.9	2.70	-2.8	1.0	-1.8	167
September	75.7	50.7	62.3	2.82	0.4	4.1	1.3	222
October	48.9	30.5	39.7	3.21	-11.3	-4.4	-7.9	218
Onida 4 NW*								
May	70.4	43.4	56.9	6.26	0.4	-0.7	-0.2	205
June	77.8	54.4	66.1	1.54	-1.9	0.4	-0.7	46
July	85.3	58.8	72.0	4.92	-2.6	-1.0	-1.8	186
August	84.4	60.1	72.2	2.54	-1.5	2.3	0.3	108
September	80.5	53.6	67.1	0.83	4.4	6.4	5.4	46
October	54.1	34.5	44.3	6.64	-6.4	-0.1	-3.3	398
Kennebec								
May	72.9	43.4	58.2	4.27	0.0	-2.5	-1.2	135
June	81.0	54.7	67.9	2.30	-0.9	-1.1	-0.9	69
July	85.9	60.0	72.9	5.03	-3.8	-2.0	-3.0	202
August	85.6	62.4	74.0	4.15	-2.8	2.4	-0.2	215
September	83.9	54.2	69.1	1.35	4.7	4.9	4.8	76
October	59.7	35.2	47.4	4.07	-4.1	-0.8	-2.5	264
Highmore 1 W								
May	70.8	43.5	57.2	4.79	0.6	-0.9	-0.1	174
June	78.8	54.8	66.8	1.94	-0.2	0.5	0.2	64
July	85.8	59.6	72.7	4.02	-1.0	-0.6	-0.8	148
August	85.3	61.2	73.3	3.02	-0.1	2.7	1.3	135
September	82.5	54.4	68.4	1.02	7.0	5.8	6.3	62
October	56.0	35.0	45.5	5.12	-4.8	-1.1	-3.0	366
Eureka								
May	68.5	42.3	55.4	4.94	-0.5	-1.8	-1.2	172
June	76.8	53.9	65.4	1.64	-0.7	0.1	-0.2	45
July	83.1	58.4	70.8	3.39	-1.4	-0.7	-1.0	114
August	83.9	58.5	71.2	0.98	0.6	1.2	0.9	41
September	76.5	52.4	64.4	2.22	4.0	5.7	4.8	131
October	51.2	33.9	42.6	5.25	-6.5	-0.2	-3.3	305
*2013 climate observations are based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above. ¹Departures from normal were determined by comparing 2013 observations to 30-yr averages (1981-2010) for each site.								

Table 4. 2013 Sunflower - Oilseed - Bison, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield ²	Oil	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/A)	(%)	(in)	(%)	(lb/bu)	(%)
Advanta Semillas SAIC	MS9024	HS,DM		44.9	56	11.0	28.0	18
AgVenture Scherr Seed	AVF3H93CL/DM	HO,CL,DM		45.4	51	9.4	29.5	0
AgVenture Scherr Seed	AVF3H95CL	HO,CL		45.6	48	9.9	28.0	6
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM		47.0	53	10.6	28.2	16
AgVenture Scherr Seed	AVF3N97CL	NS,CL		47.4	56	13.2	28.7	27
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM		46.7	48	13.4	25.8	22
Winfield Solutions	Croplan 3080	NS		48.2	50	9.7	27.7	7
Winfield Solutions	Croplan 432 E	NS,EX,DM		43.4	50	10.6	29.7	16
Winfield Solutions	Croplan 460 E	NS,EX		48.0	54	10.3	27.3	20
Winfield Solutions	Croplan 548 CL	NS,CL,DM		45.0	55	9.8	27.4	14
Winfield Solutions	Croplan 559 CL	NS,CL,DM		47.7	57	9.8	26.4	15
Sunopta/Dahlgren	4421	ConOil		42.6	54	10.0	25.8	18
Sunopta/Dahlgren	4421CL	CL,ConOil		42.6	53	9.9	25.3	0
Legend Seeds	LSF 318NCL	NS,CL		43.9	47	9.4	28.2	10
Legend Seeds	LSF 9302HOCL	HO,CL		45.3	52	10.1	28.1	12
Legend Seeds	LSF 9418HOCL	HO,CL		45.7	52	10.6	27.7	0
Legend Seeds	LSF 9426NCL	NS,CL		46.3	56	11.8	28.1	17
Legend Seeds	LSF 9468NCL	NS,CL		44.5	48	15.3	23.7	36
Legend Seeds	LSF 9501	Trad.		45.1	52	13.5	28.6	60
Legend Seeds	LSF 9505NCL	NS,CL		47.1	54	11.9	27.3	28
Legend Seeds	LSF 9534NCL	NS,CL		45.7	56	9.8	28.4	11
Legend Seeds	LSF 9536HOCL	HO,CL		45.3	51	13.0	27.3	23
Legend Seeds	LSF 9801NCL	NS,CL		47.0	53	9.1	26.2	36
Mycogen Seeds	8H449CLDM	HO,CL,DM		50.3	51	14.7	29.6	37
Mycogen Seeds	8N358CLDM	NS,CL,DM		47.9	48	9.7	26.2	11
Mycogen Seeds	8N421CLDM	NS,CL,DM		48.4	56	13.5	26.7	14
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM		47.3	52	10.4	27.1	12
Proseed	E-21 CL	HO,CL		43.3	56	13.2	27.9	24
Proseed	E-31 CL	HO,CL		41.9	59	9.4	26.3	13
Proseed	E-362436	HO		45.9	61	9.5	28.1	43
Proseed	E-85 CL	HO,CL		44.7	59	8.8	26.1	11
Nuseed/Seeds 2000	Badger	ConOil,CL		41.9	55	9.6	28.1	24
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM		40.5	51	9.6	26.2	20
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM		39.0	54	9.5	26.3	16
Nuseed/Seeds 2000	Camaro II	NS,CL,DM		46.1	48	11.5	29.0	8
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM		45.4	51	10.1	28.2	19
Nuseed/Seeds 2000	Daytona	HO,CL,DM		45.8	49	9.3	29.3	7
Nuseed/Seeds 2000	Durango	NS,EX		44.8	46	11.2	27.3	45
Nuseed/Seeds 2000	Falcon	NS,EX		46.6	53	13.3	28.7	45
Nuseed/Seeds 2000	Hornet	HO,CL,DM		47.4	50	9.8	27.2	11
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM		44.1	50	9.4	23.5	23
Nuseed/Seeds 2000	NHK12M141	HO,CL		44.3	54	9.2	25.2	8
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM		46.8	50	12.0	26.6	11
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul		41.6	53	10.2	26.5	24
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul		45.2	48	9.8	26.5	31

Table 4. 2013 Sunflower - Oilseed - Bison, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield ²	Oil	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/A)	(%)	(in)	(%)	(lb/bu)	(%)
Nuseed/Seeds 2000	Torino	NS,CL,DM		47.2	53	12.8	27.2	28
Syngenta	3733 NS/DM	NS,DM		46.5	48	10.7	27.8	25
Syngenta	3845 HO	HO		47.0	45	9.6	27.1	12
Syngenta	3158 NS/CL/DM	NS,CL,DM		47.1	50	12.8	27.5	28
USDA	894 (check)	Trad.		46.4	49	10.0	27.6	16
Grand mean				45.5	52	10.8	27.3	19
LSD 5%				1.7	4	2.0	2.2	19
C.V.				2.6	6.1	12.9	5.7	69.0

¹Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

²Yields are not reported due to excessive variability in the data (30-40% bird damage, lodging).

Planted June 5, 2013. Harvested Nov. 1, 2013. Previous crop=wheat.

Table 5. 2013 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type¹	Seed Yield		Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.				
			----(lbs/a)----					
AgVenture Scherr Seed	AVF3H95CL	HO,CL	1821	--	41.4	66	11.0	6
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	2356	--	43.6	65	11.5	8
AgVenture Scherr Seed	AVF3N97CL	NS,CL	2004	--	42.8	65	11.6	8
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2522	--	43.0	62	11.7	6
Winfield Solutions	Croplan 3080	NS	1913	--	45.8	67	9.8	8
Winfield Solutions	Croplan 432 E	NS,EX,DM	2049	2304	40.0	65	10.7	10
Winfield Solutions	Croplan 460 E	NS,EX	1847	2303	44.6	73	10.7	21
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1700	2153	42.8	72	11.0	12
Winfield Solutions	Croplan 559 CL	NS,CL,DM	2130	2304	43.9	75	10.1	8
Sunopta/Dahlgren	4421	ConOil	1884	--	40.1	68	10.9	10
Sunopta/Dahlgren	4421CL	CL,ConOil	2065	--	39.0	72	11.3	9
Legend Seeds	LSF 318NCL	NS,CL	2092	2325	39.8	65	10.8	10
Legend Seeds	LSF 9302HOCL	HO,CL	1607	2206	41.8	64	10.9	8
Legend Seeds	LSF 9418HOCL	HO,CL	2148	--	42.1	60	11.1	6
Legend Seeds	LSF 9426NCL	NS,CL	2340	--	43.9	68	11.7	7
Legend Seeds	LSF 9468NCL	NS,CL	2204	--	44.0	64	11.7	2
Legend Seeds	LSF 9501	Trad.	2590	2713	39.9	76	11.4	13
Legend Seeds	LSF 9505NCL	NS,CL	2226	2329	43.5	69	12.0	4
Legend Seeds	LSF 9534NCL	NS,CL	2477	--	43.2	71	11.4	1
Legend Seeds	LSF 9536HOCL	HO,CL	2066	--	43.9	64	11.3	5
Legend Seeds	LSF 9801NCL	NS,CL	1757	--	43.3	67	10.6	10
Mycogen Seeds	8H449CLDM	HO,CL,DM	2221	2323	46.1	68	11.6	11
Mycogen Seeds	8D417	ConOil,SS	2240	2291	42.4	51	11.2	2
Mycogen Seeds	8N421CLDM	NS,CL,DM	2037	2289	42.0	65	10.5	4
Mycogen Seeds	8N510	NS	2116	2347	43.1	66	10.7	7
Mycogen Seeds	8N668S	NS,SS	2507	--	46.8	45	11.8	4
Mycogen Seeds	E82558CP	NS,CP	2152	--	46.9	45	11.1	5
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1754	1826	42.3	70	11.0	5
Proseed	E-21 CL	HO,CL	2107	2321	38.8	73	10.6	11
Proseed	E-31 CL	HO,CL	1867	--	41.0	73	9.9	11
Proseed	E-362436	HO	1908	--	40.4	76	10.9	25
Proseed	E-85 CL	HO,CL	1748	--	40.8	73	9.9	17
Nuseed/Seeds 2000	Badger	ConOil,CL	1535	2113	39.0	75	9.8	15
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1603	--	36.0	73	9.4	12
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1420	2060	34.8	67	9.7	11
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2305	--	43.8	66	11.7	7
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1677	--	42.6	65	10.4	11
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1929	2449	42.6	65	10.8	5
Nuseed/Seeds 2000	Durango	NS,EX	1680	2103	42.7	61	10.8	6
Nuseed/Seeds 2000	Falcon	NS,EX	2040	2324	42.5	65	10.5	12
Nuseed/Seeds 2000	Hornet	HO,CL,DM	2011	--	43.0	67	11.2	23
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	2009	--	40.7	71	10.5	6
Nuseed/Seeds 2000	NHK12M141	HO,CL	1897	--	42.3	68	10.8	10
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2766	--	43.9	66	11.8	9
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1324	--	37.6	64	11.0	51

Table 5. 2013 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield		Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.				
			----(lbs/a)----					
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1766	--	39.6	62	10.3	18
Nuseed/Seeds 2000	Torino	NS,CL,DM	2111	2404	44.1	67	12.0	10
Syngenta	3733 NS/DM	NS,DM	2058	2466	42.1	65	10.0	7
Syngenta	3845 HO	HO	1919	2520	45.6	64	10.0	9
Syngenta	3158 NS/CL/DM	NS,CL,DM	1969	2482	42.4	61	10.7	17
USDA	894 (check)	Trad.	1818	2179	42.8	58	10.5	13
Grand mean			2006	2297	42.2	66	10.9	10
LSD 5%			315	261	1.6	5	0.5	11
C.V.			11.3	11.5	2.7	5.0	3.5	77.8
¹Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.								
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.								
Planted June 14, 2013. Harvested Nov. 10, 2013. Previous crop=corn.								

Table 6. 2013 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type ¹	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Lodge	Hulling Screen Test ²
			2013	2-yr Avg.	3-yr Avg.						
			----- (lb/a) -----								
Advanta Semillas SAIC	MS9024	HS,DM	1084	--	--	39.4	66	68	7.7	51	NT
AgVenture Scherr Seed	AVF3H95CL	HO,CL	1726	--	--	42.0	64	52	8.8	9	NT
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	2305	--	--	41.1	62	64	10.0	10	NT
AgVenture Scherr Seed	AVF3N97CL	NS,CL	1816	--	--	41.3	66	57	9.1	10	NT
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	1485	--	--	42.4	65	59	9.1	27	NT
Winfield Solutions	Croplan 3080	NS	1445	--	--	39.6	60	57	8.2	35	NT
Winfield Solutions	Croplan 432 E	NS,EX,DM	1622	1993	--	37.8	59	63	8.7	33	Good
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1334	1643	1731	39.4	61	64	9.1	63	NT
Sunopta/Dahlgren	4421	ConOil	1694	1874	1815	38.6	60	62	8.8	46	NT
Sunopta/Dahlgren	4421CL	CL,ConOil	2120	1932	--	37.7	66	67	9.3	19	NT
Genosys	11G08	NS	1294	1459	--	39.8	64	69	8.2	33	NT
Genosys	12E12	HO,CL,DM	1306	1682	--	38.3	63	69	9.3	38	NT
Genosys	12E13	HO,CL,DM	1739	1839	--	39.0	62	66	8.7	23	NT
Genosys	12E14	HO,CL,DM	2115	2183	--	38.1	63	65	9.0	17	NT
Genosys	12G20	HO,CL	1267	--	--	38.6	61	52	8.5	55	NT
Legend Seeds	LSF 318NCL	NS,CL	1497	1664	--	39.7	61	58	8.5	21	Excel
Legend Seeds	LSF 9302HOCL	HO,CL	1681	2095	--	40.4	63	51	8.8	21	Fail
Legend Seeds	LSF 9418HOCL	HO,CL	1849	--	--	40.1	59	54	8.6	7	Good
Legend Seeds	LSF 9426NCL	NS,CL	2369	--	--	41.4	61	60	9.6	19	Excel
Legend Seeds	LSF 9468NCL	NS,CL	1843	--	--	41.6	65	56	10.2	14	NT
Legend Seeds	LSF 9501	Trad.	1983	2184	--	37.9	64	64	8.8	11	Good
Legend Seeds	LSF 9505NCL	NS,CL	1877	1936	--	42.9	64	65	9.8	25	Fail
Legend Seeds	LSF 9534NCL	NS,CL	1909	--	--	42.1	64	61	8.7	25	Fail
Legend Seeds	LSF 9536HOCL	HO,CL	2108	--	--	42.1	66	58	8.9	19	Fail
Legend Seeds	LSF 9801NCL	NS,CL	1274	--	--	41.7	66	59	8.7	71	Fail
Mycogen Seeds	8D310CL	ConOil,CL	1995	--	--	37.0	64	68	9.0	15	NT
Mycogen Seeds	8N358CLDM	NS,CL,DM	1608	1823	1861	40.5	61	56	8.3	14	NT
Mycogen Seeds	8D417	ConOil,SS	2061	2270	--	41.1	62	49	9.3	9	NT
Mycogen Seeds	8N421CLDM	NS,CL,DM	2004	2111	1940	42.6	63	63	9.2	17	NT
Mycogen Seeds	8N510	NS	1811	2036	2094	40.7	64	59	8.4	11	NT
Mycogen Seeds	E82558CP	NS,CP	1736	--	--	42.5	67	35	9.1	18	NT
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1789	1985	2073	40.2	60	70	9.5	32	Excel
Proseed	E-21 CL	HO,CL	1213	1807	--	40.4	62	67	8.7	35	NT
Proseed	E-31 CL	HO,CL	1454	--	--	40.3	63	67	8.8	40	NT
Proseed	E-362436	HO	1107	--	--	40.6	62	70	8.9	66	NT
Proseed	E-85 CL	HO,CL	1772	--	--	38.2	64	70	8.1	18	NT
Nuseed/Seeds 2000	Badger	ConOil,CL	1124	1681	1709	35.0	63	57	8.3	62	Excel
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1302	--	--	30.6	62	62	8.2	35	Excel
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1215	1647	--	32.5	59	61	8.5	39	Excel
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2209	--	--	42.8	63	70	9.7	22	NT
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1748	--	--	39.4	62	57	8.7	14	NT
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1822	1930	1859	40.4	64	58	9.0	10	NT
Nuseed/Seeds 2000	Falcon	NS,EX	1540	1779	1946	40.9	62	54	8.6	28	NT

Table 6. 2013 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type ¹	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Lodge	Hulling Screen Test ²
			2013	2-yr Avg.	3-yr Avg.						
			----- (lb/a) -----								
Nuseed/Seeds 2000	Hornet	HO,CL,DM	1654	--	--	40.6	63	56	8.3	30	NT
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1992	--	--	39.6	65	56	8.7	10	NT
Nuseed/Seeds 2000	NHK12M141	HO,CL	1423	--	--	40.8	66	59	8.6	25	NT
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	1801	--	--	40.4	62	53	8.2	19	NT
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1022	--	--	33.0	61	58	8.7	52	Excel
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1092	--	--	35.8	62	57	8.8	58	Excel
Nuseed/Seeds 2000	Torino	NS,CL,DM	1602	1835	1821	42.3	65	59	9.3	33	NT
Syngenta	3733 NS/DM	NS,DM	1158	1778	2052	38.4	62	54	9.0	52	NT
Syngenta	3845 HO	HO	1772	2292	2279	40.2	60	56	8.0	20	NT
Syngenta	3158 NS/CL/DM	NS,CL,DM	2184	2193	2198	41.7	62	55	9.2	15	NT
USDA	RSSW-Exp 227/464		2022	--	--	43.0	62	67	8.9	8	NT
USDA	RSSW-Exp 227/468		1985	--	--	41.7	63	67	8.3	17	NT
USDA	RSSW-Exp 231/464		1944	--	--	43.1	62	63	8.1	12	NT
USDA	RSSW-Exp 237/464		1409	--	--	41.3	62	68	9.0	27	NT
USDA	RSSW-Exp 237/468		1640	--	--	38.1	63	72	7.9	18	NT
USDA	RSSW-Exp 243/464		1155	--	--	39.9	61	58	7.8	48	NT
USDA	RSSW-Exp 243/468		1669	--	--	42.3	61	57	8.0	35	NT
USDA	RSSW-Exp 245/464		1215	--	--	39.1	62	66	8.7	24	NT
USDA	RSSW-Exp 245/468		1213	--	--	38.7	63	62	8.2	19	NT
Grand mean			1648	1910	1952	40.0	63	60	8.7	28	
LSD 5%			490	352	272	2.1	2	8	0.8	20	
C.V.			18.3	16.2	15.7	3.3	1.6	8.1	5.7	45.0	

¹Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

²Hulling screen test: Excel=>65% of seed passes over a 14/64 screen; Good=>75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 15, 2013. Harvested Nov. 14, 2013. Previous crop=wheat.

Table 7. 2013 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield			Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.	3-yr Avg.				
			----- (lbs/a) -----						
Advanta Semillas SAIC	MS9024	HS,DM	1706	--	--	39.5	77	8.1	11
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2259	--	--	41.6	67	10.5	4
Winfield Solutions	Croplan 3080	NS	2095	--	--	46.0	67	8.4	7
Winfield Solutions	Croplan 432 E	NS,EX,DM	2288	2103	--	39.9	67	8.7	2
Winfield Solutions	Croplan 460 E	NS,EX	1590	1919	1817	46.6	65	9.8	10
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1760	1947	2061	40.5	71	9.0	15
Winfield Solutions	Croplan 559 CL	NS,CL,DM	2212	2299	2315	45.7	76	8.7	10
Sunopta/Dahlgren	4421	ConOil	1751	--	--	39.6	68	9.1	7
Sunopta/Dahlgren	4421CL	CL,ConOil	1851	--	--	35.8	73	10.0	5
Legend Seeds	LSF 318NCL	NS,CL	1662	1633	--	39.2	62	8.2	7
Legend Seeds	LSF 9302HOCL	HO,CL	1632	1667	--	40.9	65	10.1	7
Legend Seeds	LSF 9418HOCL	HO,CL	2029	--	--	41.9	67	10.0	1
Legend Seeds	LSF 9426NCL	NS,CL	2165	--	--	42.7	71	10.5	6
Legend Seeds	LSF 9468NCL	NS,CL	1991	--	--	42.7	63	10.4	9
Legend Seeds	LSF 9501	Trad.	2077	2126	--	39.7	73	9.3	11
Legend Seeds	LSF 9505NCL	NS,CL	1972	1964	--	42.0	70	10.7	6
Legend Seeds	LSF 9534NCL	NS,CL	2157	--	--	42.3	70	10.1	3
Legend Seeds	LSF 9536HOCL	HO,CL	1944	--	--	41.7	65	10.4	9
Legend Seeds	LSF 9801NCL	NS,CL	1718	--	--	46.0	67	10.3	13
Mycogen Seeds	8H449CLDM	HO,CL,DM	1649	1988	2060	43.1	69	10.1	11
Mycogen Seeds	8N421CLDM	NS,CL,DM	1773	2062	1984	41.1	72	9.0	15
Mycogen Seeds	8N510	NS	1834	2129	2045	41.8	68	9.4	7
Mycogen Seeds	8N668S	NS,SS	1836	--	--	46.5	48	10.6	6
Mycogen Seeds	E82558CP	NS,CP	1667	--	--	44.4	47	10.2	8
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1930	1991	2000	43.8	69	10.4	8
Proseed	E-21 CL	HO,CL	1649	1897	--	38.5	77	10.3	7
Proseed	E-31 CL	HO,CL	1444	--	--	38.9	71	9.5	22
Proseed	E-362436	HO	1919	--	--	41.3	81	10.1	11
Proseed	E-85 CL	HO,CL	1945	--	--	39.9	75	9.3	6
Nuseed/Seeds 2000	Badger	ConOil,CL	1577	1886	1799	36.7	71	8.5	11
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1858	--	--	39.1	72	8.6	14
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1579	1726	--	35.0	70	9.5	9
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2020	--	--	42.5	71	10.5	7
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1550	--	--	41.6	67	9.4	7
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1742	1875	1840	41.3	63	10.0	5
Nuseed/Seeds 2000	Durango	NS,EX	1748	1922	1943	41.8	61	9.6	10
Nuseed/Seeds 2000	Falcon	NS,EX	1793	1840	1845	43.2	63	9.5	5
Nuseed/Seeds 2000	Hornet	HO,CL,DM	2181	--	--	42.1	67	10.3	9
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1966	--	--	41.5	70	9.8	8
Nuseed/Seeds 2000	NHK12M141	HO,CL	1845	--	--	40.9	68	9.8	7
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2206	--	--	42.4	69	10.9	5
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1266	--	--	37.5	66	9.2	30
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1629	--	--	40.5	67	9.0	12
Nuseed/Seeds 2000	Torino	NS,CL,DM	1830	1850	1925	42.7	66	11.0	6
Syngenta	3733 NS/DM	NS,DM	1759	1884	1974	41.7	65	9.0	6

Table 7. 2013 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield			Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.	3-yr Avg.				
			----- (lbs/a) -----						
Syngenta	3845 HO	HO	1465	1832	1881	41.4	62	8.3	3
Syngenta	3158 NS/CL/DM	NS,CL,DM	1656	1668	1836	42.6	65	9.3	4
USDA	894 (check)	Trad.	1343	1586	1551	43.5	59	8.7	17
Grand mean			1823	1904	1930	41.5	68	9.6	9
LSD 5%			218	191	167	2.0	4	0.6	8
C.V.			8.6	10	11	3.5	4.0	4.5	64.3

¹Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 14, 2013. Harvested Nov. 2, 2013. Previous crop=wheat.

Table 8. 2013 Sunflower - Confection - Harrold, SD

Company/Brand	Hybrid	Hybrid Type¹	Seed Yield		Plant Height	Harv. Moist.	Lodge	Seed Over Screen			Nut-meat
			2013	2-yr Avg.				22/64	20/64	18/64	
			----(lbs/a)----					(inch)	(%)	(%)	
CHS	10EXP01	CL	1416	1876	69	9.8	14	51	77	88	48.6
CHS	12EXP01	EX	1699	2016	74	10.1	8	74	87	92	51.9
CHS	13EXP02	CL	1560	--	81	10.0	15	45	71	87	52.5
CHS	13EXP03	EX	2498	--	82	11.2	8	69	84	90	51.1
Genosys	12GCF05		1340	--	73	10.7	2	67	84	91	52.8
Genosys	12GCF12		1413	--	83	10.5	40	68	82	87	55.4
Mycogen Seeds	8C451CP	CL	1634	1848	74	9.4	7	62	84	91	56.2
Nuseed Global	5009		1834	1999	72	11.0	9	65	86	93	50.9
Nuseed Global	NHW10403		1361	--	79	10.2	16	73	89	94	48.7
Nuseed Global	NHW11904	DM	1826	1884	73	8.6	15	73	85	92	54.5
Nuseed Global	NHW11915		1771	--	79	11.9	9	46	73	89	51.1
Nuseed Global	NHW11921		1854	1910	82	11.3	5	61	83	92	52.1
Nuseed Global	NHW11928		1878	--	70	10.6	21	63	80	87	50.0
Nuseed Global	NHW12706	DM	2536	--	86	11.7	2	58	80	92	53.6
Nuseed Global	NHW12709		1924	--	85	9.2	0	65	84	89	53.8
Nuseed Global	NHW12717		2055	--	64	11.5	2	57	81	92	53.0
Nuseed Global	NHW12725	DM	2092	--	72	9.3	11	68	84	89	53.0
Nuseed Global	X3939		1961	--	70	10.0	13	49	76	90	51.8
Nuseed Global	X4417		1347	1639	63	8.1	15	75	87	91	56.4
Nuseed Global	X98578		1458	--	73	10.2	4	64	83	93	51.1
Red River Commodities	RRC 2215		2095	2162	70	8.3	11	59	78	88	54.4
Red River Commodities	RRC 2215 CL	CL	1514	1755	75	9.9	17	59	80	87	53.8
Red River Commodities	RRC 2217	CP	1448	--	69	9.4	13	62	82	88	56.2
Red River Commodities	RRC 8015		1641	--	63	10.4	13	72	86	90	52.0
Nuseed/Seeds 2000	Jaguar	CL	1764	1939	65	8.9	16	59	79	91	51.4
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1707	1781	65	9.2	13	53	74	84	49.7
Nuseed/Seeds 2000	Jaguar II	CL	1545	1868	70	9.0	12	58	76	87	52.5
Nuseed/Seeds 2000	Jaguar XL	CL	1373	--	81	9.5	15	58	80	92	54.0
Nuseed/Seeds 2000	NSK12M048	CL,DM	1670	--	74	10.2	13	81	90	94	55.5
Nuseed/Seeds 2000	X4334	CL	1050	1644	74	9.0	40	55	81	91	54.4
Sunopta/Dahlgren	9506CL	CL	1644	--	72	11.5	21	85	91	93	52.5
Sunopta/Dahlgren	9521		1461	--	75	9.6	21	69	85	91	53.3
Sunopta/Dahlgren	9530CL	CL	1497	--	74	9.2	19	50	74	86	55.6
Sunopta/Dahlgren	9579		2114	--	68	11.1	17	82	91	94	55.5
Sunopta/Dahlgren	9589CL	CL	1781	--	80	9.8	11	46	69	84	54.2
Sunopta/Dahlgren	9592CL+	CL+	1574	--	66	10.1	13	69	82	87	54.3
USDA	924 (check)		1175	1275	79	8.2	37	9	25	57	60.8
Grand Mean			1689	1828	74	10.0	14	62	80	89	53.2
LSD 5%			390	256	7	0.8	17	14	10	9	3.8
C.V.			16.5	14.2	6.1	5.9	84.4	11.4	6.2	4.9	3.5

¹Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Planted June 14, 2013. Harvested Nov. 10, 2013. Previous crop=corn.

Table 9. 2013 Sunflower - Confection - Onida, SD

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield			Days to Flower	Plant Height	Harv. Moist.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
			2013	2-yr Avg.	3-yr Avg.						22/64	20/64	18/64	
			----- (lbs/a) -----								----- (%) -----			
CHS	10EXP01	CL	1642	1976	1926	64	69	10.9	44	18.0	44	73	87	52.3
CHS	12EXP01	EX	2050	2267	--	67	76	10.9	19	18.0	73	86	92	51.7
CHS	13EXP02	CL	1740	--	--	68	81	11.7	48	18.0	55	78	90	50.1
CHS	13EXP03	EX	1744	--	--	69	80	10.8	28	18.0	47	74	87	54.4
Genosys	12GCF05		1580	1578	--	68	70	11.5	22	15.8	53	78	87	49.2
Genosys	12GCF12		1884	--	--	67	86	10.7	7	16.0	63	79	85	66.6
Mycogen Seeds	8C451CP	CL	1681	1878	--	68	63	10.6	29	18.0	59	79	86	59.5
Nuseed Global	5009		1766	1840	--	66	69	11.1	24	18.0	36	64	85	55.4
Nuseed Global	NHW10403		1263	--	--	66	80	11.7	60	18.0	68	85	93	52.7
Nuseed Global	NHW11904	DM	2087	1925	--	59	69	10.9	16	18.0	64	88	94	53.4
Nuseed Global	NHW11915		1747	--	--	68	76	12.7	24	18.0	52	78	91	54.9
Nuseed Global	NHW11921		1886	1972	--	67	78	11.9	14	18.0	61	81	92	52.3
Nuseed Global	NHW11928		1908	--	--	59	74	11.0	19	16.0	59	82	92	56.0
Nuseed Global	NHW12706	DM	1754	--	--	67	76	12.3	16	18.0	51	78	91	54.7
Nuseed Global	NHW12709		1397	--	--	64	71	10.6	66	18.0	64	84	91	54.0
Nuseed Global	NHW12717		1121	--	--	67	74	12.1	77	18.0	42	73	86	53.8
Nuseed Global	NHW12725	DM	1197	--	--	57	66	9.9	77	18.0	68	87	92	52.9
Nuseed Global	X3939		1334	--	--	63	72	10.9	28	18.0	42	73	87	52.5
Nuseed Global	X4417		1129	1497	--	57	66	9.2	59	18.0	77	89	92	54.6
Nuseed Global	X98578		1008	--	--	68	74	11.3	59	18.0	65	86	93	53.8
Red River Commod.	RRC 2215		2348	2155	2034	63	74	10.7	20	18.0	60	82	90	56.5
Red River Commod.	RRC 2215 CL	CL	1867	2121	2009	68	80	11.4	16	18.0	60	83	91	56.5
Red River Commod.	RRC 2217 CP	CP	1781	--	--	69	65	11.3	24	18.0	69	86	93	55.9
Red River Commod.	RRC 8015		1874	--	--	63	65	10.4	14	18.0	63	84	91	56.1
Nuseed/Seeds 2000	Jaguar	CL	2026	2064	1941	60	67	10.5	47	18.0	50	79	90	53.7
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1768	1786	1671	55	62	9.9	28	18.0	48	80	92	52.8
Nuseed/Seeds 2000	Jaguar II	CL	1630	1763	1679	62	68	10.5	55	18.0	64	80	90	52.1
Nuseed/Seeds 2000	Jaguar XL	CL	1609	--	--	64	77	11.6	50	18.0	50	71	83	49.5
Nuseed/Seeds 2000	NSK12M048	CL,DM	1488	--	--	64	76	11.8	44	15.8	77	87	92	52.8
Nuseed/Seeds 2000	X4334	CL	1365	1665	--	64	72	11.7	62	18.0	60	82	92	53.4
Sunopta/Dahlgren	9506CL	CL	1461	--	--	69	75	11.9	54	18.0	64	83	89	54.2
Sunopta/Dahlgren	9521		2097	--	--	65	69	10.3	25	18.0	52	74	86	56.6
Sunopta/Dahlgren	9530CL	CL	2193	2037	1950	68	76	11.4	23	18.0	32	64	83	57.3
Sunopta/Dahlgren	9579		1519	1840	1689	63	68	10.7	15	18.0	65	82	89	55.8
Sunopta/Dahlgren	9589CL	CL	1335	--	--	64	80	11.6	60	18.0	41	64	79	51.0
Sunopta/Dahlgren	9592CL+	CL+	1726	--	--	69	65	11.0	36	18.0	64	81	89	58.9
USDA	924 (check)		860	1100	1041	63	74	9.6	84	18.0	12	26	58	60.9
Grand Mean			1645	1851	1771	65	73	11.1	38	17.8	56	78	88	54.6
LSD 5%			462	327	254	1	5	0.8	23	1.4	23	16	8	6.1
C.V.			20.0	17.9	17.8	1.3	5.1	5.3	43.8	5.6	20.2	10.2	4.6	5.5

¹Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Planted June 15, 2013. Harvested Nov. 15, 2013. Previous crop=wheat.

Table 10. 2013 Sunflower – Confection – Averaged over two locations

Company/Brand	Hybrid	Hybrid Type1	Seed Yield	Plant Height	Harv. Moist.	Lodge	Seed Over Screen			Nut-meat
			(lbs/A)	(inch)	(%)	(%)	22/64	20/64	18/64	
			------(%)-----							(%)
CHS	10EXP01	CL	1528	61	10.3	29	47	75	88	50.4
CHS	12EXP01	EX	1874	66	10.5	13	74	86	92	51.8
CHS	13EXP02	CL	1650	71	10.8	32	50	74	88	51.3
CHS	13EXP03	EX	2121	71	11.1	18	58	79	88	52.8
Genosys	12GCF05		1459	63	11.1	12	60	81	89	51.0
Genosys	12GCF12		1648	74	10.6	23	66	81	86	61.0
Mycogen Seeds	8C451CP	CL	1657	59	10.0	18	61	81	88	57.9
Nuseed Global	5009		1799	62	11.1	16	51	75	89	53.1
Nuseed Global	NHW10403		1312	70	10.9	37	70	87	94	50.7
Nuseed Global	NHW11904	DM	1956	62	9.8	15	68	86	93	54.0
Nuseed Global	NHW11915		1759	67	12.3	16	49	76	90	53.0
Nuseed Global	NHW11921		1870	70	11.6	9	61	82	92	52.2
Nuseed Global	NHW11928		1892	63	10.8	20	61	81	90	53.0
Nuseed Global	NHW12706	DM	2145	70	12.0	9	54	79	92	54.2
Nuseed Global	NHW12709		1660	67	9.9	33	64	84	90	53.9
Nuseed Global	NHW12717		1588	61	11.8	39	49	77	89	53.4
Nuseed Global	NHW12725	DM	1644	60	9.6	44	68	85	90	53.0
Nuseed Global	X3939		1647	63	10.5	20	45	74	88	52.2
Nuseed Global	X4417		1237	57	8.7	37	76	88	91	55.5
Nuseed Global	X98578		1233	65	10.8	31	64	85	93	52.5
Red River Commodities	RRC 2215		2221	64	9.5	15	59	80	89	55.5
Red River Commodities	RRC 2215 CL	CL	1691	68	10.6	16	60	81	89	55.2
Red River Commodities	RRC 2217	CP	1614	58	10.3	19	66	84	90	56.0
Red River Commodities	RRC 8015		1757	56	10.4	13	68	85	91	54.1
Nuseed/Seeds 2000	Jaguar	CL	1895	58	9.7	31	55	79	90	52.5
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1737	55	9.5	20	51	77	88	51.2
Nuseed/Seeds 2000	Jaguar II	CL	1587	61	9.8	33	61	78	88	52.3
Nuseed/Seeds 2000	Jaguar XL	CL	1491	69	10.5	32	54	76	87	51.7
Nuseed/Seeds 2000	NSK12M048	CL,DM	1579	66	11.0	28	79	89	93	54.2
Nuseed/Seeds 2000	X4334	CL	1207	63	10.4	50	57	82	91	53.9
Sunopta/Dahlgren	9506CL	CL	1552	64	11.7	37	75	87	91	53.4
Sunopta/Dahlgren	9521		1779	63	9.9	23	60	79	89	54.9
Sunopta/Dahlgren	9530CL	CL	1845	65	10.3	21	41	69	84	56.5
Sunopta/Dahlgren	9579		1816	59	10.9	16	73	87	92	55.6
Sunopta/Dahlgren	9589CL	CL	1558	70	10.7	35	44	66	82	52.6
Sunopta/Dahlgren	9592CL+	CL+	1650	57	10.5	24	66	82	88	56.6
USDA	924 (check)		1017	67	8.9	60	11	26	57	60.9
Grand Mean			1667	64	10.5	26	59	79	89	53.9
LSD 5%			ns	6	1.1	ns	13	9	5	4.4
C.V.			19.5	6.9	6.1	60.2	16.0	8.4	4.8	4.6
¹Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.										

¹Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Table 11. 2013 Sunflower – Oilseed – Averaged over three locations

Company/Brand	Hybrid	Hybrid Type ¹	Seed Yield	Oil	Plant Height	Harv. Moist.	Lodge
			(lbs/A)	(%)	(in)	(%)	(%)
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2089	42.4	63	10.4	13
Winfield Solutions	Croplan 3080	NS	1818	43.8	64	8.8	17
Winfield Solutions	Croplan 432 E	NS,EX,DM	1987	39.2	65	9.4	15
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1598	40.9	69	9.7	30
Sunopta/Dahlgren	4421	ConOil	1777	39.4	66	9.6	21
Sunopta/Dahlgren	4421 CL	CL,ConOil	2012	37.5	71	10.2	11
Legend Seeds	LSF 318NCL	NS,CL	1750	39.6	62	9.2	12
Legend Seeds	LSF 9302HOCL	HO,CL	1640	41.1	60	9.9	12
Legend Seeds	LSF 9418HOCL	HO,CL	2008	41.3	60	9.9	5
Legend Seeds	LSF 9426NCL	NS,CL	2291	42.7	66	10.6	11
Legend Seeds	LSF 9468NCL	NS,CL	2012	42.8	61	10.8	8
Legend Seeds	LSF 9501	Trad.	2217	39.1	71	9.8	12
Legend Seeds	LSF 9505NCL	NS,CL	2025	42.8	68	10.8	12
Legend Seeds	LSF 9534NCL	NS,CL	2181	42.6	67	10.1	10
Legend Seeds	LSF 9536HOCL	HO,CL	2039	42.6	62	10.2	11
Legend Seeds	LSF 9801NCL	NS,CL	1583	43.6	64	9.9	31
Mycogen Seeds	8N421CLDM	NS,CL,DM	1938	41.9	67	9.6	12
Mycogen Seeds	8N510	NS	1920	41.9	64	9.5	8
Mycogen Seeds	E82558CP	NS,CP	1852	44.6	42	10.1	10
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1825	42.1	70	10.3	15
Proseed	E-21 CL	HO,CL	1656	39.2	72	9.9	18
Proseed	E-31 CL	HO,CL	1588	40.1	70	9.4	25
Proseed	E-362436	HO	1644	40.8	76	10.0	34
Proseed	E-85 CL	HO,CL	1822	39.6	73	9.1	14
Nuseed/Seeds 2000	Badger	ConOil,CL	1412	36.9	68	8.9	29
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1588	35.3	69	8.8	20
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1405	34.2	66	9.2	20
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2178	43.0	69	10.6	12
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1658	41.2	63	9.5	11
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1831	41.4	62	9.9	6
Nuseed/Seeds 2000	Falcon	NS,EX	1791	42.2	61	9.5	15
Nuseed/Seeds 2000	Hornet	HO,CL,DM	1949	41.9	63	10.0	21
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1989	40.6	66	9.7	8
Nuseed/Seeds 2000	NHK12M141	HO,CL	1722	41.3	65	9.7	14
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2257	42.2	62	10.3	11
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1204	36.0	63	9.6	44
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1496	38.6	62	9.4	30
Nuseed/Seeds 2000	Torino	NS,CL,DM	1848	43.0	64	10.8	16
Syngenta	3733 NS/DM	NS,DM	1658	40.8	61	9.3	22
Syngenta	3845 HO	HO	1718	42.4	61	8.8	11
Syngenta	3158 NS/CL/DM	NS,CL,DM	1936	42.2	60	9.7	12
Grand mean			1827	40.9	65	9.8	16
LSD 5%			193	1.1	3	0.4	7
C.V.			12.5	3.2	5.6	4.4	53.9

¹Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.