Technical Report TR08-03 January 2008

Agricultural Experiment Station

Colorado State University

College of Agricultural Sciences | Department of Soil and Crop Sciences | Western Colorado Research Center | Extension

MAKING BETTER DECISIONS

2007 Colorado Sunflower Variety Performance Trials

Acknowledgments

The authors express their gratitude to the Colorado farmers who generously contributed the use of their land, equipment, and time to conduct these trials for the good of all Colorado sunflower producers:

- Brandon - Burl Scherler
- Julesburg - BLM, LLC
- Idalia - Dennis Towns
- Dailey - Dan and Dave Anderson

We gratefully acknowledge the Colorado Sunflower Administrative Committee for funding the sunflower trials and to Triumph Seed Co., Inc. for sunflower oil analyses and Red River Commodities, Inc. for sunflowers seed-sizing analyses.

Research conducted by Colorado State University Crops Testing Program
Department of Soil and Crop Sciences
Crops Testing Program
Western Colorado Research Center
Colorado State University Extension

Table of Contents

AUTHORS and INFORMATION RESOURCES 2
2007 COLORADO SUNFLOWER HYBRID PERFORMANCE TRIALS 1
Introduction 1
Table 1. 2007 Irrigated Oil Sunflower Variety Performance Trial at Julesburg[1] 2
Table 2. 2007 Irrigated Confection Sunflower Variety Performance Trial at Julesburg[1]. 4
Table 3. 2007 Dryland Oil Sunflower Variety Performance Trial at Brandon[1]. 6
Table 4. 2007 Dryland Confection Sunflower Variety Performance Trial at Brandon[1]. 8
Table 5. 2007 Irrigated Oil Sunflower Variety Performance Trial at Idalia[1]. 9
Table 6. 2-Yr Average Irrigated Oil Sunflower Variety Performance Trial at Idalia in 2006-07. 10
Table 7. 2007 Irrigated Confection Sunflower Variety Performance Trial at Idalia[1]. 11
Table 8. 2-Yr Average Irrigated Confection Sunflower Variety Performance Trial at Idalia in 2006-07. 12
Table 9. 2007 Dryland Oil Sunflower Variety Performance Trial at Dailey[1]. 13
Table 10. 2007 Dryland Confection Sunflower Variety Performance Trial at Dailey[1]. 15
Seed Company Entrants in the 2007 Colorado Sunflower Performance Trials 16
Sunflower Variety Performance Test at Fruita, Colorado 2007 17
2007 Irrigated Oil Sunflower Performance Trial Southwestern Colorado Research Center Yellow Jacket, CO 20
Table 1. 2007 irrigated oil sunflower variety performance at Yellow Jacket, CO[1]. 21

AUTHORS and INFORMATION RESOURCES

Dr. Jerry Johnson - Research Scientist/Extension Specialist/Crop Production, Colorado State University, Department of Soil and Crop Sciences, C11 Plant Science Building, Fort Collins, CO 80523-1170; telephone 970-491-1454; fax 970-491-2758; e-mail jerry.johnson@colostate.edu.

Alicia Davisson - Research Associate/Crops Testing Program, Colorado State University, Department of Soil and Crop Sciences, C03 Plant Science Building, Fort Collins, CO 80523-1170; telephone 970-491-1914; fax 970-491-2758; e-mail cas_csucroptesting@mail.colostate.edu.

Jim Hain - Research Associate/Crops Testing Program, Colorado State University, Department of Soil and Crop Sciences, Central Great Plains Research Station, 40335 County Road GG, Akron, CO 80720; telephone 970-554-0980; fax 970-345-2088.

Dr. Calvin Pearson - Professor/Extension Specialist/New & Alternative Crops, Colorado State University, Western Colorado Research Center, 1910 L Road, Fruita, CO 81521; telephone 970-858-3629; fax 970-858-0461; e-mail calvin.pearson@colostate.edu.

Mark Stack –Southwest Colorado Research Center Manager, Colorado State University, Fort Collins, CO 80525; telephone 970-562-4255; e-mail mark.stack@colostate.edu

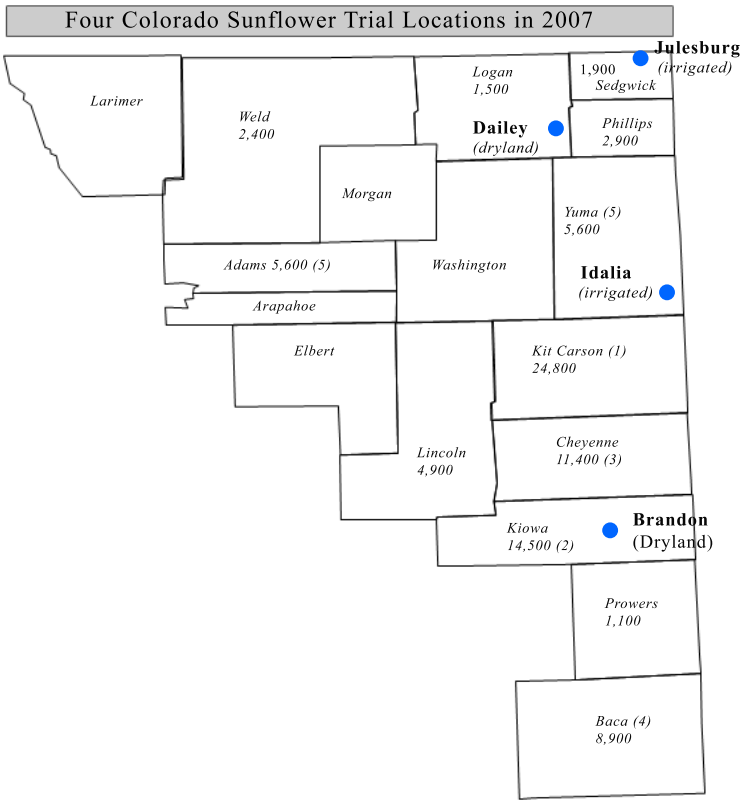
2007 COLORADO SUNFLOWER HYBRID PERFORMANCE TRIALS

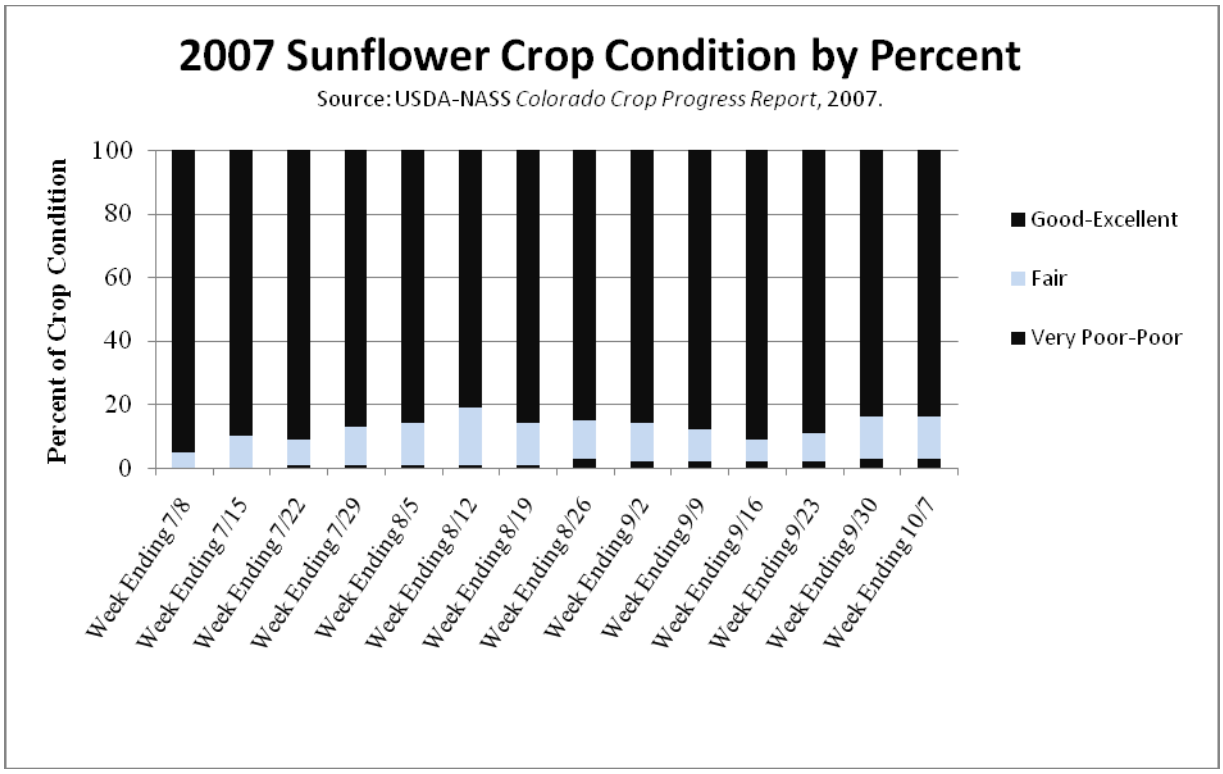
Introduction

CSU's Crops Testing personnel assists Colorado sunflower producers to make the best possible hybrid sunflower seed selection by providing unbiased and reliable yield trial results from oil and confection sunflower performance trials. Variable climatic conditions, innovations from biotechnology, acquisitions and mergers of seed companies, and rapid evolution of new hybrid lines means that unbiased crop performance information is increasingly important to Colorado sunflower producers.

In 2006, Colorado sunflower producers harvested 108,600 million pounds from 93,000 acres. Average yield was 1,170 pounds per acre, down from 1,280 pounds last year. Production of sunflowers decreased 41 percent from the previous year. Each year, Colorado sunflower producers purchase over $4 million of seed.

For the two traditional small-plot dryland trials and two irrigated sunflower performance trials, a randomized complete block design was used. The dryland trials had four replicates, while the irrigated had three replicates. All trials, dryland and irrigated, consisted of four row plots 32 feet long. Target plant population for dryland oil was 18,000 plants per acre and confection hybrids was 14,000 plants/ac. Target plant population for irrigated oil was 25,000 plants/ac and confection hybrids was 20,000 plants/ac. Seed yields are reported in lbs/ac and are adjusted to 10% moisture content. Oil content is reported as % oil at 10% seed moisture content.





The chart above shows the sunflower crop condition by percent every two weeks during the 2007 growing season. There are three categories used for rating the crop condition, very poor to poor, fair and good to excellent.

Table 1. 2007 Irrigated Oil Sunflower Variety Performance Trial at Julesburg[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Oil Content
	lb/ac	%	lb/bu	inches	plants/ac	%	%
Triumph R657	3474	7.0	27.8	67	14397	3.6	42.82
DEKALB DKF34-80CL	3332	6.8	29.2	65	15356	3.5	42.04
DEKALB DKF38-45	3241	6.4	30.7	68	12176	3.8	41.28
Fontanelle 902 NS	3106	7.2	28.3	69	15561	8.0	42.56
Fontanelle IS 4668	3092	7.4	27.7	74	19013	4.0	37.98
Garst 4420NS	3091	8.3	29.4	70	13470	2.7	39.12
Monsanto MH6641	3034	8.0	29.8	65	16430	2.3	38.03
Monsanto MH6638	3001	8.9	29.9	66	20480	2.7	42.26
Mycogen 8H419CL	2890	6.6	29.0	67	16175	5.0	42.34
Monsanto MH6639	2873	6.1	30.1	65	19175	3.9	43.78
Seeds 2000 Blazer-NS	2857	7.0	29.9	68	16202	1.1	42.22
Triumph s678	2854	7.2	31.7	65	16474	2.5	43.05
Mycogen 8N386CL	2835	8.5	26.4	68	15041	2.6	37.16
DEKALB DKF37-31	2806	6.5	29.3	67	15241	2.0	41.72

Garst XF06NS16	2782	7.4	30.7	65	20244	1.5	39.55
Dyna-Gro FX07419	2735	8.2	27.4	67	15250	1.9	40.36
Mycogen 8N510	2732	6.6	29.5	61	16191	1.0	40.00
Triumph TRX7449	2726	7.0	30.7	64	19807	4.3	41.98
Dyna-Gro 94N82	2691	6.6	29.1	57	19239	2.4	41.01
Pioneer M91	2674	7.3	30.9	71	18077	3.1	41.37
Mycogen 8N358CL	2626	6.1	30.3	61	17841	1.7	41.56
Advanta Pacific AP534 NS/CL	2605	7.0	28.2	71	18871	3.9	39.17
Garst 4651NS	2604	6.4	30.2	70	19164	4.3	42.57
Triumph R664	2514	6.5	30.8	64	18629	2.0	40.63
Monsanto MH6640	2508	6.2	30.6	66	18172	8.0	44.68
Mycogen 8N453DM	2480	6.6	32.5	64	18903	4.0	43.79
Dyna-Gro FX07519DM	2472	6.4	29.0	64	15738	1.8	39.11
DEKALB DKF34-33	2456	6.5	30.5	64	18517	4.7	43.01
Dyna-Gro 94C38	2436	7.2	28.2	67	17851	3.7	37.85
Fontanelle IS 5880	2413	6.6	28.9	69	18255	2.5	38.71
Triumph TRX7442	2352	7.5	26.9	66	14916	4.8	42.80
Mycogen 8N337DM	2278	6.2	31.1	58	15941	2.0	42.32
Average	**2768**	**7.0**	**29.5**	**66**	**17087**	**3.3**	**41.15**
[3]$LSD_{(0.30)}$	388	0.9	1.0	4	2355		
[3]$LSD_{(0.05)}$	741	1.8	1.9	8	4504		

[1]Trial conducted on the BLM, LLC farm; seeded 6/5 and harvested 10/10/07.

[2]Yields corrected to 10% seed moisture.

[3]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" row spacing

Experimental Design: randomized complete block, 3 replications

Seeding Rate: approximately 25,000 seeds/acre

Previous Crop: corn

Irrigation: sprinkler

Soil Type: Richfield loam

Fertilization: 40 lbs N $acre^{-1}$; 26 lbs P_2O_5 $acre^{-1}$; 0.2 lbs Zn $acre^{-1}$; 3 lbs S $acre^{-1}$

Herbicide: Round-up, Spartan, Prowl H_2O, Arrow EC

Insecticide: Methyl Parathion, Warrior T

Table 2. 2007 Irrigated Confection Sunflower Variety Performance Trial at Julesburg[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Seed Size				
							Above 22/64	22/64 to 20/64	20/64 to 18/64	18/64 to 16/64	16/64 to 14/64
	lb/ac	%	lb/bu	inches	plants/ac	%	%	%	%	%	%
Dahlgren 9530	3277	9.3	21.9	67	13637	4.8	42.7	29.7	22.2	4.3	1.1
Red River RRC 7015	3229	12.7	18.1	64	8423	2.2	58.8	24.5	12.7	3.2	0.8
CHS Sunflowers RH1121	3154	9.5	21.2	70	13165	0.7	73.8	17.2	6.7	2.0	0.3
Dahlgren 9531	3091	9.9	21.2	63	13230	2.8	60.2	23.3	13.9	2.6	0.0
Dahlgren 9569	2908	9.9	20.5	77	12383	1.6	37.0	32.6	20.7	7.2	2.5
CHS Sunflowers RH1122	2900	12.3	19.7	73	12848	1.3	78.6	13.0	6.3	1.9	0.2
Dahlgren 9579	2860	10.5	18.0	71	13769	0.7	60.9	21.3	12.6	4.5	0.7
Red River RRC 2216	2817	9.0	21.0	69	14054	1.1	46.6	36.5	13.3	3.2	0.4
Red River RRC 2215	2730	9.9	20.4	66	13345	3.4	55.4	25.9	16.1	2.1	0.5
CHS Sunflowers 07EXP01	2681	13.3	18.5	70	8184	0.0	64.2	18.1	14.3	3.0	0.4
CHS Sunflowers 06EXP02	2668	10.6	20.3	69	12576	0.9	83.4	10.4	4.0	1.6	0.6
Mycogen 8C482	2644	11.6	18.7	63	11103	1.5	54.8	27.6	11.7	4.2	1.7
CHS Sunflowers RH316	2605	12.4	19.0	67	12142	0.9	27.5	42.0	25.4	3.8	1.3
Seeds 2000 Panther (confection type)	2554	10.8	19.1	72	11080	12.1	57.2	24.5	13.5	3.3	1.5
Seeds 2000 Panther DMR (confection type)	2519	10.0	22.2	68	12714	1.5	38.3	31.5	23.7	5.3	1.2
Triumph 777C	2476	10.0	18.6	62	13997	1.3	67.9	18.5	9.0	3.2	1.4
Average	**2819**	**10.7**	**19.9**	**68**	**12291**	**2.3**					
[3]$LSD_{(0.30)}$	257	2.2	1.4	2	1532						
[3]$LSD_{(0.05)}$	498	4.3	2.6	3	2967						

[1]Trial conducted on the BLM, LLC farm; seeded 6/5 and harvested 10/10/07.

[2]Yields corrected to 10% seed moisture.

[3]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" row spacing

Experimental Design: randomized complete block, 3 replications

Seeding Rate: approximately 20,000 seeds/acre

Previous Crop: corn

Irrigation: sprinkler

Soil Type: Richfield loam

Fertilization: 40 lbs N $acre^{-1}$; 26 lbs P_2O_5 $acre^{-1}$; 0.2 lbs Zn $acre^{-1}$; 3 lbs S $acre^{-1}$

Herbicide: Round-up, Spartan, Prowl H_2O, Arrow EC

Insecticide: Methyl Parathion, Warrior T

Table 3. 2007 Dryland Oil Sunflower Variety Performance Trial at Brandon[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Oil Content
	lb/ac	%	lb/bu	inches	plants/ac	%	%
Dyna-Gro 94N82	2445	5.5	27.6	55	14517	11.3	39.10
Mycogen 8N453DM	2442	5.4	31.5	60	12276	9.4	42.50
Triumph TRXs7425HOCL	2318	5.3	24.9	42	14274	3.2	38.84
Triumph R657	2280	5.2	26.4	64	13721	12.8	41.09
Triumph s678	2274	5.2	30.4	54	15022	7.4	41.03
Mycogen 8N510	2267	5.4	28.3	49	13831	10.1	38.29
DEKALB DKF38-45	2234	5.2	28.3	50	13483	16.1	40.33
DEKALB DKF37-31	2215	5.5	27.8	51	11751	11.7	38.07
Fontanelle 902 NS	2190	5.5	27.6	57	11534	12.9	38.60
Seeds 2000 Blazer-NS	2138	5.3	28.6	50	13040	10.2	40.66
Triumph R664	2138	5.4	28.2	60	14019	10.6	41.73
Dyna-Gro FX07419	2131	5.4	28.5	62	15791	19.3	38.48
Triumph TRXs7426HO	2093	5.5	29.7	54	13366	6.6	38.21
Garst 4651NS	2054	5.3	28.0	60	14821	15.6	39.40
DEKALB DKF34-33	2052	5.2	29.8	48	10830	18.1	39.87
Monsanto MH6641	2005	5.5	29.1	57	14332	12.1	36.01
Seeds 2000 Sierra-HO	1993	5.5	26.7	57	15110	14.9	37.77
Pioneer M91	1969	5.2	30.1	53	10598	5.3	37.11
Seeds 2000 Barracuda-CL-NS	1963	5.3	29.4	58	14036	8.3	40.53
Triumph R859HOCL	1953	5.4	27.7	60	12873	14.3	35.94
Garst 4420NS	1943	5.5	28.7	63	14629	9.3	37.16
Fontanelle IS 4668	1936	5.4	27.0	61	13225	18.8	36.17
Mycogen 8N358CL	1932	5.1	28.3	55	13943	18.6	39.40
Dyna-Gro 94C38	1928	5.4	26.8	55	15106	19.1	35.56
Mycogen 8N337DM	1921	5.0	29.1	50	12350	13.3	40.37
Dyna-Gro FX07519DM	1918	5.5	27.3	51	13451	16.3	36.76
DEKALB DKF34-80CL	1896	5.3	27.2	46	12523	4.5	37.83
Triumph 845HO	1868	5.3	27.7	59	14674	13.5	41.35
Mycogen 8H419CL	1861	5.3	27.0	61	15086	11.1	37.92
Monsanto MH6639	1807	5.1	28.5	48	14457	19.9	40.55
Advanta Pacific AP534NS/CL	1758	5.4	26.3	54	12799	7.7	35.39
Fontanelle IS 5880	1683	5.3	25.1	57	13782	13.9	37.02
Monsanto MH6640	1671	5.2	29.0	50	14340	21.6	41.16
Garst XF06NS16	1667	5.4	28.1	53	13751	12.0	36.16
Monsanto MH6638	1639	5.2	28.6	53	16044	23.5	40.76
Mycogen 8N386CL	1611	5.4	26.6	55	12573	6.1	35.91
Average	**2005**	**5.3**	**28.0**	**55**	**13665**	**12.8**	**38.70**
[3]$LSD_{(0.30)}$	225	0.4	1.7		1485		
[3]$LSD_{(0.05)}$	428	0.7	3.3		2827		

[1]Trial conducted on the Burl Scherler farm; seeded 6/18 and harvested 10/25/07.

[2]Yields corrected to 10% seed moisture.

[3]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" spacing
Experimental Design: randomized complete block, 4 replications
Seeding Rate: approximately 18,000 seeds/acre
Previous Crop: wheat
Soil Type: Fort Collins sandy loam
Fertilization: 63 lbs N $acre^{-1}$; 20 lbs P_2O_5 $acre^{-1}$
Herbicide: Round-up, Spartan, Prowl H_2O
Insecticide: Methyl Parathion, Mustang Max

Table 4. 2007 Dryland Confection Sunflower Variety Performance Trial at Brandon[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Seed Size: Above 22/64	Seed Size: 22/64 to 20/64	Seed Size: 20/64 to 18/64	Seed Size: 18/64 to 16/64	Seed Size: 16/64 to 14/64
	lb/ac	%	lb/bu	inches	plants/ac	%	%	%	%	%	%
Dahlgren 9569	2420	6.9	17.9	60	9531	3.5	64.9	21.8	9.9	2.5	0.9
Red River RRC 7015	2024	7.1	16.9	59	7233	6.5	73.4	16.5	8.2	1.3	0.6
Red River RRC 2216	1992	7.3	18.8	62	9034	6.3	76.9	16.2	6.0	0.5	0.4
Dahlgren 9579	1969	7.0	16.1	58	9065	11.0	67.1	16.2	14.7	2.0	0.0
Triumph 777c w/Myconate	1952	5.9	14.1	68	10811	8.6	86.6	8.3	4.8	0.3	0.0
Dahlgren 9531	1916	7.2	18.8	59	10880	6.7	66.6	21.5	10.2	1.6	0.1
Red River RRC 2215	1907	7.2	18.5	57	8891	7.7	76.4	15.3	6.4	1.2	0.7
Dahlgren 9530	1845	7.3	19.2	56	10124	12.3	69.9	20.0	8.9	0.7	0.5
Triumph 777C	1631	7.1	17.4	63	9891	12.1	76.0	13.7	7.7	2.2	0.4
Average	**1962**	**7.0**	**17.5**	**60**	**9496**	**8.3**					
[3]$LSD_{(0.30)}$	206	0.4	0.9		1051						
[3]$LSD_{(0.05)}$	402	0.8	1.8		2047						

[1]Trial conducted on the Burl Scherler farm; seeded 6/18 and harvested 10/25/07.

[2]Yields corrected to 10% seed moisture.

[3]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" row spacing

Experimental Design: randomized complete block, 4 replications

Seeding Rate: approximately 14,000 seeds/acre

Previous Crop: wheat

Soil Type: Fort Collins sandy loam

Fertilization: 63 lbs N $acre^{-1}$; 20 lbs P_2O_5 $acre^{-1}$

Herbicide: Round-up, Spartan, Prowl H_2O

Insecticide: Methyl Parathion, Mustang Max

Table 5. 2007 Irrigated Oil Sunflower Variety Performance Trial at Idalia[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Heads Broken Off[3]	Oil Content
	lb/ac	%	lb/bu	inches	plants/ac	%	%	%
Monsanto MH6638	2709	5.0	32.5	74	21002	12.7	2.4	43.32
Garst XF06NS16	2357	5.1	22.7	69	20366	5.7	1.7	38.19
Pioneer M91	2334	4.6	27.8	73	20634	13.1	1.0	44.25
Fontanelle 902 NS	2310	4.6	30.5	65	19109	19.7	8.7	43.62
DEKALB DKF34-33	2275	4.5	32.8	70	19550	24.1	5.8	43.83
Monsanto MH6640	2207	4.8	32.4	75	21280	27.5	4.0	43.06
DEKALB DKF38-45	2194	4.6	33.3	71	20079	40.1	8.1	44.70
Monsanto MH6639	2164	4.7	31.5	72	20034	34.5	2.0	44.79
Triumph R657	2144	4.7	25.7	72	20754	16.8	4.0	45.77
Seeds 2000 Blazer-NS	2134	4.6	31.4	82	22415	11.6	24.5	44.55
Triumph 645	2106	4.6	29.7	74	21296	22.6	2.9	45.53
Mycogen 8N510	2105	4.8	25.3	69	20420	27.7	5.3	42.64
Triumph TRXs7425HOCL	2049	4.8	28.0	67	19193	20.3	7.7	42.98
Triumph TRX7442	2025	4.7	24.8	75	21026	23.5	2.3	39.74
Garst 4651NS	2021	5.0	26.3	70	20416	22.2	15.3	42.14
Fontanelle IS 4668	2011	5.0	23.4	79	21599	20.9	15.8	39.49
Triumph TRX7449	1942	4.7	28.1	75	20510	18.5	7.1	43.61
DEKALB DKF34-80CL	1915	4.8	28.4	71	19580	7.1	18.1	43.13
Mycogen 8H419CL	1801	4.9	23.1	76	21245	10.8	24.1	43.42
Advanta Pacific F41269DM3	1742	4.8	28.8	73	20581	19.5	13.5	39.65
Mycogen 8N337DM	1731	4.7	28.5	64	18707	23.9	7.2	45.59
Mycogen 8N358CL	1699	4.7	27.2	74	20466	41.8	7.2	43.53
Triumph TRXs7426HO	1695	4.7	25.0	71	19930	41.9	0.4	43.14
Garst 4596HO	1680	4.8	31.7	64	18168	10.2	26.9	42.82
Advanta Pacific F51311NSDM	1679	5.0	30.9	62	17295	26.1	16.9	40.98
Mycogen 8N386CL	1665	4.9	24.0	75	20536	8.7	11.4	41.21
Triumph s678	1662	4.7	30.3	76	21036	37.2	1.8	43.81
Monsanto MH6641	1655	5.0	31.2	77	21571	22.1	33.3	37.95
Triumph TRX7434HOCL	1639	4.9	26.1	76	20890	25.1	13.1	41.85
Triumph 845HO	1626	4.6	26.6	77	21326	28.1	2.2	43.98
Advanta Pacific AP561NS	1617	5.0	22.5	79	22446	41.3	5.4	40.24
Dyna-Gro 94C38	1610	5.0	20.0	85	23416	19.5	22.8	38.70
Garst 4420NS	1564	4.8	27.1	79	21599	14.0	11.7	41.22
Dyna-Gro 94N82	1546	4.8	30.7	82	22234	24.3	16.7	41.22
Mycogen 8N453DM	1533	4.9	31.6	74	20813	50.0	5.4	44.10
Garst 4704NS	1533	5.0	25.7	84	22778	2.0	0.4	37.83
Garst 4668NS/CL	1509	5.1	14.4	82	22491	26.9	16.4	38.56
Dyna-Gro FX07519DM	1485	4.8	32.7	77	21296	60.1	2.3	43.47
Triumph R859HOCL	1473	4.7	29.2	74	20467	19.1	7.6	42.21
DEKALB DKF37-31	1424	4.6	31.4	60	17078	48.4	3.1	44.21

Fontanelle IS 5880	1395	5.0	21.5	70	19175	11.0	21.0	40.04
Dyna-Gro FX07419	1368	5.0	30.1	83	22461	58.9	0.0	42.12
Advanta Pacific F51132NS/CL/CM	1295	4.8	29.0	78	21782	5.6	53.7	40.79
Triumph R664	1240	4.7	27.6	73	19784	42.7	4.6	45.95
Advanta Pacific AP534NS/CL	1219	4.8	23.0	82	22325	28.0	17.2	38.30
Triumph TRXs7424	1209	4.6	32.1	68	18769	41.6	2.9	43.16
Triumph s672	1116	4.7	27.4	71	19421	61.0	0.5	43.64
Triumph TRXs5423	1094	4.8	28.9	69	18785	58.0	1.0	43.98
Average	**1761**	**4.8**	**27.8**	**74**	**20573**	**26.4**	**10.2**	**42.35**
[4]$LSD_{(0.30)}$	360							
[4]$LSD_{(0.05)}$	686							

[1]Trial conducted on the Dennis Towns farm; seeded 6/8 and harvested 10/20.

[2]Yields corrected to 10% seed moisture.

[3]Severe winds prior to harvest broke some sunflower heads off from the stalks and into neighboring plots. Broken heads could not be harvested so yields and LSD values (of questionable meaning) are based only on harvested heads within the plot.

[4]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" row spacing
Experimental Design: randomized complete block, 3 replications
Seeding Rate: approximately 25,000 seeds/acre
Previous Crop: corn
Irrigation: sprinkler
Soil Type: Kuma silt loam
Fertilization: 56 lbs N $acre^{-1}$; 19 lbs P_2O_5 $acre^{-1}$
Herbicide: Sonalan

Table 6. 2-Yr Average Irrigated Oil Sunflower Variety Performance Trial at Idalia in 2006-07.

Hybrid	Yield	Moisture	Test Weight
	lb/ac	%	lb/bu
Mycogen 8N510	2339	6.1	29.5
Seeds 2000 Blazer-NS	2270	5.5	30.2
Fontanelle 902 NS	2235	6.0	30.0
Triumph 845HO	2139	6.0	27.6
Triumph s678	2125	6.5	26.3
Mycogen 8N453 DM	2083	6.7	31.5
Fontanelle IS 5880	2046	5.7	28.4
Mycogen 8N386 CL	2029	6.7	27.0
Mycogen 8H419 CL	2023	6.0	28.1
Triumph TRXs5423	1852	5.6	25.2
Average	**2101**	**6.1**	**28.2**

Table 7. 2007 Irrigated Confection Sunflower Variety Performance Trial at Idalia[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Lodging	Heads Broken Off[3]	Seed Size				
								Above 22/64	22/64 to 20/64	20/64 to 18/64	18/64 to 16/64	16/64 to 14/64
	lb/ac	%	lb/bu	inches	plants/ac	%	%	%	%	%	%	%
CHS Sunflowers 07EXP01	1943	6.8	21.0	71	13619	7.8	6.7	26.0	25.5	31.7	11.5	5.3
Triumph TRX7352C	1905	6.8	21.9	73	14706	13.1	7.9	29.2	35.6	25.6	6.9	2.7
Red River RRC 2215	1889	6.6	22.4	71	14417	11.9	9.2	25.9	31.1	32.3	8.8	1.9
CHS Sunflowers RH1121	1885	6.8	22.6	74	15921	11.2	8.9	50.8	24.0	20.2	3.7	1.3
Red River RRC 7015	1861	6.7	21.7	68	13266	8.1	14.5	17.5	33.6	32.9	11.6	4.4
Goliath RT	1797	6.7	22.9	69	13806	8.8	3.4	12.3	32.6	38.8	11.9	4.4
Mycogen 8C482	1779	6.6	21.2	75	15065	11.9	3.6	20.8	27.0	39.4	10.6	2.2
Seeds 2000 Panther DMR (confection type)	1769	6.5	21.6	62	17488	5.8	5.4	17.3	27.5	40.1	11.8	3.3
Dahlgren 9530	1752	6.6	23.3	73	15136	11.5	12.0	21.5	34.6	32.9	9.1	1.9
Seeds 2000 Panther (confection type)	1752	6.6	24.9	68	14066	7.7	5.7	21.5	28.6	37.9	9.5	2.5
Triumph 767C	1748	6.7	22.1	72	12788	10.0	3.6	31.9	30.7	28.7	6.0	2.7
Red River RRC 2216	1745	6.7	22.3	74	15648	10.8	10.8	27.3	34.5	29.2	6.3	2.7
Dahlgren 9569	1714	6.6	20.9	73	13916	12.7	6.5	19.7	34.5	30.0	13.0	2.8
CHS Sunflowers RH1122	1611	6.7	21.2	73	15915	13.8	5.4	50.5	23.9	17.8	6.0	1.8
CHS Sunflowers 06EXP02	1594	6.9	21.6	71	16108	6.9	12.1	46.1	29.1	16.4	6.0	2.4
Advanta Pacific F39018CF	1579	6.7	23.2	67	17882	4.1	1.0	9.7	17.0	41.9	25.3	6.1
CHS Sunflowers RH316	1550	6.7	19.2	69	15955	6.8	18.3	19.8	25.7	40.7	11.8	2.0
Dahlgren 9531	1489	6.5	23.1	72	17152	11.6	13.8	17.7	30.8	40.3	8.8	2.4
Triumph 777C	1422	6.7	21.2	74	14277	19.2	2.0	49.9	25.5	20.0	3.8	0.8
Dahlgren 9579	1122	6.1	19.5	68	13862	46.0	8.7	28.1	35.0	28.9	6.4	1.6
Average	**1695**	**6.7**	**21.9**	**71**	**15050**	**12.0**	**8.0**					
[4]$LSD_{(0.30)}$	271	0.2	1.3	3	1200							
[4]$LSD_{(0.05)}$	522	6.9	2.5	6	2311							

[1]Trial conducted on the Dennis Towns farm; seeded 6/8 and harvested 10/20.

[2]Yields corrected to 10% seed moisture.

[3]Severe winds prior to harvest broke some sunflower heads off from the stalks and into neighboring plots. Broken heads could not be harvested so yields and LSD values (of questionable meaning) are based only on harvested heads within the plot.

[4]$LSD_{(0.30)}$ is more useful for producers using these results to select a variety but some seed company collaborators wish to use $LSD_{(0.05)}$.

Site Information

Plot Size: 5' x 32' with 30" row spacing
Experimental Design: randomized complete block, 3 replications
Seeding Rate: approximately 20,000 seeds/acre
Previous Crop: corn
Irrigation: sprinkler
Soil Type: Kuma silt loam
Fertilization: 56 lbs N $acre^{-1}$; 19 lbs P_2O_5 $acre^{-1}$
Herbicide: Sonalan

Table 8. 2-Yr Average Irrigated Confection Sunflower Variety Performance Trial at Idalia in 2006-07.

Hybrid	Yield	Moisture	Test Weight
	lb/ac	%	lb/bu
Mycogen 8C482	1936	7.2	21.5
Triumph 777C	1748	7.7	21.0
Sigco Sun Goliath RT	1732	6.8	22.7
Red River 2215	1726	7.0	22.6
Red River 2216	1701	7.3	22.2
Triumph 767C	1697	8.0	21.9
CHS Sunflowers RH1122	1623	5.9	20.4
Dahlgren 9530	1591	6.8	22.9
Dahlgren 9569	1589	8.1	21.5
Average	**1705**	**7.2**	**21.8**

Table 9. 2007 Dryland Oil Sunflower Variety Performance Trial at Dailey[1].

Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Oil Content
	lb/ac	%	lb/bu	inches	plants/ac	%
Mycogen 8N453DM	1477	6.4	23.3	49	13933	33.68
DEKALB DKF38-45	1154	6.3	22.0	49	12179	31.59
Monsanto MH6641	1134	6.5	23.9	55	13734	30.63
Monsanto MH6640	1114	6.5	22.8	50	14652	32.63
Mycogen 8H419CL	1029	6.4	19.3	53	16698	33.44
Mycogen 8N358CL	962	6.2	24.0	49	13792	33.91
Seeds 2000 Blazer-NS	892	6.4	22.0	46	13807	32.55
Monsanto MH6639	891	6.5	22.1	49	12929	29.97
Mycogen 8N510	864	6.4	20.4	50	13613	32.75
Mycogen 8N337DM	838	6.4	20.3	51	13212	33.31
Dyna-Gro 94N82	837	6.4	23.0	55	15341	33.69
DEKALB DKF37-31	829	6.5	22.3	46	12502	30.12
Mycogen 8N386CL	824	6.5	21.0	56	13959	31.07
Check Two[3]	807	6.3	22.0	57	14816	35.16
Fontanelle 902 NS	805	6.5	22.4	54	12886	33.50
Dyna-Gro FX07419	781	6.7	15.6	49	15694	30.38
Garst XF06NS16	759	6.6	22.9	48	15017	29.82
Monsanto MH6638	753	6.5	22.8	49	13103	31.86
Dyna-Gro 94C38	752	6.5	20.5	52	15150	32.24
Garst 4420NS	734	6.6	20.8	51	13306	30.93
DEKALB DKF34-33	729	6.5	18.1	50	14157	29.80
Fontanelle IS 4668	709	6.5	20.0	51	15219	30.61
Garst 4704NS	707	6.5	20.1	44	14157	30.54
Triumph R657	688	6.5	21.5	48	9883	33.16
Triumph s678 w/ Myconate	648	6.3	21.9	49	14217	32.56
Fontanelle IS 5880	639	6.5	20.9	52	11258	31.67
DEKALB DKF34-80CL	623	6.5	20.9	50	12282	31.04
Garst 4651NS	603	6.4	21.0	53	14077	28.58
Pioneer M91	537	6.3	23.8	52	10280	34.69
Dyna-Gro FX07519DM	454	6.3	22.5	42	15791	30.44
Advanta Pacific AP534NS/CL	447	6.5	20.9	56	13635	31.46
Seeds 2000 Sierra-HO	399	6.6	21.9	54	13649	28.30
Triumph s678	394	6.4	21.0	46	13646	31.53
Average	**782**	**6.4**	**21.5**	**50**	**13813**	**31.75**

[1]Trial conducted on the Dan and Dave Anderson farm; seeded 6/2 and harvested 10/9.

[2]Yields corrected to 10% seed moisture.

[3]Check Two is Triumph 645.

[4]Yields above are only indicative of yield trends for these hybrid varieties as the trial was planted in low soil moisture, received a rain following planting, and suffered from slight crusting which resulted in uneven emergence, variable plant stands, and some plots were lost to an accidental misapplication of herbicide.

*No significant lodging.

Site Information

Plot Size: 5' x 32' with 30" row spacing
Experimental Design: randomized complete block, 4 replications
Seeding Rate: approximately 18,000 seeds/acre
Previous Crop: corn
Soil Type: Platner loam
Fertilization: 65 lbs N $acre^{-1}$; 15 lbs P_2O_5 $acre^{-1}$
Herbicide: Round-up, Spartan
Insecticide: none

Table 10. 2007 Dryland Confection Sunflower Variety Performance Trial at Dailey[1].

						Seed Size				
Hybrid	Yield[2]	Moisture	Test Weight	Plant Height	Density	Above 22/64	22/64 to 20/64	20/64 to 18/64	18/64 to 16/64	16/64 to 14/64
	lb/ac	%	lb/bu	inches	plants/ac	%	%	%	%	%
Red River RRC 7015	800	7.8	15.0	66	5628	32.3	34.8	19.5	5.0	8.4
Red River RRC 2216	731	7.3	15.3	65	7843	46.6	25.4	18.2	3.6	6.2
Dahlgren 9530	678	7.8	14.8	61	10037	47.9	31.4	16.0	2.9	1.8
Dahlgren 9579	664	7.4	15.2	58	8651	45.6	28.6	18.0	5.6	2.2
Dahlgren 9531	658	7.8	15.5	60	9407	47.9	30.2	18.1	2.8	1.0
Red River RRC 2215	598	7.1	15.6	58	9326	39.0	35.1	19.3	4.6	2.0
Dahlgren 9569	536	7.0	16.4	65	10406	44.9	33.1	15.2	5.5	1.3
Triumph 777C	528	7.7	16.4	61	10880	46.9	25.0	20.9	4.9	2.3
Average	**649**	**7.5**	**15.5**	**62**	**9022**					

[1]Trial conducted on the Dan and Dave Anderson farm; seeded 6/2 and harvested 10/9.

[2]Yields corrected to 10% seed moisture.

[3]Yields above are only indicative of yield trends for these hybrid varieties as the trial was planted in low soil moisture, received a rain following planting, and suffered from slight crusting which resulted in uneven emergence, variable plant stands, and some plots were lost to an accidental misapplication of herbicide.

Site Information

Plot Size: 5' x 32' with 30" row spacing

Experimental Design: randomized complete block, 4 replications

Seeding Rate: approximately 14,000 seeds/acre

Previous Crop: corn

Soil Type: Platner loam

Fertilization: 65 lbs N $acre^{-1}$; 15 lbs P_2O_5 $acre^{-1}$

Herbicide: Round-up, Spartan

Insecticide: none

Seed Company Entrants in the 2007 Colorado Sunflower Performance Trials

Entrant	Brand/Hybrid	Address	Telephone
Advanta Pacific, L.L.C.	Advanta Pacific	6103 53rd Avenue, SW, Fargo, ND 58104	701-282-2952
CHS Sunflowers	CHS	220 Clement Avenue, Grandin, ND 58038	701-484-5129
Dyna-Gro Seed	Dyna-Gro	PO Box 2050, Kearney, NE 68848	800-652-9298
Dahlgren & Company, Inc	Dahlgren	1220 Sunflower Street, Crookston, MN 56716	800-837-5984
Dekalb/Monsanto	DEKALB/Monsanto	304 Center Street, West Fargo, ND 58078	800-437-4120
Fontanelle Hybrid, Inc	Fontanelle	919 W. 23rd Street, Fontanelle, NE 68044	402-721-8567
Garst Seed Co.	Garst	46376 County Road 53 Bennett, CO 80102	303-519-7016
Mycogen Seeds	Mycogen	7220 Gardenstone Dr., Colorado Springs, CO 80922	719-331-1376
Plant Health Care, Inc	Myconate	7521 Tynewind Drive, Wake Forest, NC 27587	919-926-1937
Pioneer Hi-Bred Int'l, Inc	Pioneer	1616 S. Kentucky St., Ste. C350, Amarillo, TX 79102	806-356-9221
Red River Commodities, Inc	Red River	212 NE Loop 289, Lubbock, TX 79403	806-763-9747
SEEDS 2000	SEEDS 2000	115 North 3rd Street, Breckenridge, MN 56520	888-786-7333
SunOpta		1701 Industrial Loop, Goodland, KS 67735	785-899-5607
Triumph Seed Co, Inc	Triumph	P.O. Box 1050, Ralls, TX 79357	800-530-4789

Sunflower Variety Performance Test at Fruita, Colorado 2007

Calvin H. Pearson[1]

Summary

The high cost of transportation fuels has been a primary factor for increased interest in alternative fuels such as biodiesel. There are a number of biodiesel production facilities currently under construction and many existing facilities are undergoing expansion in the United States. The potential for agriculture to produce vegetable oils as feedstocks for biodiesel production in the country appears promising. An oilseed sunflower variety performance test was conducted at the Western Colorado Research Center at Fruita, Colorado during 2007 in which thirty-two sunflower varieties were evaluated for seed and oil yield and related agronomic characteristics to assess the potential for commercial production of sunflower under irrigation in western Colorado. Seed yields averaged 2118 lbs/acre and ranged from a high of 3549 lbs/acre for Producers Hybrids 7203 to a low of 998 lbs/acre for Croplan Genetics 308 NS. Seed oil content averaged 45.3%, which is typical for many sunflower varieties. Oil contents ranged from a high of 49.0% for 8N453DM to a low of 41.0% for DKF 35-10 NS. Oil yield averaged 959 lbs/acre. Oil yields among the sunflower varieties ranged from a high of 1620 lbs/acre for Triumph 645 to a low of 450 lbs/acre for Croplan Genetics 308 NS. The variety with the highest seed yield did not have the highest oil yield, but the variety with the lowest seed yield did have the lowest oil yield. Several sunflower varieties performed well under the furrow-irrigated, high desert arid environment of western Colorado.

Planted – 16 May 2007, Harvested – 22 Oct. 2007. Planted at a seeding rate of 22,000 seeds/acre. Plot size – 5x50ft. Previous crop was dry beans. Soil type – Youngston clay loam. Applied Prowl herbicide at 2½ pts/acre preplant incorporated on May 15, 2007 in 20 gallons water per acre at 25 psi. Fertilizer was applied sidedress on 15 June 2007 at 40 lbs N/acre on each side of the plant row making a total application of 80 lbs N/acre. Six furrow irrigations were applied during the growing season with siphon tubes. Weed control during the 2007 growing season was excellent.

Contact: Dr. Calvin H. Pearson, Professor/Research Agronomist
Colorado State University
Agricultural Experiment Station
Western Colorado Research Center - Fruita
1910 L Road, Fruita, CO 81521
Phone 970-858-3629, Fax 970-858-0461
email: calvin.pearson@colostate.edu

Table 1. Seed moisture, seed yield, oil content, and oil yield of thirty-two sunflower varieties evaluated in the Grand Valley of western Colorado at the Western Colorado Research Center at Fruita during 2007.[1]

Cultivar	Source	Seed moisture	Seed yield	Oil content	Oil yield
		%	lb/ac	%	lbs/acre
Triumph 645	Triumph	6.0	3311	48.9	1620
7203	Producers Hybrids	5.8	3549	45.4	1612
8N453DM	Mycogen	6.0	2793	49.0	1369
HySun 454	HySun	6.9	2915	46.5	1355
8H419CL	Mycogen	5.8	2834	46.1	1307
Croplan Genetics 378 DMR	Croplan Genetics	6.2	2680	45.0	1207
8N520DM	Mycogen	5.8	2503	46.9	1175
Garst 454	Garst	7.0	2600	45.0	1169
7303	Producers Hybrids	6.1	2608	44.3	1156
63M80	Pioneer brand	5.8	2354	47.2	1111
Blazer	Seeds 2000	6.6	2342	46.9	1099
Garst 4668 ns/cl	Garst	6.2	2396	43.2	1036
8N462DM	Mycogen	6.1	2151	47.0	1010
DKF 37-31 NS	DEKALB	5.9	2186	46.1	1008
8N386CL	Mycogen	6.0	2252	44.1	992
63M91	Pioneer brand	6.1	2061	45.9	946
Garst 450	Garst	6.0	2086	44.4	926
Croplan Genetics 343 DMR	Croplan Genetics	6.4	2121	41.6	883
Triumph 820 HO	Triumph	5.8	1840	47.3	871
DKF 35-10 NS	DEKALB	6.3	2070	41.0	870
Croplan Genetics 305 DMR	Croplan Genetics	6.0	2045	42.5	869
HySun 450	HySun	6.1	1924	44.2	850
Croplan Genetics 356	Croplan Genetics	6.5	1857	45.7	848
Garst 521	Garst	6.2	1873	44.5	833
Sierra	Seeds 2000	8.0	1747	41.4	723
93C05 #4	Dyna-Gro	5.8	1542	45.3	698
Triumph s672	Triumph	5.8	1305	47.8	623
SF7105NS	Producers Hybrids	6.3	1312	44.7	586
93N05 #2	Dyna-Gro	6.1	1349	43.1	581
Triumph s678	Triumph	6.4	1090	46.1	503
Croplan Genetics 3080 DMR	Croplan Genetics	6.4	1096	45.8	502
Croplan Genetics 308 NS	Croplan Genetics	6.0	998	45.0	450
Ave.		6.2	2118	45.3	959
LSD (0.05)		0.5	791	-	-

[1] Table is arranged by decreasing oil yield. Seed yields and oil contents are reported at 10 % moisture.

Table 2. Test weight, plant height, plant population, flowering, and lodging of thirty-two sunflower varieties evaluated in the Grand Valley of western Colorado at the Western Colorado Research Center at Fruita during 2007.

Cultivar	Source	Test weight.	Plant height	Plant population	Flower	Lodging
		lb/bu	in.	Plants/ac	days	%
Triumph 645	Triumph	34.6	83.2	35,226	63.5	5.2
7203	Producers Hybrids	35.7	90.3	30,869	64.8	5.8
8N453DM	Mycogen	37.2	83.3	30,591	63.8	3.2
HySun 454	HySun	35.0	85.3	26,790	64.2	5.7
8H419CL	Mycogen	35.6	85.2	33,048	65.5	2.9
Croplan Genetics 378 DMR	Croplan Genetics	34.8	82.2	28,783	64.2	4.3
8N520DM	Mycogen	35.8	80.6	31,843	65.5	9.6
Garst 454	Garst	34.7	84.8	26,929	64.5	7.5
7303	Producers Hybrids	35.6	83.7	24,936	65.8	5.8
63M80	Pioneer brand	35.6	75.4	30,359	62.8	5.0
Blazer	Seeds 2000	36.1	70.5	26,281	64.2	9.6
Garst 4668 ns/cl	Garst	33.8	84.9	35,041	65.5	18.4
8N462DM	Mycogen	37.2	85.6	29,664	64.0	20.0
DKF 37-31 NS	DEKALB	33.6	76.4	25,261	63.0	12.9
8N386CL	Mycogen	34.2	84.8	30,081	64.2	7.2
63M91	Pioneer brand	35.9	78.3	24,751	62.8	3.9
Garst 450	Garst	34.9	76.9	25,725	66.5	17.7
Croplan Genetics 343 DMR	Croplan Genetics	35.3	83.0	27,486	63.3	7.0
Triumph 820 HO	Triumph	36.3	78.1	33,743	60.0	9.8
DKF 35-10 NS	DEKALB	34.8	83.0	27,995	62.8	10.3
Croplan Genetics 305 DMR	Croplan Genetics	34.9	79.0	31,796	62.5	6.4
HySun 450	HySun	35.5	84.5	31,472	65.2	8.4
Croplan Genetics 356	Croplan Genetics	34.6	71.9	21,831	64.2	7.4
Garst 521	Garst	35.1	71.3	34,253	61.0	5.8
Sierra	Seeds 2000	33.3	87.6	33,048	66.2	24.6
93C05 #4	Dyna-Gro	36.3	84.8	30,081	65.5	6.3
Triumph s672	Triumph	36.1	63.0	34,021	66.3	21.7
SF7105NS	Producers Hybrids	35.9	72.0	35,689	60.5	12.0
93N05 #2	Dyna-Gro	34.9	72.6	28,830	62	2.2
Triumph s678	Triumph	36.7	72.8	31,611	66.5	8.6
Croplan Genetics 3080 DMR	Croplan Genetics	35.3	77.4	29,618	62.8	24.2
Croplan Genetics 308 NS	Croplan Genetics	35.3	76.6	29,247	62.8	34.9
Ave.		35.3	79.7	29,903	63.9	10.4
LSD (0.05)		0.9	4.4	3,685	0.9	-

2007 Irrigated Oil Sunflower Performance Trial Southwestern Colorado Research Center Yellow Jacket, CO

This was the third year for testing sunflowers in southwestern Colorado. An oil crusher and biodiesel facility being built in Dove Creek, CO is scheduled to be completed by July 1, 2008. Sunflowers will be the primary feedstock. An irrigated sunflower performance trial (mid-oleic or NuSun entries only) was planted in 2007 to select adapted varieties and identify agronomic issues that need to be addressed. A dryland sunflower trial was not planted in 2007. Entries were solicited from sunflower seed companies and no fee was charged.

The statistical design for the trials was a randomized complete block design with three replicates. The irrigated trial plots consisted of eight or four rows (8 rows 1st replication, 4 rows 2nd and 3rd replications) for each entry. The length of each plot was 1,300 ft. The sunflowers were planted on 30-inch rows. The target seeding rate was 22,000 seeds/ac. The previous crop was small grains (oat, barley and spring wheat).

Total precipitation received for the 12 months prior to harvest was 14.8 inches (93% of the long-term average). Irrigation water was applied thru a wheel-line sprinkler system. Irrigation water applied preplant was 2.25 inches with an additional 9.25 inches applied prior to the start of flowering. Sunflower plant height prevented further irrigation with the wheel-line during the reproductive stage. At the start of flowering, the field received 1 inch of rain. Entering the reproductive stage, soil moisture was near field capacity.

The trial was harvested with a JD 4420 combine equipped with a wheat platform (reel removed) and attached sunflower pans. The seed from each plot was augered into a grain trailer and weighed on a truck scale at a local warehouse. Seed samples obtained at harvest were sent to the Kansas Grain Inspection Service, Inc. for grade analysis and oil content.

The irrigated trial (Table 1) yielded 2,232 lb/ac with and an average oil content of 40.2%. The sunflowers were at physiological maturity when the first fall freeze occurred on Sept. 30 (27.1°F). None of the entries lodged nor was there any significant wildlife damage. Triumph s678 was infected with white mold head rot. Sclerotia were easily seen in the combine bin at harvest. This field has a history of white mold disease in dry beans. White mold was not observed in any of the other sunflower entries.

Sunflower head moth and banded sunflower moth activity was monitored with pheromone traps. The number of sunflower head moths captured was above the economic threshold (4 or more moths per night) at the start of flowering (reproductive stage R-5). The field was aerial sprayed for the moths on August 10 (R-5). Bee activity was still low at this stage when the field was treated.

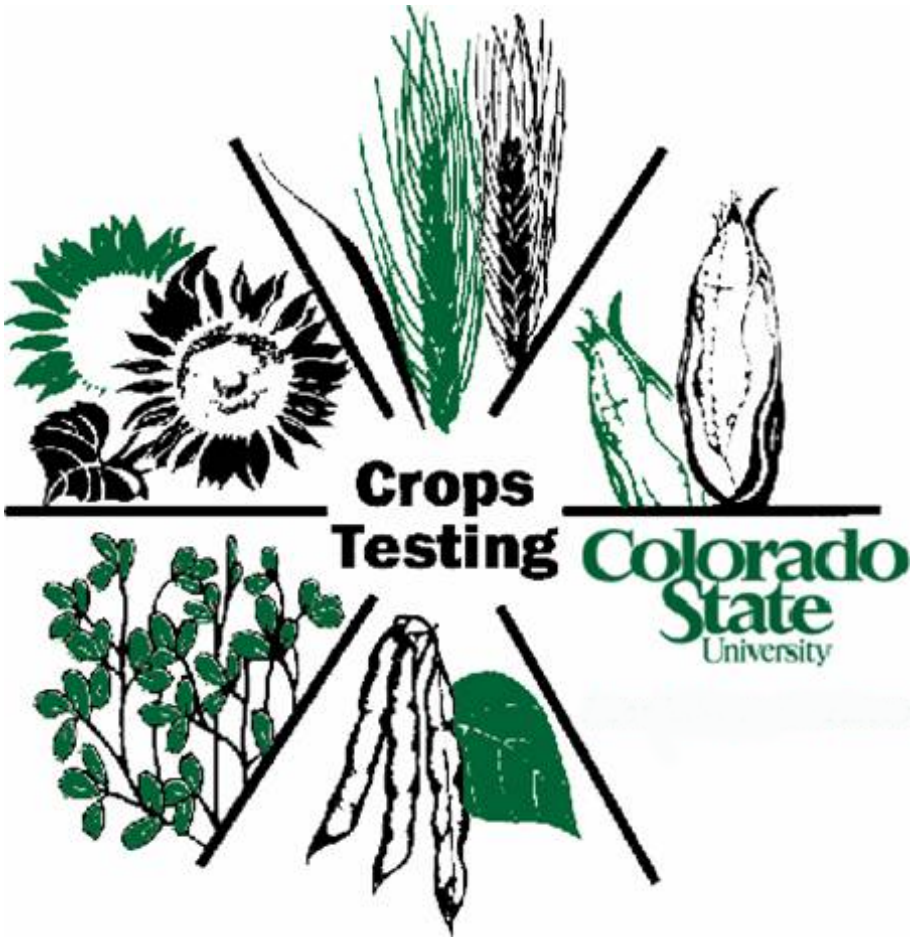
Table 1. 2007 irrigated oil sunflower variety performance at Yellow Jacket, CO[1].

Entry	Yield[2]	Moisture	Test Weight	Plant Height	Density Plants/ac	Oil Content[2]
	lb/ac	%	lb/bu	in	plants/ac	%
Triumph 658 NuSun	2663	7.3	26.2	70	12807	41.7
Croplan Genetics 356NS	2459	7.5	29.7	65	13387	40.5
Triumph 665 NuSun	2454	7.5	28.5	72	14898	40.9
Triumph 636 NuSun	2416	7.3	27.3	67	11616	41.8
Dekalb DKF38-45 NS	2362	6.2	29.7	57	11935	42.5
Dekalb DKF35-10 NS	2249	7.7	29.7	63	12574	36.6
Triumph s672 NuSun	2224	6.6	28.7	36	16204	42.6
Croplan Genetics 3080DMR,NS	2099	5.7	28.2	62	12865	41.9
Triumph s678 NuSun	2071	8.5	29.5	52	13910	41.8
Croplan Genetics 378DMR,NS	2031	10.6	24.2	66	11732	34.5
Dekalb DKF37-31 NS	1523	8.9	28.0	52	6534	37.8
Average	**2232**	**7.6**	**28.1**			**40.2**
$LSD_{(0.05)}$	**341**					
CV%	**9.0**					

[1]Trial conducted at the Southwestern Colorado Research Center; planted 6/7/07 and harvested 10/28/07.
[2]Yield and oil content are reported at 10% moisture.

Site Information:

Soil type:	Wetherill silty clay loam
Previous crop:	Spring grains; two-years ago: dry beans
Seeding rate:	22,000 seeds/ac (9.5-inch seed spacing on 30-inch rows)
Planter:	Monosem pneumatic (furrow openers, double-disk openers)
Tillage:	Spring moldboard plowed; field cultivator; roller harrow; tine harrow
Fertilizer:	32 lb N/ac (urea) broadcast (May 30, 2007)
Herbicide:	Trifluralin 1.33 pt/ac incorporated (June 4, 2007)
Insecticide:	Warrior 3 oz/ac - sunflower moth/banded sunflower moth (August 10, 2007)
Row cultivation:	July 13, 2007
Irrigation:	11.5 inches (5 passes wheel-line sprinkler)
Precipitation:	October 1, 2006 thru September 30, 2007: 14.8 inches (long-term average 15.9 inches)



Jerry Johnson, Extension Specialist Crop Production

Colorado State University

Extension

Department of Soil and Crop Sciences
1170 Campus Delivery
Fort Collins, Colorado 80523-1170