



# 2009 Sunflower Performance Tests



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### **Information on Sunflower Performance Trials**

Numerous hybrids were evaluated in performance tests during 2009. Commercially available hybrids and experimental lines were included within the tests. Tests were designed to provide information to assist producers in identifying superior hybrids and make crop management decisions.

Hybrids of private seed company origin are submitted based on decisions by the respective company and hybrid characteristics listed were provided by the companies (Table 2).

### **2009 Sunflower Crop Overview**

The 2009 sunflower production season in Oklahoma got off to a cool and wet start in some areas. However, as temperatures started to reach near normal in late April and early May the early planted sunflower crop took off. The double-crop sunflowers around the state that were planted in June and July experienced a wide range of growing conditions. In the southwestern part of the state extremely dry conditions reduced yields. In the northeast and northwest part of the state adequate rainfall was received for the most part but timing of rainfall caused problems. The biggest problem observed in 2009 were unseasonable cool temperatures and above normal precipitation in the fall.

### **Pest problems**

Plant disease was minimal during the 2009 growing season. Some rust was observed in the northeast part of the state but most likely had very little impact on yield. Some areas received heavy head moth pressure and had to apply insecticide to control populations.

### **Methods**

Test locations were near Miami, Altus, and Goodwell. Two other locations were established but not harvested due to wildlife damage. These locations were at Stillwater and Lahoma. All test plots were planted using four or two 30-inch rows (2 row Goodwell and Altus) that were 25 feet long. Plots were seeded at a rate of 18,000-21,000 seeds/ac depending on location. Tests were conducted using randomized complete block design with four repli-

cations. Irrigation was used only at the Goodwell location. Two rows the entire length of the plot was harvested with a small plot combine to determine grain yield.

### **Interpreting Data**

Details of establishment and management of each test are listed in footnotes below the tables. Least significant differences (LSD) are listed at the bottom of all but the Performance Summary tables. Differences between varieties are significant only if they are equal to or greater than the LSD value. If a given variety out yields another variety by as much or more than the LSD value, then we are 95% sure that the yield difference is real, with only a 5% probability that the difference is due to chance alone. For example, if variety X is 200 lb/ac higher in yield than variety Y, then this difference is statistically significant if the LSD is 200 or less. If the LSD is 200 or greater, then we are less confident that variety X really is higher yielding than variety Y under the conditions of the test.

The CV value or coefficient of variation, listed at the bottom of each table is used as a measure of the precision of the experiment. Lower CV values will generally relate to lower experimental error in the trial. Uncontrollable or immeasurable variations in soil fertility, soil drainage, and other environmental factors contribute to greater experimental error and higher CV values.

Results reported here should be representative of what might occur throughout the state but would be most applicable under environmental and management conditions similar to those of the tests. The relative yields of all sunflower hybrids are affected by crop management and by environmental factors including soil type, summer conditions, soil moisture conditions, diseases, and insects.

### **Additional information on the Web**

A copy of this publication as well as additional information and more information on sunflower management can be found at

<http://pss.okstate.edu/>

**Table 1. Sources of Seed for the 2009 Sunflower Performance Tests.**

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Winfield Solutions, LLC  
525 55th ST SE  
Minot, ND 58701

Telephone: 701-852-3556

Syngenta

[www.syngenta.com](http://www.syngenta.com)

Mycogen  
9300 Zionsville Rd  
Indianapolis, IN 46268

Telephone: 1-800-MYCOGEN

Seeds 2000  
115 North 3rd St.  
Breckenridge, MN 56520

Telephone: 218-643-2410

Advanta US, Inc.  
6109 53rd Ave. SW  
Fargo, ND 58104

Telephone: 701-282-2952

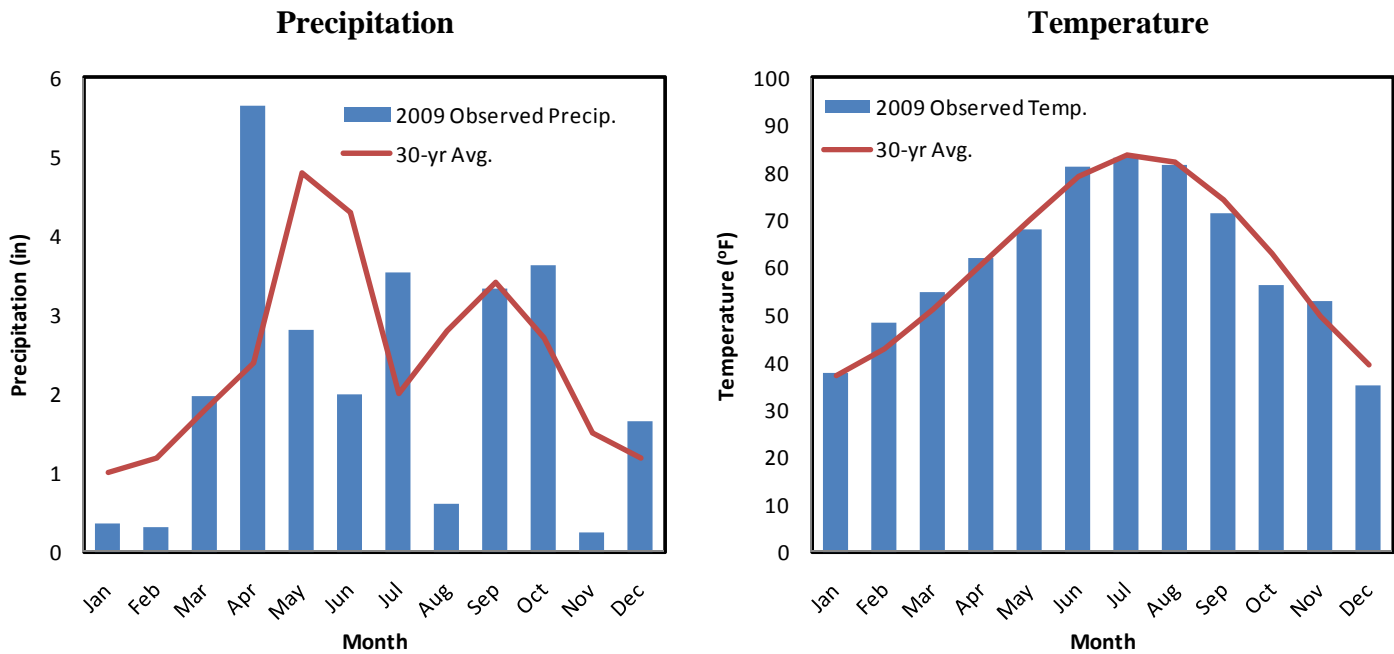
Triumph Seed Co., Inc  
PO Box 1050  
Ralls, TX 79357

Telephone: 888-521-7333

Table 2. Characteristics of sunflower hybrids (provided by the company) entered in the 2009 performance trials.

Entry	Company	Maturity	Oil Type	Oil Con-		Disease Resistance	Herbicide Resistance
				tent	Plant Height		
				--%--	--in--		
AP461NS	Advanta	mid-late	NuSun				
AP462NS	Advanta	mid-late	NuSun				
F30294NS	Advanta	mid-late	NuSun			Rust	
F30008NS,CL	Advanta	mid-late	NuSun				Clearfield
CG 3080 DMR NS	Croplan Genetics	90	NuSun	48	medium	Downy Mildew	
CG 356A NS	Croplan Genetics	95	NuSun	46	short		
CG 369 DMR NS	Croplan Genetics	95	NuSun	46	med-tall	Downy Mildew	
CG 378 DMR NS	Croplan Genetics	95	NuSun	46	medium	Downy Mildew	
CG 460 E NS	Croplan Genetics	95	NuSun	48	medium		Express
CG 555 CL DMR NS	Croplan Genetics	95	NuSun	46	med-tall	Downy Mildew	Clearfield
CG 179	Croplan Genetics	97	Confection		short		
34-33 NS/DM	Syngenta	96	NuSun	45	55-65	Downy Mildew	
34-80CL	Syngenta	97	NuSun	44	55-65	Downy Mildew	Clearfield
37-31 NS	Syngenta	100	NuSun	43	57-67		
38-45 HO	Syngenta	105	High Oleic	44	56-67		
IS7120 HO/DM	Syngenta	95	High Oleic	44	55-65	Downy Mildew	
8N453DM	Mycogen	97	NuSun	45	62	Downy Mildew	
8H449DM	Mycogen	97	High oleic	45	64	Downy Mildew	
8N510	Mycogen	100	NuSun	40	59		
BLAZER CL	Seeds 2000	95	NuSun	42-45	60	Phoma, Verticillium Wilt	Clearfield
Barracuda	Seeds 2000	97	NuSun	42-45	60	Phoma, Rust, Verticillium Wilt	Clearfield
Firebird	Seeds 2000	98	NuSun	40-42	60	Sclerotinia Stalk Rot	Express
s671	Triumph Seed Co.	100	NuSun	43	short stature	Rust	
s674	Triumph Seed Co.	100	NuSun	45	short stature	Rust	
s878HO	Triumph Seed Co.	100	High Oleic	44	short stature		
664	Triumph Seed Co.	100	NuSun	44		Rust	
660 CL	Triumph Seed Co.	100	NuSun	44	short stature	Rust	

## 2009 Altus Trial Data



The sunflower trial at Altus was planted on May 23. Soil moisture at planting was excellent and the soil profile was nearly full due to high amounts of rain received in April. Below normal rainfall in May, June, and August limited yield potential of this location. No additional N was side-dressed due to dry conditions. Given the below normal precipitation for most of the growing season yields were good. Average yield, when averaged across hybrid was 1181 lb/ac and average oil content was 39%. We observed heavy head moth pressure at this location and plots were treated 3 times to control moth populations. No lodging was observed for any hybrid at Altus.

Table 3. Information on soil chemical properties and management practices for the Dryland Sunflower Performance Test at Altus, OK in 2009.

Soil Properties	Result	Cultural Practice	Information
pH	na	Planting Date	May 23, 2009
Soil Test P Index	na	Harvest Date	September 8, 2009
Soil Test K Index	na	Previous Crop	Terminated wheat
Fertilizer Applied		Herbicide Applications	Treflan pre-plant with glyphosate
N	46	Pesticide Applications	3 times to control heat moth
P	0	Harvest Aid	Gramaxone
K	0		

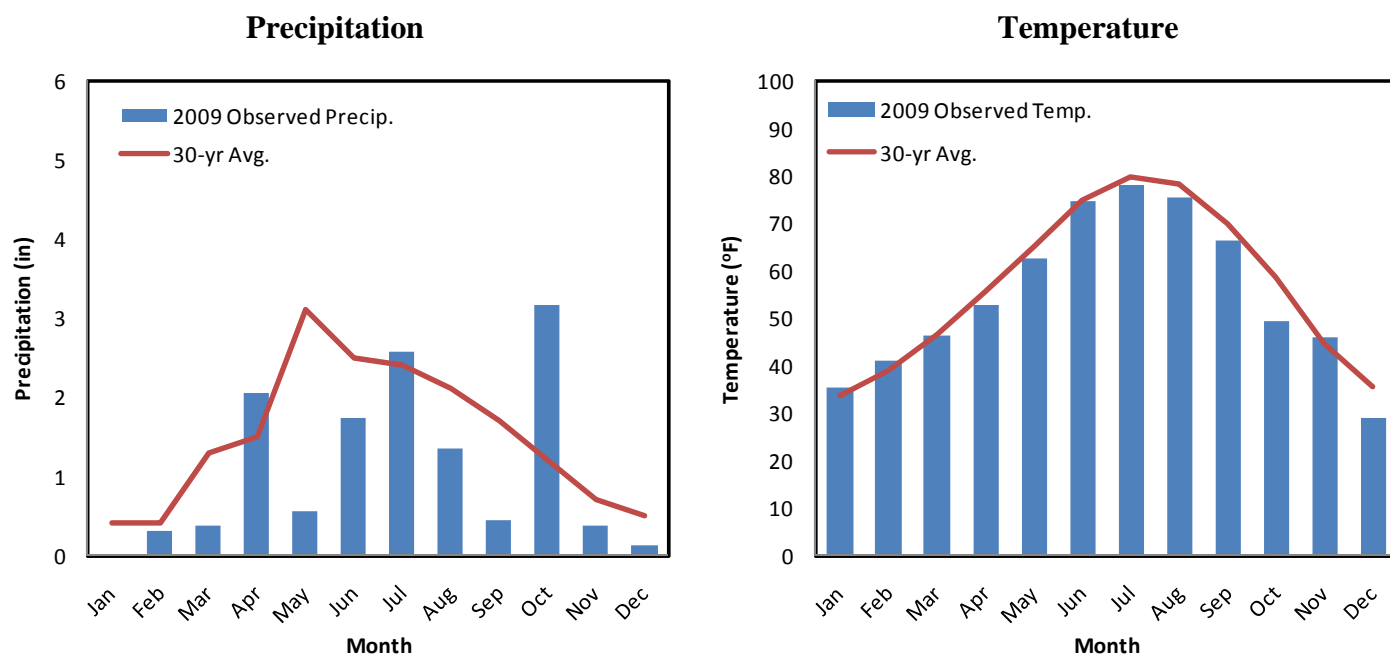
Table 4. Sunflower growth characteristics, oil content, and yield for 2009 in Altus, OK.

Entry	Company	Lodging†	Height -- in --	Oil‡ -- % --	Yield -- lb/ac --
s671	Triumph Seed Co.	0	23	44	1819
s674	Triumph Seed Co.	0	22	43	1720
s878HO	Triumph Seed Co.	0	36	42	1644
660 CL	Triumph Seed Co.	0	28	44	1419
664	Triumph Seed Co.	0	43	43	1364
F30008NS,CL	Advanta	0	33	41	1337
8N453DM	Mycogen	0	36	43	1302
AP462NS	Advanta	0	32	40	1268
CG 369 DMR NS	Croplan Genetics	0	34	42	1267
CG 378 DMR NS	Croplan Genetics	0	38	37	1248
AP461NS	Advanta	0	35	40	1246
CG 356A NS	Croplan Genetics	0	25	46	1218
8N510	Mycogen	0	35	37	1201
8H449DM	Mycogen	0	44	40	1128
37-31 NS	Syngenta	0	37	36	1110
CG 179	Croplan Genetics	0	33	24	1059
BLAZER CL	Seeds 2000	0	46	40	1054
34-80CL	Syngenta	0	30	35	1046
CG 3080 DMR NS	Croplan Genetics	0	36	42	1019
34-33 NS/DM	Syngenta	0	33	39	1011
F30294NS	Advanta	0	31	34	992
CG 555 CL DMR NS	Croplan Genetics	0	39	37	933
CG 460 E NS	Croplan Genetics	0	36	41	916
Firebird	Seeds 2000	0	38	38	913
38-45 HO	Syngenta	0	32	38	905
IS7120 HO/DM	Syngenta	0	37	37	888
Barracuda	Seeds 2000	0	45	39	868
LSD (P=0.05)					404
CV					20

† Percent of plot that was lodged.

‡Oil analysis was performed on one composite sample, so statistical analysis was not possible.

## 2009 Goodwell Trial Data



Yields at Goodwell in 2009 were a little lower than average. Percent oil was not determined for samples in 2009. Typically, oil contents run between 40 and 43% for double crop irrigated in the area. Cooler weather throughout the growing season, especially in October, appeared to delay maturity and may have effected yield. Average yield, when averaged across hybrid, was 1011 lb/ ac. No pest problems were observed during the growing season. Some yield was lost to bird damage and this contributed to a higher CV.

Table 5. Information on soil chemical properties and management practices for the Irrigated Sunflower Performance Test at Goodwell, OK in 2009.

Soil Properties	Result	Cultural Practice	Information
pH	7.3	Planting Date	June 14, 2009
Soil Test P Index	36	Harvest Dates	December 2, 2009
Soil Test K Index	987	Previous Crop	Wheat
Fertilizer Applied		Herbicide Applications	Spartan and Prowl H <sub>2</sub> O
N	130 <sup>†</sup>	Pesticide Applications	none
P	30	Harvest Aid	none
K	0	Irrigation	as needed

<sup>†</sup> Fertilizer was applied to the preceding wheat crop but sufficient amount of residual N should have been present.



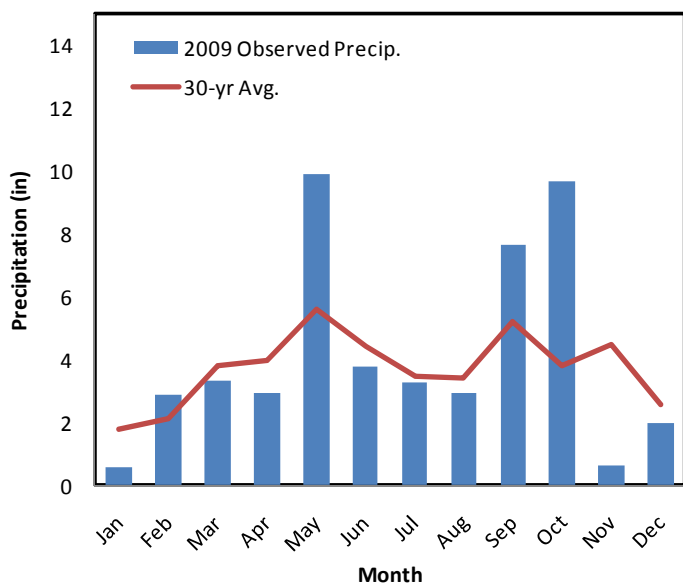
Table 6. Sunflower growth characteristics, oil content, and yield for 2009 in Goodwell, OK (irrigated location).

Entry	Company	Lodging†	Yield -- lb/ac --
AP461NS	Advanta	0	1419
8N510	Mycogen	0	1244
DKF	Syngenta	0	1220
AP462NS	Advanta	0	1200
8H449DM	Mycogen	0	1195
38-45 HO	Syngenta	0	1136
s878HO	Triumph Seed Co.	0	1134
F30008NS,CL	Advanta	0	1119
8N453DM	Mycogen	0	1116
F30294NS	Advanta	0	1091
CG 555 CL DMR NS	Croplan Genetics	0	1079
s674	Triumph Seed Co.	0	1065
34-33 NS/DM	Syngenta	0	1056
660 CL	Triumph Seed Co.	0	1050
s671	Triumph Seed Co.	0	1015
Firebird	Seeds 2000	0	1013
CG 369 DMR NS	Croplan Genetics	0	997
CG 378 DMR NS	Croplan Genetics	0	962
CG 356A NS	Croplan Genetics	0	954
CG 460 E NS	Croplan Genetics	0	927
Barracuda	Seeds 2000	0	917
CG 3080 DMR NS	Croplan Genetics	0	839
IS7120 HO/DM	Syngenta	0	816
34-80CL	Syngenta	0	789
664	Triumph Seed Co.	0	780
CG 179	Croplan Genetics	0	589
BLAZER CL	Seeds 2000	0	578
LSD (P=0.05)			500
CV			30

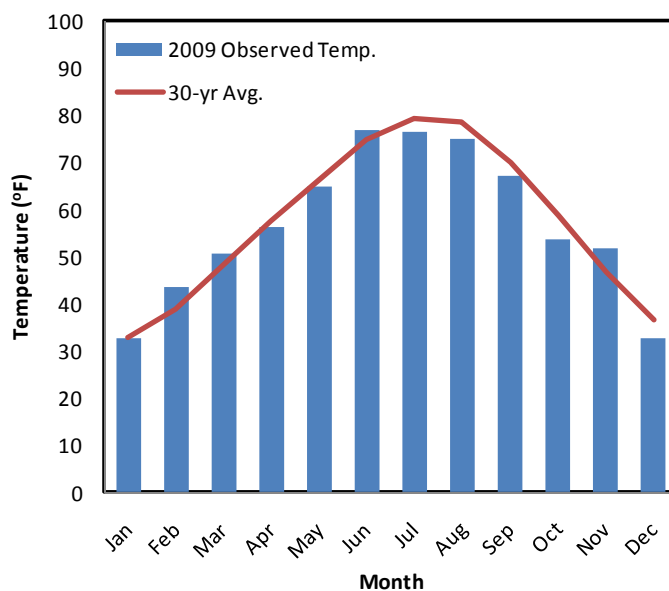
† Percent of plot that was lodged.

## 2009 Miami Trial Data

### Precipitation



### Temperature



Yields at Miami in 2009 were excellent. Lodging was severe for some hybrids due to extremely high winds during the early bloom period. The short stature hybrids withstood the wind better than the tall hybrids. Even though lodging was severe almost all plots were harvested with the exception of a few. Other than high winds, growing conditions were excellent. The CV of this trial is quite high so use this data in conjunction with past years or other sources to make hybrid selections for 2010. Average yield, when averaged across hybrid, was 2177 lb/ac and average oil percentage was 49%. No pest problems were observed during the growing season.

Table 7. Information on soil chemical properties and management practices for the Dryland Sunflower Performance Test at Miami, OK in 2009.

Soil Properties	Result	Cultural Practice	Information
pH	6.0	Planting Date	June 26, 2009
Soil Test P Index	24	Harvest Dates	November 9, 2009
Soil Test K Index	163	Previous Crop	Wheat
Fertilizer Applied		Herbicide Applications	Spartan and Prowl H <sub>2</sub> O
N	100	Pesticide Applications	none
P	0	Harvest Aid	none
K	0		

Table 8. Sunflower growth characteristics, oil content, and yield for 2009 in Miami, OK.

Entry	Company	Lodging†	Height -- in --	Oil‡ -- % --	Yield -- lb/ac --
AP462NS	Advanta	20	36	51	3793
CG 378 DMR NS	Croplan Genetics	20	43	47	3224
CG 369 DMR NS	Croplan Genetics	60	44	47	3145
664	Triumph Seed Co.	20	36	56	3022
CG 460 E NS	Croplan Genetics	60	41	52	3005
Firebird	Seeds 2000	0	34	49	2946
37-31 NS	Syngenta	80	33	50	2719
Barracuda	Seeds 2000	80	42	49	2449
IS7120 HO/DM	Syngenta	40	38	50	2398
34-80CL	Syngenta	40	33	49	2373
38-45 HO	Syngenta	60	30	51	2321
8H449DM	Mycogen	60	38	48	2200
AP461NS	Advanta	0	29	50	2020
CG 179	Croplan Genetics	100	na	33	2010
660 CL	Triumph Seed Co.	20	35	54	2005
8N510	Mycogen	20	33	47	1877
CG 356A NS	Croplan Genetics	40	33	51	1849
s878HO	Triumph Seed Co.	100	na	48	1807
F30294NS	Advanta	0	38	52	1769
CG 3080 DMR NS	Croplan Genetics	0	39	51	1753
BLAZER CL	Seeds 2000	0	38	50	1736
F30008NS,CL	Advanta	0	39	50	1594
8N453DM	Mycogen	100	na	na	1528
CG 555 CL DMR NS	Croplan Genetics	20	41	47	1467
34-33 NS/DM	Syngenta	100	na	na	1360
s671	Triumph Seed Co.	0	29	49	1320
s674	Triumph Seed Co.	0	28	47	1085
LSD (P=0.05)					1218
CV					32

† Percent of plot that was lodged.

‡Oil analysis was performed on one composite sample so statistical analysis was not possible.

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