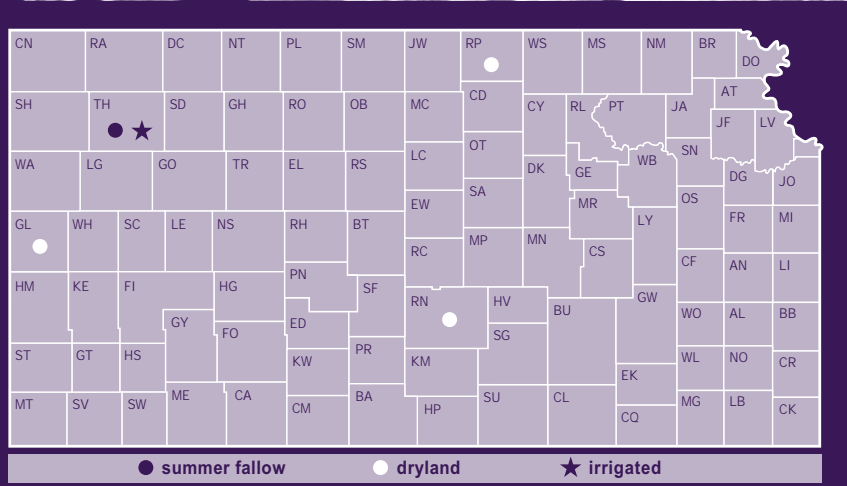


1999

KANSAS PERFORMANCE TESTS WITH SUNFLOWER HYBRIDS

REPORT OF PROGRESS 849

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service



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Excerpts from the
UNIVERSITY RESEARCH POLICY AGREEMENT
WITH COOPERATING SEED COMPANIES*

Permission is hereby given to Kansas State University to test our varieties and/or hybrids designated on the attached entry forms in the manner indicated on the test announcement. I understand that all results from Kansas crop performance tests belong to the University and to the public and shall be controlled by the University so as to produce the greatest benefit to the public. It is further agreed that the name of the University shall not be used by the company in any commercial advertising either in regard to this agreement or any other related matter.

*This agreement must be signed by an authorized individual before results involving the company's entries can be published by the Experiment Station. Except for the limitation that the name "KANSAS STATE UNIVERSITY" cannot be used in advertising (you may use something like "official state tests" or "state yield trials"), this does not preclude the use of data for advertising, if done in a fair manner.

Contribution No. 00-256-S from the Kansas Agricultural Experiment Station.

1999 KANSAS PERFORMANCE TESTS WITH SUNFLOWER HYBRIDS

INTRODUCTION

TEST OBJECTIVES AND PROCEDURES

Sunflower performance tests were conducted in 1999 by the Kansas Agricultural Experiment Station to provide farmers, extension workers, and private industry with unbiased agronomic information on many of the sunflower hybrids marketed in the state. Tests were financed in part by entry fees from private companies. Companies known to be developing and marketing sunflowers were invited to participate and enter hybrids on a voluntary fee-entry basis. So, not all hybrids grown in the state were included in tests, and hybrids were not grown uniformly at all locations.

Five test locations in 1999 included Republic County and Greeley County—dryland; Reno County—dryland, continuous crop; and Thomas County—irrigated and fallow sites. Oilseed entries were grown at all locations. Confectionary entries were included in all tests except Republic County. Oilseed and confectionary entries were planted separately in all tests. Entries were planted in four-row, replicated plots at all locations. To ensure uniform and adequate stands, all tests were planted at a high seeding rate and hand thinned after emergence to desired stands.

Environmental factors affecting test results and cultural practices are discussed individually for each of the test sites. Test results for 1999, as well as period-of-years average data, are included in Tables 1-11. Entrants and entries in 1998 tests are listed at the end of the report.

DATA INTERPRETATION

Yields are reported as lbs seed/a adjusted to 10% moisture content.

Days to half bloom is number of days from date of planting to date when 50% of plants were in bloom.

Lodging percent is based on counts of lodged and total plants in harvested areas at all locations.

Oil percent was obtained from samples submitted under code number to the Kansas State Grain Inspection Department for analysis and is reported on a 10% moisture basis. Samples for all tests were derived by compositing replications by entry for each location and subsampling.

Oil yields are reported as net lbs oil/a.

Seed size percent analysis for confectionary-type entries was performed at the Northwest Research-Extension Center on cleaned samples submitted from each of the tests. Separation by seed size was made by screening a weighed sample through a series of six sieves (22/64, 21/64, 20/64, 19/64, 18/64, and 16/64-round holes) secured on a Ro-Tap mechanical shaker.

Statistical analysis Conducting perfect tests is virtually impossible, because soil fertility, moisture, and other environmental factors vary. Therefore, small differences in results may have no real meaning. To help interpret data, we applied a statistical technique, analysis of variance, wherever possible. Such analysis requires repeating whole sets of varieties or treatments several times and placing individual varieties or treatments as they would be placed by chance alone. Results of the analyses are reported in terms of least significant differences (LSD). If two means differ by more than the LSD (.05), such a difference would be due to chance variation only 5% of the time. So, it's 95% probable that the difference was due to

treatment. If means do not differ by as much as the LSD, then little confidence can be placed in the importance of varietal or treatment differences. The coefficient of variability (CV) represents an estimate of the precision

of replicated yield trials. CVs ranging from 10 to 15% are usually acceptable for performance comparisons. CVs greater than 15% provide only a rough guide to hybrid performance.

ACKNOWLEDGEMENTS

Cooperation of Research Center personnel who performed many of the field operations is sincerely appreciated. Vicki Brown, secretary, assisted in preparing this report; and temporary workers Justin Kniep, Shelby Moses, and Nadia Fercha helped with seed counting and plot thinning and maintenance. Mary Knapp at the Weather Data Library provided climatological data, and Bob Cochrane, agricultural technician, provided weather charts.

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**NORTHWESTERN KANSAS
FALLOW SUNFLOWER TESTS—
OILSEED AND CONFECTIONARY**

LOCATION: Northwest Research-
Extension Center, Thomas County
COOPERATOR: Pat Evans, research
technologist
TEST SITE: Keith silt loam
Grain sorghum 1997, fallow 1998
FERTILIZATION: 60-15-0 spring 1999
PLANTING DATE: June 15, 1999
HEADING DATES: Aug. 9-15, 1999
HARVEST DATES: Oct.19, 1999

PEST CONTROL: Treflan, May 21; Warrior,
Aug. 18

POPULATIONS: Double-planted and
thinned

to desired stands:

Oil (O) 17,000 plants/a

Confectionary (C) 14,900 plants/a

TEST YIELDS:

Avg. (lbs/a): (O) 2641, (C) 2352

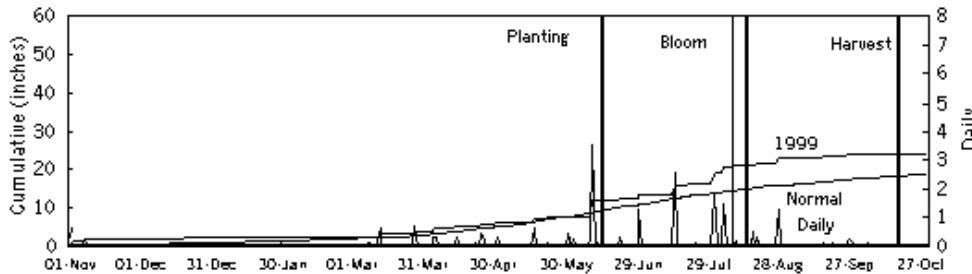
Range: (O) 1982-3220, (C) 2041-2569

LSD (lbs/a): (O) 400, (C) 337

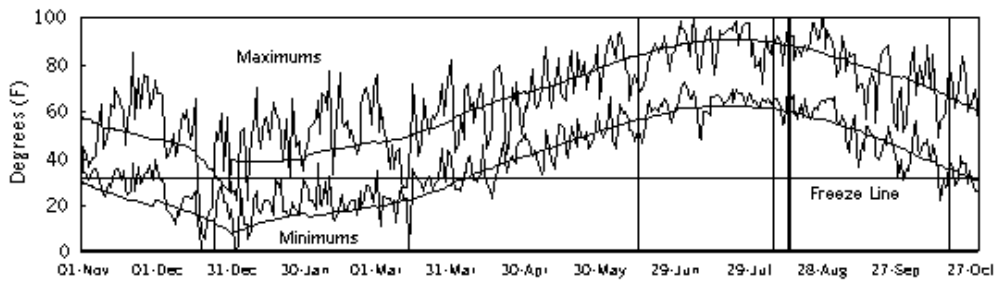
CV (%): (O) 12.9, (C) 12

GROWING CONDITIONS: A favorable
growing season with above-average
rainfall produced some very good yields.
Diseases did not cause problems.

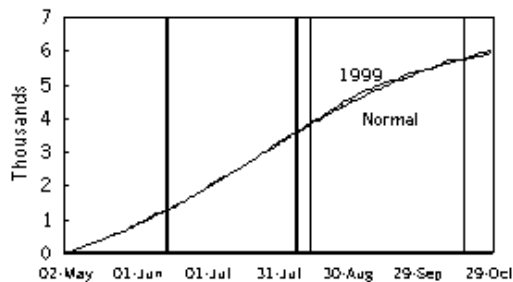
PRECIPITATION



DAILY TEMPERATURES



GROWING DEGREE DAYS



GROWING-SEASON WEATHER SUMMARY

Month	Precipitation		Average Temp.		GDD	
	1999	Normal	1999	Normal	1999	Normal
April	2.0	1.8	48	49	0	0
May	1.3	2.9	60	60	792	781
June	5.0	3.1	70	70	1072	1093
July	4.2	3.0	78	76	1378	1317
August	6.6	2.2	76	74	1303	1241
Sep.	0.8	1.5	63	65	859	928
Oct.	0.2	1.1	53	53	595	574
Season Totals	20.1	15.6	64	64	5999	5934

Table 1. Thomas County Oilseed Sunflower Performance Test Results-Fallow, 1997-1999

Brand and hybrid	Yield, lbs/a					Yield as % of test average			Oil, %			Oil yield, lbs/a		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agripro Seeds Inc. AP3430	2483	2374	2210	2428	2356	94	82	85	40.1	39.7	39.1	996	963	921
Agripro Seeds Inc. AP3470	3109	3133	3004	3121	3082	118	108	115	40.4	40.0	40.0	1256	1248	1233
Agripro Seeds Inc. ST X2135	2424	-----	-----	-----	-----	92	-----	-----	42.1	-----	-----	1020	-----	-----
Cargill SF120	2473	-----	-----	-----	-----	94	-----	-----	38.0	-----	-----	940	-----	-----
Cargill SF125NL	2491	-----	-----	-----	-----	94	-----	-----	37.2	-----	-----	927	-----	-----
Cargill SF187	2849	2928	2682	2889	2820	108	101	103	40.1	40.3	39.8	1142	1164	1123
Cargill SF260	2627	-----	-----	-----	-----	99	-----	-----	40.6	-----	-----	1066	-----	-----
Cargill SF270	2665	3076	2426	2870	2722	101	106	93	40.5	40.5	40.4	1079	1161	1101
Cargill SF290NL	2796	3091	2812	2944	2900	106	107	108	38.1	38.4	38.8	1065	1131	1125
Garst/Interstate Seed HYSUN 449	2841	2630	2382	2736	2618	108	91	91	38.6	37.6	37.8	1097	1028	990
Garst/Interstate Seed HYSUN 450	2167	-----	-----	-----	-----	82	-----	-----	39.9	-----	-----	864	-----	-----
Garst/Interstate Seed IS 4049	2564	2946	-----	2755	-----	97	102	-----	40.9	40.4	-----	1048	1110	-----
Garst/Interstate Seed IS 6767	2622	3273	2532	2947	2809	99	113	97	41.0	42.0	41.8	1075	1241	1176
Kaystar 8806	2679	-----	-----	-----	-----	101	-----	-----	38.4	-----	-----	1029	-----	-----
Kaystar 9501	2866	3336	2857	3101	3020	109	115	110	37.2	36.6	36.5	1066	1132	1101
Monsanto Global Seed Group DK3790	1982	2671	2335	2326	2329	75	92	90	41.9	42.6	42.3	830	992	986
Monsanto Global Seed Group DK3806	2236	2647	-----	2442	-----	85	91	-----	42.5	43.0	-----	950	1050	-----
Monsanto Global Seed Group DK3868	2504	2388	2297	2446	2396	95	82	88	40.8	41.3	40.5	1022	1009	971
Monsanto Global Seed Group DK3872NS	2400	-----	-----	-----	-----	91	-----	-----	39.4	-----	-----	946	-----	-----
Monsanto Global Seed Group DK3875	2223	3274	2602	2749	2700	84	113	100	38.3	39.0	38.6	851	1074	1046
Monsanto Global Seed Group DK3881	2874	2790	2556	2832	2740	109	96	98	41.4	41.7	41.0	1190	1179	1125
Monsanto Global Seed Group DK3900	2765	3542	-----	3153	-----	105	122	-----	43.1	42.6	-----	1192	1340	-----
Mycogen Seeds 8372	2427	3007	-----	2717	-----	92	104	-----	42.1	42.7	-----	1022	1162	-----
Mycogen Seeds 8377NS	2550	-----	-----	-----	-----	97	-----	-----	40.8	-----	-----	1040	-----	-----
Mycogen Seeds 8468	2997	-----	-----	-----	-----	113	-----	-----	43.4	-----	-----	1300	-----	-----
Mycogen Seeds 8488NS	3011	2893	-----	2952	-----	114	100	-----	39.8	38.9	-----	1198	1147	-----
Novartis Seeds NK231	2629	3379	2713	3004	2907	100	117	104	37.8	37.7	37.4	994	1130	1088
Novartis Seeds NK278	3220	3236	2953	3228	3136	122	112	113	43.2	42.3	42.1	1391	1364	1322
Novartis Seeds NX12827	2994	-----	-----	-----	-----	113	-----	-----	38.9	-----	-----	1165	-----	-----
Pioneer Hi-Bred International 6300	2689	2794	-----	2742	-----	102	97	-----	42.2	42.8	-----	1135	1174	-----
Pioneer Hi-Bred International 63A81	2708	-----	-----	-----	-----	103	-----	-----	39.8	-----	-----	1078	-----	-----
Pioneer Hi-Bred International 63M91	2693	-----	-----	-----	-----	102	-----	-----	41.7	-----	-----	1123	-----	-----
Pioneer Hi-Bred International 6451	2637	2876	2647	2757	2720	100	99	102	42.7	43.1	42.9	1126	1189	1166
Seeds 2000 Bronco	2400	-----	-----	-----	-----	91	-----	-----	39.8	-----	-----	955	-----	-----
Seeds 2000 Maverick	2685	-----	-----	-----	-----	102	-----	-----	39.5	-----	-----	1060	-----	-----
Triumph Seed 540	2474	2961	-----	2717	-----	94	102	-----	40.9	41.9	-----	1012	1139	-----
Triumph Seed 545A	2494	-----	-----	-----	-----	94	-----	-----	43.6	-----	-----	1087	-----	-----
Triumph Seed 562	3119	3651	3303	3385	3358	118	126	127	40.2	40.3	40.3	1254	1364	1352
Triumph Seed 573	2569	2829	2921	2699	2773	97	98	112	40.0	39.4	38.8	1028	1061	1076
Triumph Seed 567DW	2503	-----	-----	-----	-----	95	-----	-----	41.4	-----	-----	1036	-----	-----
Triumph Seed 652	2834	-----	-----	-----	-----	107	-----	-----	39.2	-----	-----	1111	-----	-----
Average	2641	2895	2605	2768	2714	100	100	100	40.4	40.3	40.9	1067	1056	960
LSD (.05)	400.0	398	291	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

continued

Table 1. Thomas County Oilseed Sunflower Performance Test Results--Fallow, 1997-1999, continued

Brand and hybrid	Days to ½ bloom			Plant height (in)			Lodging (%)			Test wt (lbs/bu)			200 seed wt (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agripro Seeds Inc. AP3430	63	61	61	65	65	62	1	2	2	27.1	27.7	27.6	9.7	10.8	11.6
Agripro Seeds Inc. AP3470	64	62	61	66	66	62	0	2	1	27.4	27.6	27.8	9.5	11.1	11.9
Agripro Seeds Inc. ST X2135	67	----	----	69	----	----	2	--	--	21.4	-----	-----	9.2	-----	-----
Cargill SF120	62	----	----	67	----	----	3	--	--	29.1	-----	-----	10.9	-----	-----
Cargill SF125NL	63	----	----	72	----	----	3	--	--	27.9	-----	-----	10.2	-----	-----
Cargill SF187	65	63	62	63	61	57	2	1	1	26.0	27.0	27.0	9.2	10.4	10.7
Cargill SF260	64	----	----	62	----	----	2	--	--	27.9	-----	-----	9.0	-----	-----
Cargill SF270	62	60	59	60	59	55	0	2	1	28.3	28.9	29.0	9.8	11.4	12.1
Cargill SF290NL	65	63	62	61	58	56	2	2	2	27.3	27.7	27.4	10.3	11.0	11.4
Garst/Interstate Seed HYSUN 449	65	64	63	67	66	62	3	4	3	26.7	27.7	27.7	9.2	11.1	11.5
Garst/Interstate Seed HYSUN 450	65	----	----	65	----	----	1	--	--	13.7	-----	-----	7.9	-----	-----
Garst/Interstate Seed IS 4049	65	64	----	74	73	----	3	4	3	27.9	27.7	-----	9.0	10.4	-----
Garst/Interstate Seed IS 6767	64	62	61	67	67	62	0	1	1	27.7	28.8	28.6	9.8	11.3	12.0
Kaystar 8806	65	----	----	67	----	----	0	--	0	25.3	-----	-----	8.7	-----	-----
Kaystar 9501	66	64	64	71	70	65	2	2	--	27.4	28.4	28.8	9.4	11.4	11.9
Monsanto Global Seed Group DK3790	62	60	59	64	65	60	1	3	--	28.2	29.3	29.3	8.7	9.8	10.3
Monsanto Global Seed Group DK3806	63	60	----	65	65	----	3	3	--	29.2	29.9	-----	9.5	10.8	-----
Monsanto Global Seed Group DK3868	64	62	61	64	62	56	1	3	3	29.0	29.4	28.6	8.9	10.1	10.7
Monsanto Global Seed GroupDK3872NS	66	----	----	75	----	----	1	--	1	27.3	-----	-----	8.9	-----	-----
Monsanto Global Seed Group DK3875	65	62	62	66	66	60	0	2	1	27.4	27.6	27.5	9.2	10.6	11.0
Monsanto Global Seed Group DK3881	65	63	62	65	63	59	1	4	3	27.4	27.6	27.3	9.7	10.8	11.2
Monsanto Global Seed Group DK3900	66	63	----	70	66	----	0	1	1	29.5	29.3	-----	9.9	11.0	-----
Mycogen Seeds 8372	62	60	----	65	67	----	3	6	4	27.5	28.3	-----	8.6	10.3	-----
Mycogen Seeds 8377NS	62	----	----	66	----	----	1	--	0	28.1	-----	-----	9.0	-----	-----
Mycogen Seeds 8468	64	----	----	64	----	----	0	--	0	27.0	-----	-----	10.2	-----	-----
Mycogen Seeds 8488NS	64	63	----	66	66	----	3	3	2	28.3	28.7	-----	8.6	10.0	-----
Novartis Seeds NK231	64	61	60	64	64	60	0	0	0	27.4	28.5	28.6	8.8	9.6	9.6
Novartis Seeds NK278	64	62	62	65	66	63	1	1	--	28.5	28.4	28.2	10.0	11.0	11.7
Novartis Seeds NX12827	62	----	----	67	----	----	2	--	1	28.2	-----	-----	10.5	-----	-----
Pioneer Hi-Bred International 6300	63	60	----	71	72	----	0	2	--	27.7	27.7	-----	8.9	10.1	-----
Pioneer Hi-Bred International 63A81	66	----	----	67	----	----	0	--	--	23.7	-----	-----	9.0	-----	-----
Pioneer Hi-Bred International 63M91	64	----	----	72	----	----	0	--	--	29.1	-----	-----	9.6	-----	-----
Pioneer Hi-Bred International 6451	65	62	62	64	62	59	0	3	2	24.3	26.4	26.8	8.5	10.0	10.6
Seeds 2000 Bronco	65	----	----	63	----	----	1	--	0	26.7	-----	-----	8.5	-----	-----
Seeds 2000 Maverick	64	----	----	63	----	----	1	--	0	28.0	-----	-----	9.5	-----	-----
Triumph Seed 540	61	59	----	61	62	----	2	6	--	28.2	29.1	-----	10.0	11.4	-----
Triumph Seed 545A	63	----	----	61	----	----	4	--	2	28.5	-----	-----	9.8	-----	-----
Triumph Seed 562	64	62	61	66	69	64	2	4	--	24.8	26.9	27.6	11.1	12.2	13.1
Triumph Seed 573	66	64	64	70	71	65	1	3	2	26.9	27.5	27.7	9.7	10.8	11.5
Triumph Seed 567DW	67	----	----	46	----	----	14	--	--	28.6	-----	-----	9.9	-----	-----
Triumph Seed 652	65	----	----	67	----	----	2	--	1	26.0	-----	-----	10.8	-----	-----
Average	64	62	62	65	65	61	2	3	2	27.0	27.9	28.0	9.4	10.8	11.3
LSD (.05)	4.0	----	----	1.8	----	----	2.6	--	--	4.8	-----	-----	-----	-----	-----

Table 2. Thomas County Confectionary Sunflower Performance Test Results-Fallow, 1997-1999

Brand and hybrid	Yield (lbs/a)					Yield as % of test avg			Days to 1/2 bloom		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg
	Agway Inc. Royal Hybrid 2073	2549	3223	-----	2886	-----	108	101	-----	58	59
Agway Inc. Royal Hybrid 2373	2243	3250	-----	2746	-----	95	102	-----	58	60	---
Garst/Interstate Seed IS8048	2260	-----	-----	-----	-----	96	-----	-----	56	---	---
Red River Commodities 2213	2246	3078	2140	2662	2488	95	97	104	58	60	60
Red River Commodities 2331	2167	3190	2017	2679	2458	92	100	98	59	61	61
Red River Commodities 2412	2072	3122	-----	2597	-----	88	98	-----	59	60	---
Red River Commodities 2413	2041	3501	-----	2771	-----	87	110	-----	59	60	---
Red River Commodities 9490	2306	3156	-----	2731	-----	98	99	-----	59	60	---
Red River Commodities EX2582	2533	-----	-----	-----	-----	108	-----	-----	58	---	---
Red River Commodities EX6182	2535	-----	-----	-----	-----	108	-----	-----	59	---	---
Red River Commodities EX6782	2524	-----	-----	-----	-----	107	-----	-----	58	---	---
SEEDS 2000 KODIAK	2535	3196	1914	2866	2548	108	100	93	56	57	59
Triumph Seed Co. 520C	2439	3159	2737	2799	2778	104	99	133	59	60	61
Triumph Seed Co. 765C	2569	2715	1685	2642	2323	109	85	82	58	60	60
Triumph Seed Co. 766CRT	2267	-----	-----	-----	-----	96	-----	-----	59	---	---
Average	2352	3181	2062	2622	2622	100	100	100	58	60	60
LSD .05	337	488	355	-----	-----	-----	-----	-----	1	---	---

	Plant height (in)			Lodging (%)			Test weight (lbs/bu)			200 seed weight (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
	Agway Inc. Royal Hybrid 2073	66	68	---	1	4	---	22.1	21.0	-----	25.0	24.7
Agway Inc. Royal Hybrid 2373	67	71	---	1	3	---	21.7	20.8	-----	21.6	22.8	-----
Garst/Interstate Seed IS8048	64	-----	---	1	---	---	22.0	-----	-----	23.9	-----	-----
Red River Commodities 2213	67	70	65	3	9	6	21.2	20.4	19.8	19.8	22.1	21.5
Red River Commodities 2331	70	72	66	2	6	4	21.3	20.5	20.5	18.1	18.6	16.4
Red River Commodities 2412	67	70	---	4	9	---	20.9	20.5	-----	22.7	24.3	-----
Red River Commodities 2413	67	69	---	10	5	---	21.6	21.2	-----	20.0	21.7	-----
Red River Commodities 9490	67	67	---	5	7	---	21.6	20.9	-----	19.6	20.3	-----
Red River Commodities EX2582	67	-----	---	0	---	---	22.6	-----	-----	22.8	-----	-----
Red River Commodities EX6182	67	-----	---	3	---	---	22.0	-----	-----	22.1	-----	-----
Red River Commodities EX6782	68	-----	---	3	---	---	22.6	-----	-----	21.2	-----	-----
SEEDS 2000 KODIAK	64	68	62	1	2	1	24.8	22.5	21.0	17.4	18.4	18.9
Triumph Seed Co. 520C	69	71	66	3	5	3	21.2	20.5	20.0	22.9	23.2	23.1
Triumph Seed Co. 765C	65	68	62	5	11	7	20.7	19.8	19.3	23.7	23.4	22.9
Triumph Seed Co. 766CRT	70	-----	---	4	---	---	20.6	-----	-----	22.5	-----	-----
Average	67	62	60	3	4	5	21.8	19.3	19.2	21.3	22.8	21.4
LSD (.05)	2	-----	---	4	---	---	2.1	-----	-----	-----	-----	-----

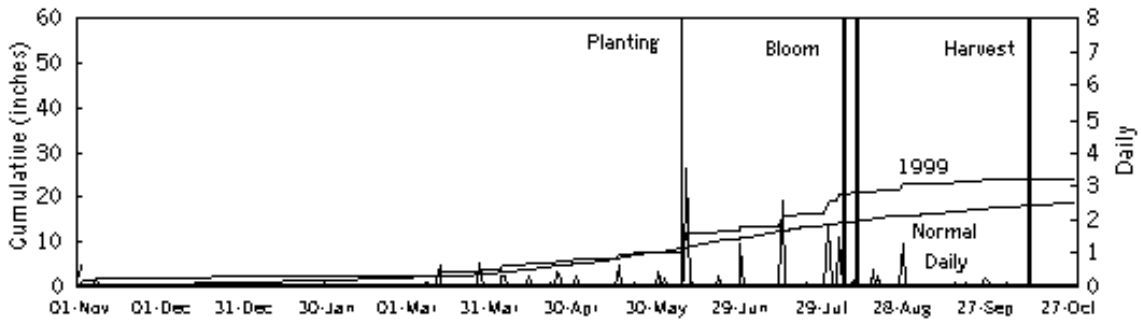
Table 3. Seed Size Distribution for Thomas County Confectionary Sunflower Performance Tests--Fallow, 1997-1999

Brand and hybrid	Seed size distribution (%)																				
	1999							2-year average							3-year average						
	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 19/64	Below 16/64	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 19/64	Below 16/64	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 19/64	Below 16/64
Agway Inc. Royal Hybrid 2073	32.1	18.6	15.6	14.6	7.2	7.0	4.0	31.0	19.5	16.6	13.2	7.8	7.2	2.6	-----	-----	-----	-----	-----	-----	-----
Agway Inc. Royal Hybrid 2373	16.5	16.3	18.9	18.9	12.2	11.5	5.4	22.6	17.0	20.6	17.3	9.7	8.3	4.3	-----	-----	-----	-----	-----	-----	-----
Garst/Interstate Seed IS8048	25.6	21.2	17.9	12.6	8.3	9.0	5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 2213	7.4	11.0	15.0	17.8	14.9	24.3	9.2	15.2	17.5	16.8	17.8	10.7	16.2	5.6	20.3	17.7	16.4	16.5	9.1	13.4	6.6
Red River Commodities 2331	15.9	12.1	14.3	15.8	10.2	19.4	11.3	21.0	12.7	14.3	15.3	10.4	16.3	9.6	22.2	12.7	13.3	14.5	10.3	15.9	10.9
Red River Commodities 2412	31.5	15.6	9.4	11.6	8.6	13.5	9.3	35.2	17.1	11.3	11.7	7.8	10.1	6.6	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 2413	14.2	16.6	16.6	14.4	11.9	16.7	9.0	16.8	17.1	18.1	17.2	11.3	13.5	5.7	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 9490	8.9	11.7	12.9	18.1	14.6	21.4	11.0	10.3	13.6	15.0	18.0	13.3	19.8	9.6	-----	-----	-----	-----	-----	-----	-----
Red River Commodities EX2582	13.4	12.6	15.3	21.9	15.7	15.2	4.6	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities EX6182	20.0	17.9	19.2	17.7	10.3	9.9	4.3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities EX6782	17.0	13.9	15.5	20.3	13.0	14.3	4.9	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SEEDS 2000 KODIAK	13.0	8.9	10.0	13.1	11.8	27.4	15.2	15.2	10.6	13.0	15.5	12.1	22.6	11.0	23.6	12.5	12.7	14.0	9.9	16.8	10.4
Triumph Seed Co. 520C	15.4	15.1	19.9	21.7	9.6	13.1	4.0	17.3	17.4	21.3	21.0	9.0	10.1	3.4	27.8	17.9	18.4	16.9	7.0	7.4	4.2
Triumph Seed Co. 765C	22.3	20.3	23.1	15.6	7.5	7.8	2.7	23.4	22.9	22.2	15.9	6.0	6.5	2.5	32.7	21.0	18.6	12.7	5.3	6.0	3.5
Triumph Seed Co. 766CRT	11.7	13.1	18.3	23.3	13.8	14.7	4.2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Average	16.7	14.6	16.0	17.2	11.6	15.9	7.3	19.6	16.5	16.9	17.2	10.3	13.4	5.9	26.1	16.5	15.5	14.9	8.7	11.2	6.8

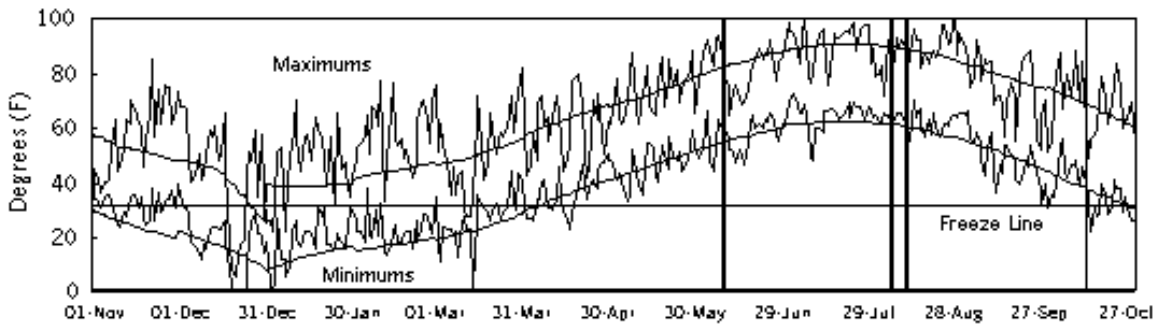
NORTHWESTERN KANSAS
 IRRIGATED SUNFLOWER TESTS—
 OILSEED AND CONFECTIONARY
 LOCATION: Northwest Research-Extension
 Center, Thomas County
 COOPERATOR: Pat Evans, research
 technologist
 TEST SITE: Keith silt loam
 Soybean 1997, corn 1998
 FERTILIZATION: 150-15-0 spring
 PLANTING DATE: June 9, 1999
 HEADING DATES: Aug. 7-12, 1999
 HARVEST DATES: Oct. 14, 1999

PEST CONTROL: Treflan, May 21;
 Warrior, Aug. 18
 IRRIGATIONS: (3") July 27, Aug. 17, 1999
 POPULATIONS: Double-planted and
 thinned to desired stands:
 Oil (O) 23,000 plants/a
 Confectionary (C) 17,000 plants/a
 TEST YIELDS:
 Avg. (lbs/a): (O) 2539, (C) 2415
 Range: (O) 1973-3130, (C) 1971-2735
 LSD (lbs/a): (O) 396, (C) 484
 CV (%): (O) 13.3, (C) 16.9
 GROWING CONDITIONS: Excellent
 stands were established, and favorable
 conditions continued throughout the
 growing season.

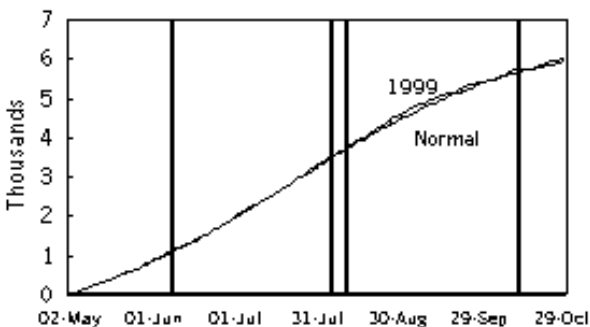
PRECIPITATION



DAILY TEMPERATURES



GROWING DEGREE DAYS



GROWING-SEASON WEATHER SUMMARY

Month	Precipitation		Average Temp.		GDD	
	1999	Normal	1999	Normal	1999	Normal
April	2.0	1.8	48	49	0	0
May	1.3	2.9	60	60	792	781
June	5.0	3.1	70	70	1072	1093
July	4.2	3.0	78	76	1378	1317
August	6.6	2.2	76	74	1303	1241
Sep.	0.8	1.5	63	65	859	928
Oct.	0.2	1.1	53	53	595	574
Season Totals	20.1	15.6	64	64	5999	5934

Table 4. Thomas County Oilseed Sunflower Performance Test Results—Irrigated, 1997-1999

Brand and hybrid	Yield (lbs/a)					Yield as % of test average			Oil (%)			Oil yields (lbs/a)		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
AgriPro Seeds Inc AP 3430	2366	2029	2688	2198	2361	93	90	93	40.8	39.9	40.5	965	878	959
AgriPro Seeds Inc AP 3470	2764	1996	3020	2380	2593	109	89	105	40.4	40.3	40.7	1116	958	1059
AgriPro Seeds Inc ST X2135	2569	-----	-----	-----	-----	101	-----	-----	43.2	-----	-----	1110	-----	-----
Cargill SF 120	2218	-----	-----	-----	-----	87	-----	-----	37.5	-----	-----	832	-----	-----
Cargill SF 125NL	1986	-----	-----	-----	-----	78	-----	-----	36.9	-----	-----	733	-----	-----
Cargill SF 187	2957	2484	3379	2720	2940	116	111	117	42.0	41.2	41.5	1242	1123	1201
Cargill SF 260	2495	-----	-----	-----	-----	98	-----	-----	44.0	-----	-----	1098	-----	-----
Cargill SF270	2537	2372	3001	2454	2637	100	106	104	42.4	41.8	42.1	1075	1025	1084
Cargill SF290 NL	2730	2285	3048	2508	2688	108	102	106	40.6	40.0	40.7	1108	1004	1073
Garst/Interstate Seed Hysun 449	2733	2396	2639	2564	2589	108	107	91	37.7	36.6	38.1	1030	939	989
Garst/Interstate Seed Hysun 450	2289	-----	-----	-----	-----	90	-----	-----	38.2	-----	-----	874	-----	-----
Garst/Interstate Seed 4049	2768	2410	-----	2589	-----	109	107	-----	41.8	41.2	-----	1157	1067	-----
Garst/Interstate Seed IS 6767	2552	2608	2761	2580	2640	101	116	96	44.1	43.4	43.5	1126	1118	1118
Garst/Interstate Seed K 41978	2821	-----	-----	-----	-----	111	-----	-----	39.5	-----	-----	1114	-----	-----
Garst/Interstate Seed ST 2126	2098	-----	-----	-----	-----	83	-----	-----	40.7	-----	-----	854	-----	-----
Garst/Interstate Seed ST 2135	2387	-----	-----	-----	-----	94	-----	-----	43.3	-----	-----	1034	-----	-----
Garst/Interstate Seed ST 971136NS	2589	-----	-----	-----	-----	102	-----	-----	41.0	-----	-----	1061	-----	-----
Kaystar 9404	2562	-----	-----	-----	-----	101	-----	-----	41.9	-----	-----	1074	-----	-----
Kaystar 9501	3078	1960	3093	2519	2710	121	87	107	37.3	36.6	37.3	1148	925	983
Monsanto Global Seed Group DK 3790	2055	2243	2748	2149	2349	81	100	95	43.6	43.3	43.7	896	930	992
Monsanto Global Seed Group DK 3806	2262	2400	-----	2331	-----	89	107	-----	44.2	44.1	-----	1000	1027	-----
Monsanto Global Seed Group DK 3868	2204	2355	3112	2279	2557	87	105	108	42.3	42.5	42.8	932	969	1064
Monsanto Global Seed Group DK 3872NS	2561	-----	-----	-----	-----	101	-----	-----	43.1	-----	-----	1104	-----	-----
Monsanto Global Seed Group DK 3875	2482	2471	3156	2477	2703	98	110	109	40.4	40.5	40.6	1003	1003	-----
Monsanto Global Seed Group DK 3881	2853	2251	2926	2552	2677	112	100	101	43.3	42.5	42.6	1235	1087	1107
Monsanto Global Seed Group DK 3900	2720	2205	-----	2464	-----	107	98	-----	43.1	43.2	-----	1172	1063	-----
Mycogen Seeds 8372	2479	2492	-----	2485	-----	98	111	-----	45.3	44.1	-----	1123	1095	-----
Mycogen Seeds 8377NS	2605	-----	-----	-----	-----	103	-----	-----	42.9	-----	-----	1117	-----	-----
Mycogen Seeds 8468	2700	-----	-----	-----	-----	106	-----	-----	47.2	-----	-----	1274	-----	-----
Mycogen Seeds 8488NS	2527	2358	-----	2442	-----	100	105	-----	40.8	39.3	-----	1031	960	-----
Pioneer Hi-Bred International 63A81	2530	-----	-----	-----	-----	100	-----	-----	43.1	-----	-----	1091	-----	-----
Pioneer Hi-Bred International 63M91	2573	-----	-----	-----	-----	101	-----	-----	43.7	-----	-----	1124	-----	-----
Pioneer Hi-Bred International 6451	2571	2190	2862	2380	2541	101	98	99	44.9	44.1	44.5	1154	1050	1133
Pioneer Hi-Bred International 64M01	2765	-----	-----	-----	-----	109	-----	-----	41.9	-----	-----	1159	-----	-----
Seeds 2000 Bronco	2353	-----	-----	-----	-----	93	-----	-----	39.4	-----	-----	927	-----	-----
Seeds 2000 Maverick	1973	-----	-----	-----	-----	78	-----	-----	38.7	-----	-----	764	-----	-----
Triumph Seed 540	2270	1655	3183	1962	2369	89	74	110	43.1	42.5	42.7	978	835	965
Triumph Seed 545A	2781	-----	-----	-----	-----	110	-----	-----	46.1	-----	-----	1282	-----	-----
Triumph Seed 562	2855	2906	3196	2880	2986	112	129	111	41.4	40.7	41.4	1182	1172	1241
Triumph Seed TRX8232	2358	-----	-----	-----	-----	93	-----	-----	42.6	-----	-----	1005	-----	-----
Triumph Seed TRX8441NS	3130	-----	-----	-----	-----	123	-----	-----	39.9	-----	-----	1249	-----	-----
Average	2539	2246	2888	2567	2300	100	103	100	41.8	41.8	41.3	1062	1079	956
LSD (.05)	396	436	381	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

continued

Table 4. Thomas County Oilseed Sunflower Performance Test Results—Irrigated, 1997-1999, continued

Brand and hybrid	Days to 1/2 bloom			Plant height (in)			Lodging (%)			Test weight (lbs/bu)			200 seed weight (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
AgriPro Seeds Inc AP 3430	60	60	58	71	68	68	2	2	4	27.5	27.8	28.5	9.7	11.0	11.8
AgriPro Seeds Inc AP 3470	60	59	58	73	72	71	5	6	9	27.2	28.1	29.0	10.6	11.2	12.3
AgriPro Seeds Inc ST X2135	64	----	----	79	----	----	5	----	----	29.7	-----	-----	9.3	-----	-----
Cargill SF120	59	----	----	77	----	----	4	----	----	30.1	-----	-----	9.2	-----	-----
Cargill SF 125NL	59	----	----	79	----	----	6	----	----	28.5	-----	-----	11.3	-----	-----
Cargill SF187	61	61	61	66	66	66	1	3	4	28.3	28.6	28.9	8.3	9.8	10.4
Cargill SF 260	61	----	----	67	----	----	3	----	----	28.2	-----	-----	8.8	-----	-----
Cargill SF270	59	58	57	66	67	66	2	3	3	28.8	29.4	29.6	11.0	11.8	12.1
Cargill SF290 NL	61	60	60	64	62	63	2	5	5	27.9	28.2	28.3	10.5	11.2	11.6
Garst/Interstate Seed Hysun 449	61	62	61	74	70	69	8	6	7	27.8	28.3	28.8	9.8	11.5	11.6
Garst/Interstate Seed Hysun 450	63	----	----	71	----	----	5	----	----	27.6	-----	-----	7.8	-----	-----
Garst/Interstate Seed 4049	63	62	----	80	81	----	4	5	----	27.1	28.0	-----	9.7	11.0	-----
Garst/Interstate Seed IS 6767	60	59	59	73	72	70	4	5	5	28.8	29.8	30.1	10.8	12.2	12.2
Garst/Interstate Seed K 41978	61	----	----	75	----	----	2	----	----	24.7	-----	-----	10.8	-----	-----
Garst/Interstate Seed ST 2126	62	----	----	79	----	----	2	----	----	24.4	-----	-----	8.1	-----	-----
Garst/Interstate Seed ST 2135	64	----	----	79	----	----	2	----	----	29.0	-----	-----	9.2	-----	-----
Garst/Interstate Seed ST 971136NS	61	----	----	76	----	----	4	----	----	27.0	-----	-----	10.0	-----	-----
Kaystar 9404	60	----	----	71	----	----	1	----	----	28.3	-----	-----	9.0	-----	-----
Kaystar 9501	63	63	62	79	80	78	3	4	5	27.3	28.3	29.2	10.9	12.0	13.2
Monsanto Global Seed Group DK 3790	60	59	58	71	71	70	2	4	6	28.6	30.2	30.7	8.5	10.3	10.5
Monsanto Global Seed Group DK 3806	60	58	----	69	71	----	3	4	----	28.5	30.0	-----	10.3	11.2	-----
Monsanto Global Seed Group DK 3868	60	60	58	67	67	65	1	4	5	28.9	30.0	30.3	8.8	10.2	10.6
Monsanto Global Seed Group DK 3872NS	63	----	----	78	----	----	3	----	----	28.5	-----	-----	9.8	-----	-----
Monsanto Global Seed Group DK 3875	61	62	60	73	72	70	3	6	7	28.0	28.4	28.9	8.3	10.2	10.8
Monsanto Global Seed Group DK 3881	61	61	60	69	66	65	4	6	8	28.2	28.6	29.2	9.5	11.5	11.6
Monsanto Global Seed Group DK 3900	63	62	----	74	69	----	0	5	----	28.4	29.2	-----	8.7	10.4	-----
Mycogen Seeds 8372	59	58	----	74	75	----	9	10	----	30.1	30.3	-----	9.4	11.0	-----
Mycogen Seeds 8377NS	59	----	----	73	----	----	1	----	----	28.6	-----	-----	9.3	-----	-----
Mycogen Seeds 8468	61	----	----	67	----	----	0	----	----	26.8	-----	-----	11.2	-----	-----
Mycogen Seeds 8488NS	61	61	----	74	73	----	3	4	----	27.9	29.0	-----	8.8	10.6	-----
Pioneer Hi-Bred International 63A81	63	----	----	71	----	----	5	----	----	25.3	-----	-----	9.9	-----	-----
Pioneer Hi-Bred International 63M91	60	----	----	80	----	----	5	----	----	28.9	-----	-----	9.1	-----	-----
Pioneer Hi-Bred International 6451	61	61	60	68	67	67	1	2	5	27.7	28.2	28.6	9.7	11.6	11.4
Pioneer Hi-Bred International 64M01	60	----	----	72	----	----	2	----	----	28.2	-----	-----	10.9	-----	-----
Seeds 2000 Bronco	63	----	----	69	----	----	4	----	----	27.6	-----	-----	8.2	-----	-----
Seeds 2000 Maverick	60	----	----	70	----	----	14	----	----	26.6	-----	-----	8.4	-----	-----
Triumph Seed 540	59	58	57	68	68	67	7	11	9	29.0	29.4	29.8	10.4	12.0	12.1
Triumph Seed 545A	60	----	----	70	----	----	8	----	----	28.4	-----	-----	9.9	-----	-----
Triumph Seed 562	61	60	59	77	78	75	3	4	5	29.1	29.3	30.0	12.6	13.3	13.6
Triumph Seed TRX8232	64	----	----	47	----	----	18	----	----	29.7	-----	-----	8.7	-----	-----
Triumph Seed TRX8441NS	62	----	----	78	----	----	3	----	----	29.0	-----	-----	11.1	-----	-----
Average	61	59	58	72	70	69	4	8	16	28.0	30.0	29.6	9.7	12.4	11.6
LSD (.05)	.6	----	----	2.5	----	----	----	----	----	1.5	-----	-----	-----	-----	-----

Table 5. Thomas County Confectionary Sunflower Performance Test Results—Irrigated, 1997-1999

Brand and hybrid	Acre yield (lbs)					Yield as % of test avg.			Days to 1/2 bloom		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg
Agway, Inc. RH 2073	2568	2869	-----	2718	-----	106	101	-----	60	59	----
Agway, Inc. RH 2373	2718	3324	-----	3021	-----	113	117	-----	60	59	----
Garst/Interstate Seed IS 8048	2193	-----	-----	-----	-----	91	-----	-----	60	----	----
Red River Commodities 2213	2535	3169	3080	2852	2928	105	112	111	59	59	61
Red River Commodities 2331	2311	2656	2717	2484	2561	96	94	98	61	60	62
Red River Commodities 2412	2165	2610	-----	2388	-----	90	92	-----	61	60	----
Red River Commodities 2413	1971	2887	-----	2429	-----	82	102	-----	61	60	----
Red River Commodities 9490	2387	2465	-----	2426	-----	99	87	-----	60	59	----
Red River Commodities EX2582	2338	-----	-----	-----	-----	97	-----	-----	60	----	----
Red River Commodities EX6182	2417	-----	-----	-----	-----	100	-----	-----	60	----	----
Red River Commodities EX6782	2620	-----	-----	-----	-----	108	-----	-----	60	----	----
Seeds 2000 Kodiak	2183	2853	2544	2518	2527	90	101	92	60	58	61
Triumph Seed 520C	2364	2991	3185	2677	2847	98	105	115	60	59	62
Triumph Seed 765C	2735	3263	3001	2999	3000	113	115	108	61	60	63
Triumph Seed 766CRT	2730	-----	-----	-----	-----	113	-----	-----	60	----	----
Average	2416	2836	2776	2626	2676	100	100	100	60	59	58
LSD (.05)	484	579	387	-----	-----	-----	-----	-----	.6	----	----

	Plant height (in)			Lodging (%)			Test weight (lbs/bu)			200 seed weight (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agway, Inc. RH 2073	73	74	----	2	6	----	23.0	22.8	-----	24.4	24.7	-----
Agway, Inc. RH 2373	73	75	----	0	2	----	22.3	21.8	-----	22.7	23.3	-----
Garst/Interstate Seed IS 8048	69	-----	-----	5	-----	-----	22.0	-----	-----	26.3	-----	-----
Red River Commodities 2213	75	76	74	6	6	4	23.4	22.6	21.9	21.3	23.6	23.1
Red River Commodities 2331	76	77	75	4	8	7	21.1	21.3	21.1	19.8	20.4	20.7
Red River Commodities 2412	73	74	----	8	8	----	22.2	22.0	-----	22.7	23.6	-----
Red River Commodities 2413	70	74	----	9	8	----	22.8	22.7	-----	23.0	23.7	-----
Red River Commodities 9490	72	73	----	3	8	----	22.1	22.4	-----	21.6	21.7	-----
Red River Commodities EX2582	71	----	----	2	----	----	24.4	-----	-----	22.0	-----	-----
Red River Commodities EX6182	75	----	----	5	----	----	23.4	-----	-----	23.5	-----	-----
Red River Commodities EX6782	74	----	----	2	----	----	22.7	-----	-----	21.0	-----	-----
Seeds 2000 Kodiak	72	74	72	2	5	4	22.4	22.3	21.6	18.2	19.4	21.0
Triumph Seed 520C	72	76	74	2	1	2	22.6	22.3	21.5	26.4	25.5	23.4
Triumph Seed 765C	73	75	72	4	8	6	22.3	21.9	21.4	24.8	25.4	23.8
Triumph Seed 766CRT	77	----	----	6	----	----	20.7	-----	-----	25.9	-----	-----
Average	73	74	72	4	6	5	22.5	22.2	21.5	22.8	23.3	-----
LSD (.05)	2	----	----	4	----	----	1.0	-----	-----	-----	-----	-----

Table 6. Seed Size Distribution for Thomas County Confectionary Sunflower Performance Tests—Irrigated, 1997-1999

Brand and hybrid	Seed size distribution (%)																				
	1999							2-year average							3-year average						
	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 17/64	Below 16/64	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 17/64	Below 16/64	Above 22/64	21/64 to 22/64	20/64 to 21/64	19/64 to 20/64	18/64 to 19/64	16/64 to 17/64	Below 16/64
Agway, Inc. RH 2073	23.4	19.5	18.9	18.5	8.0	7.5	4.1	27.8	18.9	18.7	15.8	7.7	7.3	3.9	-----	-----	-----	-----	-----	-----	-----
Agway, Inc. RH 2373	23.8	19.7	15.5	17.2	7.1	9.1	7.6	28.7	18.1	16.1	15.9	7.1	8.3	5.9	-----	-----	-----	-----	-----	-----	-----
Garst/Interstate Seed 8048	34.7	21.0	16.0	10.4	5.6	6.2	5.3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 2213	9.7	13.3	15.8	18.8	11.5	20.6	10.2	18.5	18.5	16.8	17.4	9.1	12.9	6.4	19.2	18.1	17.3	17.0	9.8	12.3	5.9
Red River Commodities 2331	21.3	16.1	15.2	13.1	8.3	14.2	11.2	23.1	15.6	14.9	14.2	8.4	13.3	10.5	20.9	14.9	14.6	14.5	8.7	15.3	10.9
Red River Commodities 2412	21.8	21.3	14.3	13.4	8.0	11.0	9.6	28.4	20.6	14.5	13.0	7.4	8.8	6.9	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 2413	14.1	12.6	18.3	16.0	9.8	16.7	12.0	19.3	17.1	16.9	15.2	10.0	13.3	7.8	-----	-----	-----	-----	-----	-----	-----
Red River Commodities 9490	6.6	7.5	15.7	19.0	14.3	19.7	16.8	10.1	9.9	15.5	21.3	13.5	18.1	11.2	-----	-----	-----	-----	-----	-----	-----
Red River Commodities	15.6	10.0	12.9	19.8	13.9	17.1	10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities	19.6	16.8	17.3	18.8	10.7	9.9	6.3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red River Commodities	12.5	13.4	16.6	23.7	11.2	15.1	7.1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Seeds 2000 Kodiak	10.6	6.9	11.6	15.5	12.3	30.0	13.2	13.9	10.3	12.1	14.5	12.6	24.7	11.9	18.5	13.3	13.6	14.4	11.1	19.2	9.8
Triumph Seed 520C	14.5	14.8	19.5	22.0	10.5	12.1	6.2	17.4	16.0	20.0	20.7	10.0	10.7	4.7	19.2	17.9	19.7	19.2	9.6	9.3	4.7
Triumph Seed 760C	19.7	24.3	17.2	16.6	9.4	8.7	3.5	23.1	22.5	19.3	16.6	7.5	7.3	3.2	24.9	-----	-----	-----	-----	-----	-----
Triumph Seed 765C	12.3	16.2	20.7	18.7	11.8	16.4	3.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Average	16.4	14.9	16.2	17.4	10.6	15.2	8.8	20.0	16.5	16.4	16.9	9.8	12.9	7.1	23.9	17.1	16.1	15.5	9.0	11.5	6.5

**NORTH CENTRAL KANSAS
 DRYLAND SUNFLOWER TESTS—
 OILSEED**

HARVEST DATE: October 8, 1999
PEST CONTROL: Prowl, May 28, 1999;
 Warrior, Aug. 1 & 10

POPULATION: 22,000 plants/a
TEST YIELDS:

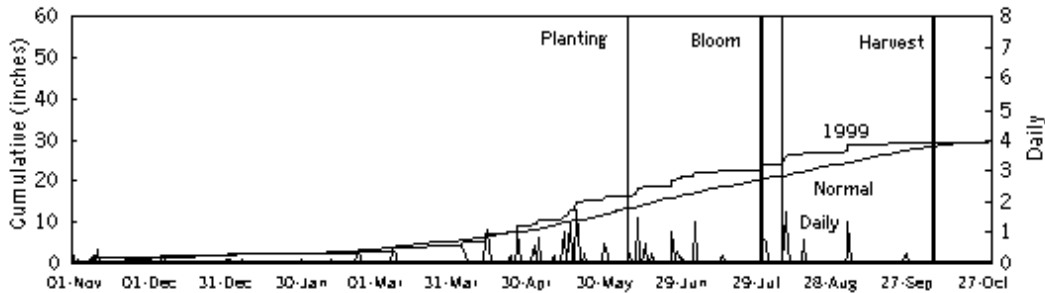
LOCATION: North Central Kansas
 Experiment Field, west of Belleville in
 Republic County
COOPERATOR: Barney Gordon,
 agronomist

Avg. (lbs/a): 2737
 Range(lbs/a): 2137-3247
 LSD (lbs/a): 220
 CV (%): 6.8

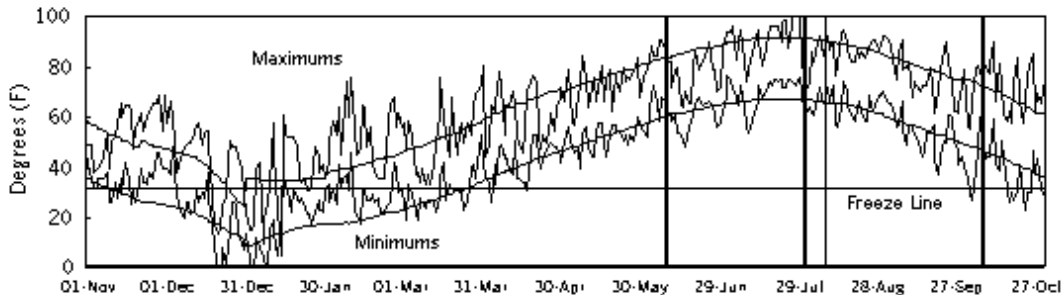
TEST SITE: Crete silt loam
 Grain sorghum 1997, corn 1998
FERTILIZATION: 60-30-0 spring
PLANTING DATE: June 9, 1999
HEADING DATES: Aug. 1-9, 1999

GROWING CONDITIONS: Uniform
 stands were established in all plots. Cool,
 wet conditions in May and June were
 followed by a hot dry July. Timely rains in
 August aided in seed development. No
 significant disease outbreaks occurred .

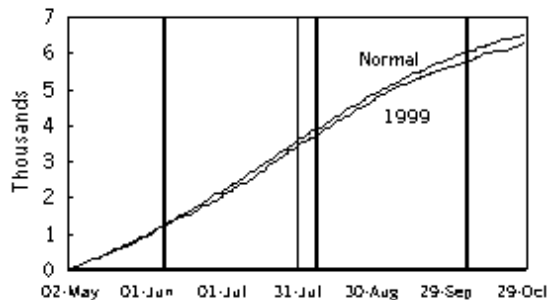
PRECIPITATION



DAILY TEMPERATURES



GROWING DEGREE DAYS



GROWING-SEASON WEATHER SUMMARY

Month	Precipitation		Average Temp.		GDD	
	1999	Normal	1999	Normal	1999	Normal
April	4.9	2.5	52	53	0	0
May	6.9	4.0	62	64	852	902
June	5.0	4.6	70	74	1090	1188
July	2.0	3.8	81	79	1442	1398
August	4.5	3.7	76	77	1293	1335
Sep.	2.1	3.9	65	67	931	1004
Oct.	0.0	2.0	55	56	652	678
Season Totals	25.4	24.5	66	67	6259	6505

Table 7. Republic County Oilseed Sunflower Performance Test Results–Dryland, 1997-1999

Brand and hybrid	Yield (lbs/a)					Yield as % of test average			Oil (%)			Oil yields (lbs/a)		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Cargill SF120	2697	-----	-----	-----	-----	99	-----	-----	42.7	-----	-----	1151	-----	-----
Cargill SF125NL	2137	-----	-----	-----	-----	78	-----	-----	40.2	-----	-----	859	-----	-----
Cargill SF187	2982	2380	2589	2681	2650	109	117	109	42.6	40.7	41.1	1270	1096	1094
Cargill SF260	2567	-----	-----	-----	-----	94	-----	-----	41.4	-----	-----	1063	-----	-----
Cargill SF270	3226	2323	2794	2775	2781	118	114	117	42.3	41.8	42.0	1365	1161	1169
Cargill SF290NL	2430	1858	2920	2144	2403	89	91	122	39.7	38.3	39.9	965	825	970
Garst/Interstate Seed Hysun 449	3076	1873	2266	2474	2405	112	92	95	42.4	39.3	40.7	1304	990	989
Garst/Interstate Seed Hysun 450	2278	-----	-----	-----	-----	83	-----	-----	43.7	-----	-----	996	-----	-----
Garst/Interstate Seed IS 4049	2879	2010	-----	2445	-----	105	99	-----	43.8	41.7	-----	1261	1027	-----
Garst/Interstate Seed IS 6767	2635	2439	2298	2537	2457	96	120	96	43.8	42.2	42.4	1154	1071	1043
Kaystar Seed 9501	3050	-----	-----	-----	-----	111	-----	-----	43.0	-----	-----	1312	-----	-----
Monsanto Global Seed Group DK 3790	2994	1721	2042	2358	2252	109	85	86	43.4	42.2	42.6	1299	1002	965
Monsanto Global Seed Group DK 3806	3018	1833	-----	2426	-----	110	90	-----	42.7	42.0	-----	1289	1023	-----
Monsanto Global Seed Group DK 3868	2529	2064	2119	2297	2237	92	101	89	40.9	40.3	41.3	1034	926	923
Monsanto Global Seed Group DK 3872NS	2499	-----	-----	-----	-----	91	-----	-----	40.8	-----	-----	1019	-----	-----
Monsanto Global Seed Group DK 3875	2618	1810	2438	2214	2289	96	89	102	42.2	40.3	40.9	1105	899	942
Monsanto Global Seed Group DK 3881	2559	2130	2456	2344	2382	93	105	103	41.9	40.4	41.4	1072	950	990
Monsanto Global Seed Group DK 3900	3247	2120	-----	2683	-----	119	104	-----	41.3	40.9	-----	1341	1099	-----
Mycogen Seeds 8372	2773	-----	-----	-----	-----	101	-----	-----	43.0	-----	-----	1192	-----	-----
Mycogen Seeds 8468	3136	-----	-----	-----	-----	115	-----	-----	43.6	-----	-----	1367	-----	-----
Triumph Seed 540	2378	1834	-----	2106	-----	87	90	-----	42.0	40.9	-----	999	864	-----
Triumph Seed 545A	2489	-----	-----	-----	-----	91	-----	-----	44.1	-----	-----	1098	-----	-----
Triumph Seed 562	2756	2597	2716	2676	2690	101	128	114	44.0	42.2	42.3	1212	1131	1138
Average	2737	2036	2386	2386	2386	100	100	100	42.4	41.1	41.4	1162	912	915
LSD (.05)	219	181	183	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

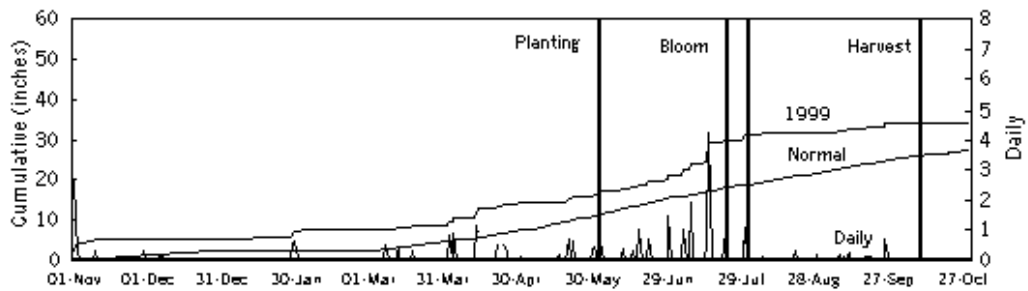
Brand and hybrid	Days to 1/2 bloom			Plant height (in)			Lodging (%)			Test weight (lbs/bu)			200 seed weight (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Cargill SF120	57	----	----	60	----	----	1	----	----	32.1	-----	-----	10.6	-----	-----
Cargill SF125NL	58	----	----	60	----	----	2	----	----	30.4	-----	-----	9.7	-----	-----
Cargill SF187	61	61	61	54	57	56	0	2	3	30.3	29.9	29.9	9.5	12.1	12.6
Cargill SF260	60	----	----	56	----	----	1	----	----	31.0	-----	-----	9.7	-----	-----
Cargill SF270	54	56	56	50	63	60	0	6	8	29.9	29.8	30.5	10.3	11.0	12.1
Cargill SF290NL	60	60	59	55	68	64	2	6	7	29.8	29.5	29.9	10.1	11.2	12.3
Garst/Interstate Seed Hysun 449	61	61	60	58	72	65	1	5	7	30.4	30.4	30.4	8.4	9.8	10.6
Garst/Interstate Seed Hysun 450	61	-----	-----	58	-----	-----	1	-----	-----	28.8	-----	-----	9.5	-----	-----
Garst/Interstate Seed IS 4049	60	61	----	60	74	----	2	6	----	30.4	30.2	-----	9.4	9.8	-----
Garst/Interstate Seed IS 6767	59	60	59	53	64	62	0	5	7	31.1	31.0	31.0	9.7	10.5	11.3
Kaystar Seed 9501	60	----	----	60	----	----	0	----	----	30.4	-----	-----	8.8	-----	-----
Monsanto Global Seed Group DK 3790	54	57	56	53	69	65	1	6	14	31.7	31.3	31.4	10.4	10.6	11.6
Monsanto Global Seed Group DK 3806	57	58	----	59	69	----	2	5	----	31.1	30.7	-----	9.9	10.5	-----
Monsanto Global Seed Group DK 3868	55	57	58	49	65	62	1	5	11	30.3	30.6	30.9	10.2	10.8	11.6
Monsanto Global Seed Group DK 3872ns	61	-----	-----	60	-----	-----	2	----	----	29.5	-----	-----	9.6	-----	-----
Monsanto Global Seed Group DK 3875	60	60	60	54	68	64	2	6	9	29.4	29.2	29.9	9.4	9.7	11.1
Monsanto Global Seed Group DK 3881	59	60	60	52	65	62	1	5	8	30.2	29.7	30.0	9.2	10.0	11.3
Monsanto Global Seed Group DK 3900	61	61	----	52	64	----	1	5	----	29.4	30.2	-----	9.0	9.9	-----
Mycogen Seeds 8372	55	----	----	54	----	----	2	----	----	30.4	-----	-----	9.5	-----	-----
Mycogen Seeds 8468	60	----	----	54	----	----	2	----	----	29.5	-----	-----	10.2	-----	-----
Triumph Seed 540	54	56	----	50	64	----	2	5	----	30.7	30.4	-----	10.2	10.5	-----
Triumph Seed 545A	60	----	----	58	----	----	1	----	----	30.8	-----	-----	9.5	-----	-----
Triumph Seed 562	60	59	60	58	71	67	2	6	8	29.7	30.6	30.8	9.5	10.3	11.2
Average	58	59	59	55	70	66	1	14	15	30.3	30.5	29.9	9.7	12.4	11.4
LSD (.05)	1	----	----	1	----	----	2	----	----	1.6	-----	-----	-----	-----	-----

**SOUTH CENTRAL KANSAS
 DRYLAND, CONTINUOUS CROP
 SUNFLOWER TEST-OILSEED**

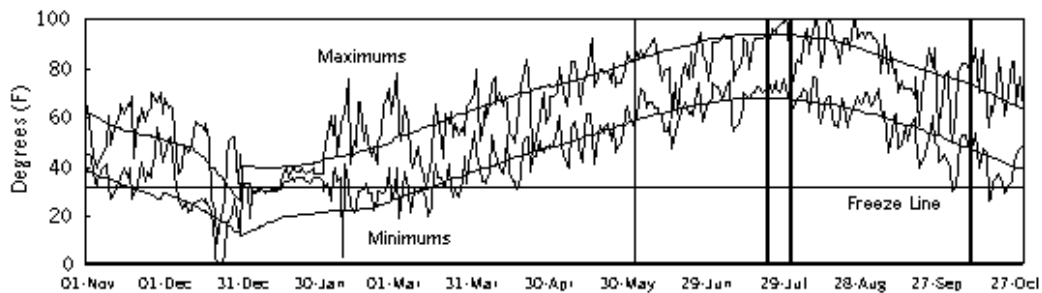
PEST CONTROL: Treflan 5/26,
 Bythroid 7/28
POPULATION: 22,000 plants/a
TEST YIELDS:
 Avg. (lbs/a): (O) 1552, (C) 1208
 Range (lbs/a): (O) 960-2028, (C) 1095-1369
 LSD (lbs/a): (O) 313, (C) 231
 CV (%): (O) 17.1, (C) 14.0
GROWING CONDITIONS: Good stands were established, and favorable growing conditions continued through July, when precipitation was 7 in. above normal. August was hot and dry.

LOCATION: South Central Kansas
 Experiment Field, Hutchinson, Reno Co.
COOPERATOR: William Heer, agronomist
TEST SITE: Ost silt loam
 Sunflower 1997, grain sorghum 1998
FERTILIZATION: 140-40-0/a spring 1999
PLANTING DATE: June 2, 1999
HEADING DATES: July 7-Aug.2, 1999
HARVEST DATE: Oct. 11, 1999

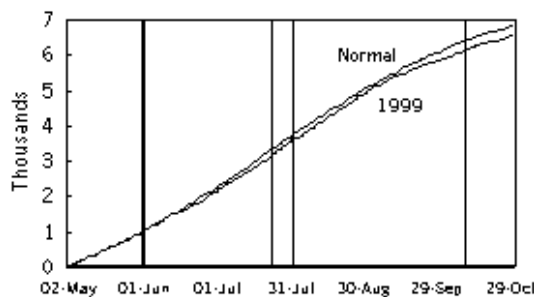
PRECIPITATION



DAILY TEMPERATURES



GROWING DEGREE DAYS



GROWING-SEASON WEATHER SUMMARY

Month	Precipitation		Average Temp.		GDD	
	1999	Normal	1999	Normal	1999	Normal
April	5.4	2.6	54	56	0	0
May	2.0	3.9	65	65	925	940
June	3.8	4.3	72	75	1145	1234
July	10.2	3.4	80	81	1431	1454
August	1.8	3.1	79	79	1380	1385
Sep.	2.2	3.3	67	70	977	1072
Oct.	0.0	2.5	57	58	713	748
Season Totals	25.4	23.1	68	69	6569	6833

Table 8. Reno County Oilseed Sunflower Performance Test Results, 1997-1999

Brand and hybrid	Yield, lbs/a					Yield as % of test average			Oil %			Oil yield lbs/a		
	1999	1998	1997	2-yr avg	3-yr avg	1999	1998	1997	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agripro Seeds Inc. ST X2135	960	-----	-----	-----	-----	62	-----	-----	39.7	-----	-----	381	-----	-----
Cargill SF120	1483	-----	-----	-----	-----	96	-----	-----	38.5	-----	-----	571	-----	-----
Cargill SF125NL	1533	-----	-----	-----	-----	99	-----	-----	36.9	-----	-----	566	-----	-----
Cargill SF187	1143	1881	1472	1512	1499	74	117	102	37.2	39	38	425	602	580
Cargill 260	1245	-----	-----	-----	-----	80	-----	-----	38.4	-----	-----	478	-----	-----
Cargill 270	2028	2117	1381	2072	1842	131	132	95	41.6	43	42	844	895	777
Cargill SF290NL	1600	1451	1633	1526	1561	103	90	113	37.9	39	38	606	590	598
Garst/Interstate Seed Hysun 449	1749	1702	1060	1726	1504	113	106	73	35	36	37	612	620	546
Garst/Interstate Seed Hysun 450	1494	-----	-----	-----	-----	96	-----	-----	39.2	-----	-----	586	-----	-----
Garst/Interstate Seed IS 4049	1917	1573	-----	1745	-----	123	98	-----	40.2	41	-----	770	719	-----
Garst/Interstate Seed IS 6767	1760	1386	1669	1573	1605	113	86	115	40.1	42	41	706	656	662
Monsanto Global Seed Group DK3790	1180	1488	1430	1334	1366	76	93	99	40.3	42	41	476	556	565
Monsanto Global Seed Group DK3806	1709	1464	-----	1587	-----	110	91	-----	41	42	-----	701	663	-----
Monsanto Global Seed Group DK3868	1553	1617	1289	1585	1486	100	101	89	40.9	41	41	635	657	604
Monsanto Global Seed Group DK3872NS	1196	-----	-----	-----	-----	77	-----	-----	39.4	-----	-----	471	-----	-----
Monsanto Global Seed Group DK3875	1312	1358	1494	1335	1388	85	85	103	38.2	40	39	501	534	540
Monsanto Global Seed Group DK3881	1398	1490	1435	1444	1441	90	93	99	39.4	41	40	551	592	575
Monsanto Global Seed Group DK3900	1683	1738	-----	1710	-----	108	108	-----	42.4	43	-----	713	735	-----
Mycogen Seeds 8372	1522	1781	-----	1652	-----	98	111	-----	40.6	42	-----	618	695	-----
Mycogen Seeds 8468	1535	-----	-----	-----	-----	99	-----	-----	39.9	-----	-----	612	-----	-----
Pioneer Hi-Bred International 63A70	1649	-----	-----	-----	-----	106	-----	-----	41.1	-----	-----	678	-----	-----
Pioneer Hi-Bred International 63A81	1444	-----	-----	-----	-----	93	-----	-----	39.4	-----	-----	569	-----	-----
Pioneer Hi-Bred International 63M91	1537	-----	-----	-----	-----	99	-----	-----	39.5	-----	-----	607	-----	-----
Pioneer Hi-Bred International 6451	1671	-----	-----	-----	-----	108	-----	-----	41.5	-----	-----	693	-----	-----
Triumph Seed 540	1546	1431	-----	1488	-----	100	89	-----	40.8	42	-----	631	627	-----
Triumph Seed 545A	1676	-----	-----	-----	-----	108	-----	-----	43.6	-----	-----	731	-----	-----
Triumph Seed 562	1980	1986	1719	1983	1895	128	124	119	39	41	40	772	811	760
Triumph Seed 573	1952	1907	-----	1930	-----	126	119	-----	36.8	39	-----	718	757	-----
Average	1552	1606	1450	1528	1536	100	100	101	39.6	41	40	615	628	624
LSD (.05)	313	235	246	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

continued

Table 8. Reno County Oilseed Sunflower Performance Test Results, 1997-1999, continued

Brand and hybrid	Days to ½ bloom			Plant height (in)			Lodging (%)			Test wt (lbs/bu)			200 seed wt (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg ¹	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agripro Seeds Inc. ST X2135	60	----	----	65	----	----	9	----	----	31.1	-----	-----	10.2	-----	-----
Cargill SF120	53	----	----	66	----	----	12	----	----	33.2	-----	-----	12.0	-----	-----
Cargill SF125NL	53	----	----	67	----	----	7	----	----	33.4	-----	-----	11.9	-----	-----
Cargill SF187	57	55	54	60	58	57	14	8	----	30.1	29.6	28.7	8.7	10.2	11.1
Cargill 260	55	----	----	58	----	----	7	----	----	29.4	-----	-----	9.1	-----	-----
Cargill 270	54	52	52	59	62	61	9	7	----	32.8	31.9	30.6	10.7	11.6	11.3
Cargill SF290NL	57	54	53	54	56	57	10	7	----	29.8	28.5	28.1	11.4	11.1	11.0
Garst/Interstate Seed Hysun 449	59	56	55	64	61	59	8	6	----	30.4	29.2	28.7	10.1	11.2	10.8
Garst/Interstate Seed Hysun 450	59	----	----	65	----	----	8	----	----	29.6	-----	-----	9.2	-----	-----
Garst/Interstate Seed IS 4049	57	55	----	69	68	----	8	7	----	30.8	29.0	-----	9.4	10.1	-----
Garst/Interstate Seed IS 6767	55	54	53	56	58	58	7	8	----	31.3	30.5	30.0	11.5	11.7	11.5
Monsanto Global Seed Group DK3790	53	53	52	59	58	57	15	10	----	31.8	30.8	30.5	9.5	10.1	10.0
Monsanto Global Seed Group DK3806	54	53	----	54	56	----	9	6	----	32.5	30.4	-----	11.2	11.1	-----
Monsanto Global Seed Group DK3868	55	53	52	60	58	56	13	9	----	31.3	29.9	29.7	9.4	9.8	9.9
Monsanto Global Seed Group DK3872ns	57	----	----	68	----	----	11	----	----	31.1	-----	-----	10.0	-----	-----
Monsanto Global Seed Group DK3875	57	55	54	65	60	59	9	14	----	29.2	29.3	29.0	10.4	10.4	10.4
Monsanto Global Seed Group DK3881	55	54	53	59	58	57	10	11	----	30.3	28.8	28.4	10.2	10.1	10.0
Monsanto Global Seed Group DK3900	57	55	----	62	60	----	12	10	----	30.5	29.4	-----	10.0	10.4	-----
Mycogen Seeds 8372	55	52	----	65	63	----	15	10	----	32.0	31.0	-----	10.9	10.2	-----
Mycogen Seeds 8468	57	----	----	57	----	----	6	----	----	29.2	-----	-----	11.9	-----	-----
Pioneer Hi-Bred International 63A70	53	----	----	53	----	----	7	----	----	31.1	-----	-----	11.6	-----	-----
Pioneer Hi-Bred International 63A81	58	----	----	56	----	----	6	----	----	29.1	-----	-----	10.3	-----	-----
Pioneer Hi-Bred International 63M91	55	----	----	68	----	----	4	----	----	30.8	-----	-----	11.4	-----	-----
Pioneer Hi-Bred International 6451	55	----	----	54	----	----	5	----	----	30.1	-----	-----	10.5	-----	-----
Triumph Seed 540	53	51	----	51	54	----	8	14	----	31.9	29.3	-----	11.7	12.8	-----
Triumph Seed 545A	55	----	----	55	----	----	8	----	----	31.3	-----	-----	11.0	-----	-----
Triumph Seed 562	55	53	52	59	62	63	6	6	----	31.8	31.2	30.5	12.1	12.6	12.2
Triumph Seed 573	59	56	----	68	68	----	7	10	----	30.8	29.8	-----	10.3	11.4	-----
Average	56	51	53	60	59	59	9	8	----	30.9	28.6	29.3	10.6	11.1	10.9
LSD (.05)	1	----	----	6.2	----	----	5.6	----	----	30.9	-----	-----	-----	-----	-----

¹Lodging data not taken in 1997.

Table 9. Reno County Confectionary Sunflower Performance Results, 1998-1999

Brand and hybrid	Yield lbs/a			Days to ½ bloom		Height in		Lodging %		Test weight lbs/bu		200 seed weight (g)	
	1999	1998	2-yr avg	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg
Garst/Interstate Seed IS 8048	1095	-----	-----	53	----	60	----	2	--	22.8	-----	24.9	-----
Triumph Seed 765C	1160	1881	1521	55	54	67	69	4	6	21.4	22.3	23.6	21.7
Triumph Seed 766CRT	1369	-----	-----	54	----	55	----	5	--	21.2	-----	23.5	-----
Average	1208	-----	-----	54	----	61	----	4	5	21.8	-----	24.0	21.9
LSD (.05)	231	-----	-----	.8	----	3	----	3.8	--	0.5	22.2	-----	-----

	Seed size distribution													
	1999							2-year average						
	Above 22/64	21/64-22/64	20/64-21/64	19/64-20/64	18/64-19/64	16/64-18/64	Below 16/64	Above 22/64	21/64-22/64	20/64-21/64	19/64-20/64	18/64-19/64	16/64-18/64	Below 16/64
Garst/Interstate Seed IS 8048	32.2	17.6	13.0	12.4	8.2	11.4	5.1	-----	-----	-----	-----	-----	-----	-----
Triumph Seed 765C	16.2	18.1	19.5	17.3	9.8	12.8	6.3	11.5	15.6	17.2	17.6	12.4	18.1	7.4
Triumph Seed 766CRT	12.4	12.0	18.1	17.6	11.5	19.6	8.9	-----	-----	-----	-----	-----	-----	-----
Average	20.3	15.9	16.9	15.8	9.8	14.6	6.7	13.5	14.5	15.8	16.8	12.5	19.1	7.7

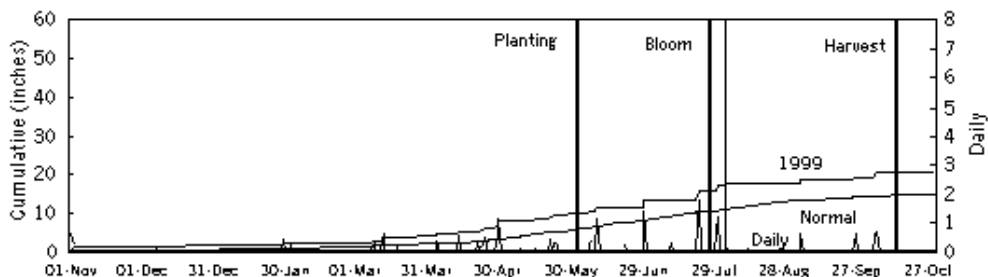
WEST CENTRAL KANSAS
 DRYLAND SUNFLOWER TESTS—
 OILSEED AND CONFECTIONARY

HARVEST DATES: Oct. 15, 1999
 PEST CONTROL: Prowl 3.6 pt/a;
 +Roundup 12 oz/a, June 4
 POPULATION: 17,400 plants/a (O and C)
 TEST YIELDS:

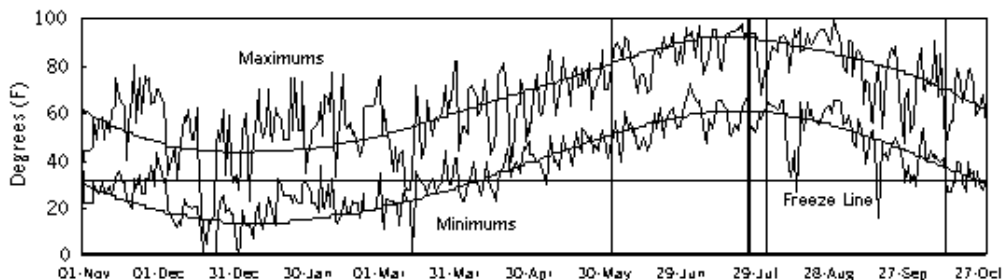
LOCATION: Southwest Research-
 Extension Center, Tribune Branch,
 Greeley County
 COOPERATOR: Alan Schlegel, agronomist
 TEST SITE: Richfield & Goshen silt loam
 Fallow 1997, wheat 1998
 FERTILIZATION: 80 lbs N/a as UAN
 PLANTING DATE: June 2, 1999
 HEADING DATES: (O) July 28-Aug. 4

Avg. (lbs/a): (O) 2363, (C) 2162
 Range (lbs/a): (O) 1872-3102, (C) 840-
 2478
 LSD (lbs/a): (O) 522, (C) 563
 CV (%): (O) 18.8, (C) 20.6
 GROWING CONDITIONS: Good stands
 were established, and conditions remained
 favorable for the growing season.

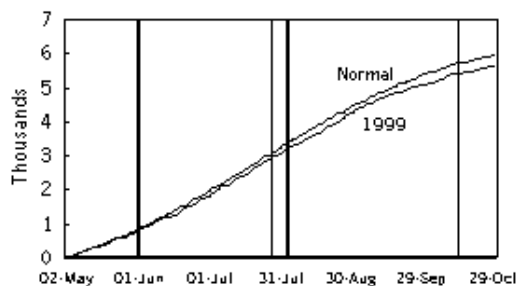
PRECIPITATION



DAILY TEMPERATURES



GROWING DEGREE DAYS



GROWING-SEASON WEATHER SUMMARY

Month	Precipitation		Average Temp.		GDD	
	1999	Normal	1999	Normal	1999	Normal
April	2.9	1.3	48	50	0	0
May	2.8	2.4	58	60	740	786
June	1.9	2.5	68	70	1015	1093
July	4.5	2.5	75	76	1275	1307
August	1.6	2.2	73	74	1212	1231
Sep.	1.4	1.3	62	65	835	944
Oct.	1.3	0.7	53	53	574	597
Season Totals	16.5	12.9	62	64	5650	5958

Table 10. Greeley County Oilseed Sunflower Performance Test Results, 1997-1999

Brand and hybrid	Yield (lbs/a)					Yield as % of test average			Oil, (%)			Oil yields, (lbs/a)		
	1999	1998	1997	2-yr avg	3-yr Avg	1999	1998	1997	1999	2-yr avg	3-yr Avg	1999	2-yr avg	3-yr Avg
Agripro Seeds Inc. AP3470	2743	1972	-----	2358	-----	116	92	----	42.9	41.4	-----	1177	982	-----
Agripro Seeds Inc. ST X2135	2109	-----	-----	-----	-----	89	----	----	44.6	-----	-----	941	-----	-----
Cargill SF120	2186	-----	-----	-----	-----	93	----	----	41.8	-----	-----	914	-----	-----
Cargill SF125NL	1720	-----	-----	-----	-----	73	----	----	39.8	-----	-----	685	-----	-----
Cargill SF187	2610	1958	2628	2284	2399	110	91	143	41.1	38.9	38.9	1073	896	939
Cargill SF260	2359	-----	-----	-----	-----	100	----	----	44.5	-----	-----	1050	-----	-----
Cargill SF270	2362	1856	1583	2109	1934	100	87	86	43.0	40.2	40.0	1015	854	779
Cargill SF290 NL	2459	2642	1807	2550	2303	104	123	98	42.0	40.0	40.2	1033	1017	923
Garst/Interstate Seed Hysun 449	2781	2288	1822	2535	2297	118	107	99	39.6	37.3	38.4	1101	950	881
Garst/Interstate Seed Hysun 450	2231	-----	-----	-----	-----	94	----	----	41.6	-----	-----	928	-----	-----
Garst/Interstate Seed IS 4049	2657	-----	-----	-----	-----	112	----	----	41.9	-----	-----	1113	-----	-----
Garst/Interstate Seed IS 6767	2829	2846	2127	2837	2601	120	133	116	45.4	42.5	42.0	1284	1204	1094
Garst/Interstate Seed IK41978	2469	-----	-----	-----	-----	104	----	----	40.8	-----	-----	1007	-----	-----
Garst/Interstate Seed ST 2126	1949	-----	-----	-----	-----	82	----	----	43.1	-----	-----	840	-----	-----
Garst/Interstate Seed ST 2135	1996	-----	-----	-----	-----	84	----	----	43.6	-----	-----	870	-----	-----
Garst/Interstate Seed ST 971136ns	1766	-----	-----	-----	-----	75	----	----	42.1	-----	-----	743	-----	-----
Kaystar Seed 9404	2918	-----	-----	-----	-----	123	----	----	41.2	-----	-----	1202	-----	-----
Kaystar Seed 9501	2369	2194	2642	2282	2402	100	102	144	39.0	37.2	37.7	924	850	909
Monsanto Global Group DK 3790	2245	1929	1755	2087	1976	95	90	95	44.5	43.0	42.6	999	899	844
Monsanto Global Group DK 3806	2695	1528	-----	2111	-----	114	71	----	44.9	43.4	-----	1210	925	-----
Monsanto Global Group DK 3868	2630	2141	1635	2385	2135	111	100	89	44.9	43.0	42.6	1181	1029	914
Monsanto Global Group DK 2872NS	1229	-----	-----	-----	-----	52	----	----	41.4	-----	-----	509	-----	-----
Monsanto Global Group DK 3875	3102	2290	1844	2696	2412	131	107	100	43.5	40.6	40.6	1349	1105	986
Monsanto Global Group DK 3881	2781	2370	2383	2576	2511	118	111	130	44.2	42.2	41.8	1229	1090	1054
Monsanto Global Group DK 3900	2482	1900	-----	2191	-----	105	89	----	44.7	43.6	-----	1109	958	-----
Mycogen Seeds 8372	2391	-----	-----	-----	-----	101	----	----	44.5	-----	-----	1064	-----	-----
Mycogen Seeds 8377NS	2409	-----	-----	-----	-----	102	----	----	43.1	-----	-----	1038	-----	-----
Mycogen Seeds 8468	2137	-----	-----	-----	-----	90	----	----	46.7	-----	-----	998	-----	-----
Mycogen Seeds 8488NS	2153	2285	-----	2219	-----	91	107	----	40.9	38.4	-----	881	849	-----
Novartis Seeds NK Brand 231	2338	2648	1709	2493	2232	99	124	93	38.6	38.8	38.7	903	966	864
Novartis Seeds NK Brand 278	2163	2308	1871	2236	2114	92	108	102	43.7	41.6	41.4	945	927	874
Novartis Seeds NX12827	2672	-----	-----	-----	-----	113	----	----	41.6	-----	-----	1111	-----	-----
Pioneer Hi-Bred International 6300	1939	2352	-----	2146	-----	82	110	----	44.9	43.7	-----	871	935	-----
Pioneer Hi-Bred International 63A81	2110	-----	-----	-----	-----	89	----	----	42.7	-----	-----	901	-----	-----
Pioneer Hi-Bred International 63M91	1808	-----	-----	-----	-----	77	----	----	42.8	-----	-----	774	-----	-----
Pioneer Hi-Bred International 6451	2312	2212	-----	2262	-----	98	103	----	45.1	42.3	-----	1043	957	-----
Seeds 2000 Bronco	2399	-----	-----	-----	-----	102	----	----	41.2	-----	-----	988	-----	-----
Seeds 2000 Maverick	1831	-----	-----	-----	-----	77	----	----	41.5	-----	-----	760	-----	-----
Triumph Seed 540	2461	2439	-----	2450	-----	104	114	----	45.6	43.3	-----	1122	1060	-----
Triumph Seed 545A	3024	-----	-----	-----	-----	128	----	----	47.4	-----	-----	1433	-----	-----
Triumph Seed 562	3063	2289	1932	2676	2428	130	107	105	42.3	41.2	41.1	1296	1107	1001
Average	2363	2143	1840	1992	2115	100	104	100	42.9	40.0	41.9	1015	799	670
LSD (.05)	522	549	451	-----	-----	----	----	----	-----	-----	-----	-----	-----	-----

continued

Table 10. Greeley County Oilseed Sunflower Performance Test Results, 1997-1999, continued

Brand and hybrid	Days to 1/2 bloom			Plant height (in)			Lodging (%)			Test weight (lbs/bu)			200 seed weight (g)		
	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg	1999	2-yr avg	3-yr avg
Agripro Seeds Inc. AP3470	60	59	---	66	65	---	0	4	--	29.8	30.4	---	11.8	13.5	---
Agripro Seeds Inc. ST X2135	66	---	---	64	---	---	0	--	--	30.7	---	---	10.3	---	---
Cargill SF120	58	---	---	71	---	---	0	--	--	32.0	---	---	11.8	---	---
Cargill SF125NL	59	---	---	71	---	---	0	--	--	31.8	---	---	12.0	---	---
Cargill SF187	60	61	61	57	56	54	0	2	1	29.1	28.9	29.6	11.0	11.4	12
Cargill SF260	60	---	---	64	---	---	0	--	--	27.2	---	---	10.6	---	---
Cargill SF270	57	56	56	68	63	59	0	7	6	31.4	31.0	31.4	12.1	13.2	13
Cargill SF290 NL	60	60	61	63	61	56	0	2	1	30.0	30.1	29.9	11.1	12.4	13
Garst/Interstate Seed Hysun 449	60	61	61	65	63	59	0	6	6	29.9	29.6	30.3	11.4	12.4	12
Garst/Interstate Seed Hysun 450	62	---	---	57	---	---	0	--	--	29.6	---	---	9.8	---	---
Garst/Interstate Seed IS 4049	62	---	---	68	---	---	0	--	--	29.7	---	---	10.9	---	---
Garst/Interstate Seed IS 6767	59	60	60	69	66	62	0	4	4	30.8	30.6	31.1	11.6	12.3	13
Garst/Interstate Seed IK41978	61	---	---	65	---	---	0	--	--	26.4	---	---	11.1	---	---
Garst/Interstate Seed ST 2126	62	---	---	68	---	---	0	--	--	26.5	---	---	10.0	---	---
Garst/Interstate Seed ST 2135	66	---	---	58	---	---	0	--	--	30.3	---	---	10.0	---	---
Garst/Interstate Seed ST 971136ns	60	---	---	68	---	---	0	--	--	28.4	---	---	10.9	---	---
Kaystar Seed 9404	58	---	---	68	---	---	0	--	--	30.8	---	---	10.4	---	---
Kaystar Seed 9501	63	63	63	67	69	67	0	7	5	30.7	30.5	31.2	11.0	11.4	12
Monsanto Global Group DK 3790	58	58	57	65	64	59	0	8	9	30.9	31.3	31.7	10.0	10.6	11
Monsanto Global Group DK 3806	58	58	---	64	64	---	0	7	--	31.4	31.4	---	11.8	12.6	---
Monsanto Global Group DK 3868	59	60	59	62	59	55	0	8	11	30.8	30.7	31.3	10.5	11.1	12
Monsanto Global Group DK 2872NS	62	---	---	70	---	---	0	--	--	26.6	---	---	10.2	---	---
Monsanto Global Group DK 3875	60	61	60	67	65	59	0	5	5	31.1	30.4	30.5	11.9	12.7	13
Monsanto Global Group DK 3881	60	61	61	64	64	58	0	7	7	30.1	30.0	30.4	11.2	11.7	12
Monsanto Global Group DK 3900	62	63	---	61	61	---	0	4	--	28.7	29.6	---	11.5	12.8	---
Mycogen Seeds 8372	58	---	---	70	---	---	0	--	--	30.9	---	---	11.2	---	---
Mycogen Seeds 8377NS	57	---	---	68	---	---	0	--	--	29.4	---	---	10.8	---	---
Mycogen Seeds 8468	60	---	---	68	---	---	0	--	--	28.9	---	---	12.3	---	---
Mycogen Seeds 8488NS	61	61	---	69	68	---	0	6	--	28.3	29.0	---	10.5	11.0	---
Novartis Seeds NK Brand 231	58	58	58	66	64	58	0	2	2	32.0	32.1	31.9	9.3	10.8	12
Novartis Seeds NK Brand 278	60	61	61	66	67	62	0	9	7	27.6	28.6	29.3	12.0	13.2	13
Novartis Seeds NX12827	58	---	---	74	---	---	0	--	--	30.6	---	---	11.7	---	---
Pioneer Hi-Bred International 6300	58	59	---	70	67	---	0	5	--	29.5	29.7	---	10.3	11.3	---
Pioneer Hi-Bred International 63A81	61	---	---	67	---	---	0	--	--	27.5	---	---	10.1	---	---
Pioneer Hi-Bred International 63M91	58	---	---	68	---	---	0	--	--	28.4	---	---	11.6	---	---
Pioneer Hi-Bred International 6451	60	61	---	68	66	---	0	3	--	29.4	28.8	---	11.1	11.6	---
Seeds 2000 Bronco	61	---	---	64	---	---	0	--	--	29.3	---	---	10.5	---	---
Seeds 2000 Maverick	58	---	---	69	---	---	0	--	--	28.9	---	---	10.4	---	---
Triumph Seed 540	57	57	---	71	67	---	0	6	--	31.3	30.7	---	11.7	12.8	---
Triumph Seed 545A	59	---	---	68	---	---	0	--	--	31.3	---	---	11.4	---	---
Triumph Seed 562	59	60	59	72	71	67	0	7	5	31.7	31.8	32.1	13.2	14.7	15
Average	60	60	60	66	59	55	0	7	8	29.7	31.0	30.3	11.0	13.5	12.7
LSD (.05)	0.8	---	---	6	---	---	---	--	--	1.4	---	---	---	---	---

Table 11. Greeley County Confectionary Sunflower Performance Results, 1998-1999

Brand and hybrid	Yield lbs/a		2-yr avg	Yield as % of test average		Days to ½ bloom		Height in		Lodging %		Test weight lbs/bu		200 seed weight (g)	
	1999	1998		1999	1998	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg	1999	2-yr avg
Agway RH 2073	2176	1874	2025	101	104	59	61	73	68	0	3	24.6	24.2	20.7	24.8
Agway RH 2373	2478	1308	1893	115	73	60	61	76	72	0	4	26.2	24.2	23.1	25.3
Garst/Interstate Seed IS 8048	2263	-----	-----	105	-----	57	----	76	----	0	--	23.3	-----	25.3	-----
Triumph Seed 765C	2256	2060	2158	104	115	59	59	71	67	0	4	24.0	23.8	26.0	27.0
Triumph Seed 766CRT	1639	-----	-----	76	-----	60	----	74	----	0	--	22.8	-----	22.4	-----
Average	2162	1796	1979	100	100	59	60	74	69	0	4	24.2	23.9	24.6	26.3
LSD (.05)	563	537	-----	-----	-----	1	----	4	----	0	--	2.1	-----	24.6	-----

Brand and hybrid	Seed size distribution (%)													
	1999							2-year average						
	Above 22/64	21/64-22/64	20/64-21/64	19/64-20/64	18/64-19/64	16/64-18/64	Below 16/64	Above 22/64	21/64-20/64	20/64-21/64	19/64-20/64	18/64-19/64	16/64-18/64	Below 16/64
Agway RH 2073	6.2	17.3	16.8	24.6	12.2	13.8	9.6	23.3	19.8	15.5	18.0	9.0	8.8	5.7
Agway RH 2373	7.0	11.6	15.2	24.8	14.6	18.3	9.1	26.5	17.0	14.8	17.2	9.3	10.6	4.9
Garst/Interstate Seed IS 8048	11.2	19.8	19.2	20.5	11.2	12.5	6.8	-----	-----	-----	-----	-----	-----	-----
Triumph Seed 765C	8.8	11.7	20.0	27.4	15.1	12.3	5.8	24.3	16.2	17.5	20.5	10.8	8.1	3.3
Triumph Seed 766CRT	5.4	11.3	14.1	23.6	18.9	21.4	5.7	-----	-----	-----	-----	-----	-----	-----
Average	7.7	14.3	17.1	24.2	14.4	15.6	7.4	24.9	18.1	15.8	17.8	9.9	9.6	4.3

Entrants and Entries in 1999 Sunflower Performance Tests

AgriPro Seeds, Inc. 23959 580 th Avenue Ames, IA 50010	AgriPro	AP 3430, 3470 ST X2135
Agway, Inc. 314 3 rd Street Grandin, ND 58038	Agway	Royal Hybrid 2073, 2373
Cargill Hybrid Seeds 1401 41st Street N.W. Fargo, ND 58102	Cargill	SF 120, 125NL, 187, 260, 270, 290NL
Garst/Interstate Seed Co. PO Box 338 West Fargo, ND 58078	Interstate	HYSUN 449, 450 IS 4049, 6077, 6767, 8084 K 41978 ST 2126, 2135, 9731136NS
Kaystar Seed Co. PO Box 947 Huron, SD 57350	Kaystar	9501, EX88900
Monsanto Global Seed Group 3100 Sycamore Road DeKalb, IL 60115	Dekalb	DK 3790, 3806, 3868, 3872NS, 3875, 3881, 3900
Mycogen Seeds 1340 Corporate Center Curve Eagan, MN 55121-1233	Mycogen	8372, 8377NS, 8468, 8488NS
Novartis Seeds 103 W. Chestnut Street, Ste 306 Garden City, KS 67846	Novartis	NK 231,278 Exp NX12827
Pioneer Hi-Bred, International 1616 S. Kentucky, Suite C-150 Amarillo, TX 79102	Pioneer Brand	6300, 63A70, 63A81, 63M91, 64M01,6451
Red River Commodities, Inc. 1320 East College Drive Colby, KS 67701	RRC	2213, 2331, 2412, 2413, 9490 Ex 2582, 6182, 6782
Seeds 2000 Box 101 Breckenridge, MN 56520	Seeds 2000	Bronco, Kodiak, Maverick
Triumph Seed Co., Inc. PO Box 1050 Ralls, TX 79357	Triumph	540, 545, 562, 573 520C, 765C, 766CRT TRX 8282, 8441

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NOTE: Trade names are used to identify products. No endorsement is intended, nor is any criticism implied of similar products not named.