

Technical Report TR 02-10

Agricultural
Experiment
Station

Department of
Soil and Crop
Sciences

Cooperative
Extension

December
2002

TABLE OF CONTENTS

2002 COLORADO SUNFLOWER	17
Introduction	18
The 2002 Cropping Season	18
Eastern Colorado Irrigated Sunflower Performance Data	18
Sunflower Cultural Conditions	Table 1
	18
Oil Sunflower Performance Data for Burlington	Table 2-3
	19
Confection Sunflower Performance Data for Burlington	Table 4-6
	20
NuSun Sunflower Performance Data for Burlington	Table 7
	21
Seed Company Entrants in the 2002 Colorado Sunflower Performance Trials	22
Entry Forms for 2003 Trials	22

KNOW YOUR SUNFLOWER IMPROVEMENT TEAM

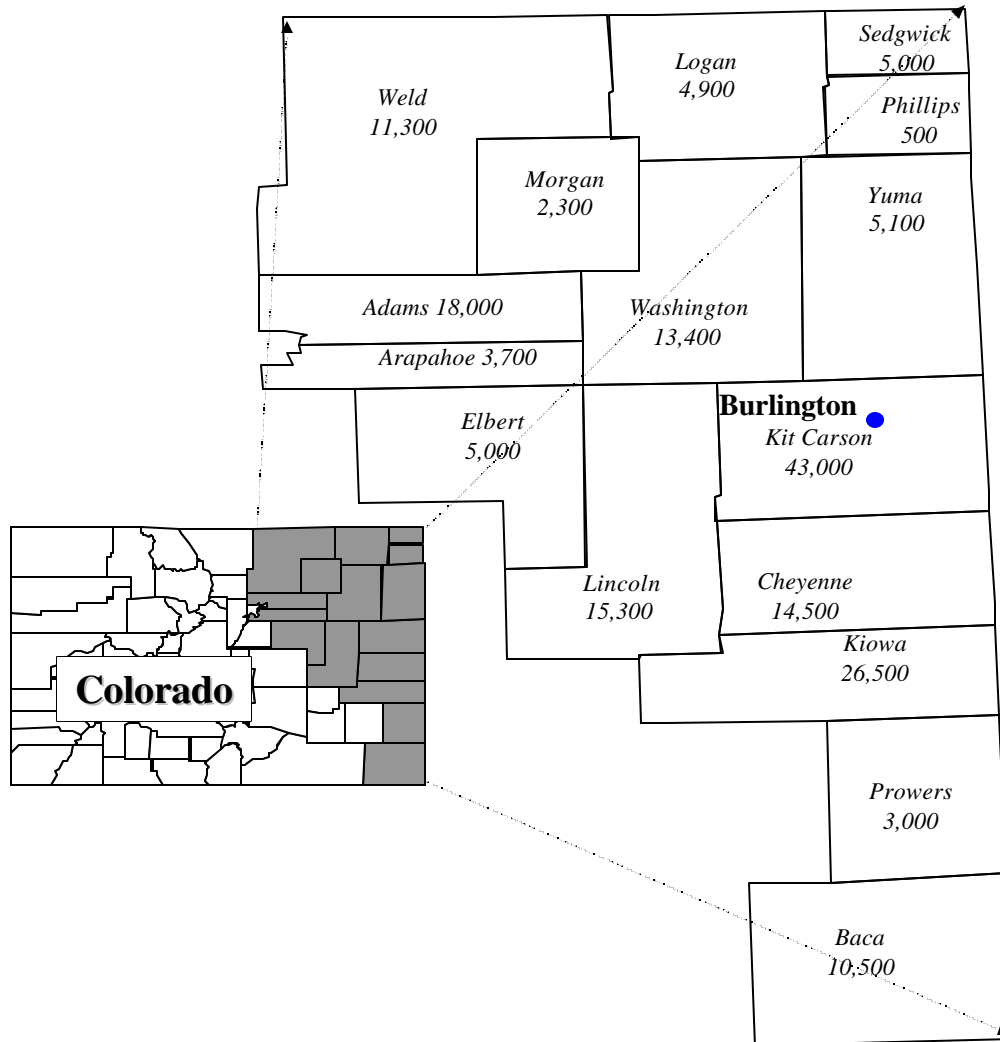
Jerry J. Johnson, Extension Crop Production (970) 491-1454 jjj@lamar.colostate.edu

James P. Hain, Crops Testing Program (970) 554-0980

Cynthia L. Johnson, Crops Testing Program (970) 491- 1914 cjohnson@agsci.colostate.edu

Ron Meyer, Golden Plains Area Extension Agronomist (719) 346-5571 rmeyer@coop.ext.colostate.edu

• One Colorado Sunflower Trial Location in 2002 and 2001 acreage harvested



ACKNOWLEDGMENTS

The authors wish to 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 and dealers: Akron - Jason Shook; Burlington - Ryan Weaver; Cheyenne Wells - Dennis Campbell; Haxtun - Richard Fryrear; Wray - Jim Roberts. We also gratefully acknowledge Triumph Seed Co., Inc. (P.O. Box 1050, Ralls, TX 79357) for oil analyses and Red River Commodities, Inc. (1320 East College Drive, Colby, KS 67701) for seed-sizing analyses.

2002 COLORADO SUNFLOWER PERFORMANCE TRIALS

Introduction

Colorado is the 4th largest producer of sunflowers in the U.S., producing over 200 million pounds of seed on 195,000 acres in 2001, and requiring an estimated \$2.4 million worth of hybrid seed to plant this acreage. To assist Colorado sunflower producers to make the best hybrid sunflower seed decision, CSU personnel evaluate commercial sunflower hybrids at different locations in northeastern Colorado.

The 2002 Cropping Season

The results of our 2002 irrigated sunflower oil and confection trials are shown below. They were located four miles east of Burlington and thanks to diligent efforts by the cooperating grower, Ryan Weaver, the trials were outstanding. Our 2002 dryland sunflower oil and confection trials almost all lost to the record-setting drought that gripped NE Colorado during the spring and summer of this year. We were able to harvest the dryland trial at Wray but due to excessive variation in plant size the results could not be statistically interpreted and are not reported. Other dryland trials and fields, were worse and were not harvested.

A randomized complete block design with four replicates was used for all trials. Plots consisted of four row plots 50 feet long for irrigated and 75 feet long for dryland trials. Both oil and confection hybrids were seeded at 18,000 seeds/acre for the irrigated trials with no hand-thinning. The dryland trials were over-planted and hand-thinned to 12,000 seeds/acre. Seed yields are reported in pounds per acre adjusted to 10% moisture content. Oil content is reported as % oil at 10% seed moisture content.



Information regarding sunflower production practices and pest control can be obtained from the following source: “High Plains Sunflower Production and IPM,” Bulletin No. 556A, Colorado State University Cooperative Extension, Fort Collins, 80523. Call CERC at (970) 491-6198 to order your copy.

Table 1. Sunflower cultural conditions in 2002.

Burlington	
Soil Type	Kuma Richfield silt loam
Previous Crop	Corn
Fertilization	
N acre ⁻¹	150
P ₂ O ₅ acre ⁻¹	50
S	15
Zn	1
Herbicide	Roundup (Pre-emerge) Spartan Poast
Insecticide	Furadan Warrior Parathion
Irrigation	Furrow

Table 2. Irrigated oil sunflower performance at Burlington¹ in 2002.

Hybrid	Test Plant							
	Yield	Moist.	Wt.	Ht.	Density	Bloom ²	Lodging	Oil
	lb/ac	%	lb/bu	in	plants/a	days	%	%
Garst/Interstate 971136NS	3699	7.3	31.6	62	14678	57	1.3	44.7
Triumph 658	3610	7.7	30.7	62	15151	59	1.0	47.2
DEKALB DK3900	3607	8.1	32.2	55	15151	60	1.5	46.9
Triumph 665	3520	8.5	32.5	60	15199	58	2.3	46.2
Garst/Interstate IS 4049	3493	6.9	31.8	60	15483	60	0.0	43.6
Cargill SF260	3347	5.5	31.5	51	15057	58	0.7	46.7
Pioneer brand XF4735	3339	7.7	30.3	57	13636	59	1.1	43.4
Mycogen 8N421	3309	8.1	30.8	63	13968	58	2.8	45.2
Kaystar 9501	3305	8.4	33.2	64	15341	59	1.3	39.9
Croplan CL385 NS	3303	7.1	31.4	53	14678	59	2.0	44.0
Cargill SF187	3286	5.9	31.5	52	15672	59	0.6	41.1
Garst/Interstate Hysun 450	3245	7.2	32.9	51	14820	60	0.0	44.7
Garst/Interstate Hysun 521	3210	7.0	34.0	49	16572	57	2.3	45.1
Pioneer brand 63M80	3191	6.8	32.6	58	14299	59	4.1	45.6
Garst/Interstate IS 5331	3182	10.3	31.7	47	13636	57	1.2	43.3
Mycogen 8488 NS	3123	9.1	33.6	63	13541	58	1.4	43.3
Pioneer brand 63M91	3087	9.2	32.7	62	13778	57	1.8	45.0
Croplan CL322 NS	3020	6.8	31.6	58	14536	58	1.6	41.2
Garst/Interstate IS 6767	3019	9.8	32.0	63	13920	58	1.9	45.6
Garst/Interstate IS 4340	2831	8.7	34.5	58	14678	62	1.3	47.0
Pioneer brand 63A70	2798	6.0	31.3	53	14725	57	3.0	49.3
Croplan CL308	2764	7.0	32.7	51	15057	57	1.6	46.8
DEKALB DKF33-33NS	2735	6.5	32.9	52	14915	57	1.2	40.6
Mycogen 8N327	2665	7.2	31.6	54	13873	57	0.0	47.0
Triumph 636	2646	9.7	29.6	61	13399	58	0.7	44.9
DEKALB DKF36-40 NS	1949	8.1	32.2	62	15104	57	2.8	42.2
Average	3126	7.7	32.1	57	14649	58	1.5	
LSD _(0.30)	193							

¹Trial conducted on the Ryan Weaver farm; seeded 5/30 and harvested 10/17.

²Days from planting.

Table 3. 2-Yr average irrigated oil sunflower performance at Burlington/Idalia, 2001-2002

Hybrid	Test	
	Yield	Wt.
	lb/ac	lb/bu
Kaystar 9501	2739	33.8
Triumph 658	2679	30.7
Cargill SF187	2647	31.4
DEKALB DK3900	2572	32.0
Cargill SF260	2556	32.1
Triumph 665	2435	31.8
Garst/Interstate IS 5331	2408	32.0
Mycogen 8488 NS	2407	33.9
Pioneer brand 63M91	2313	33.2
Garst/Interstate IS 6767	2294	32.1
Garst/Interstate IS 4340	2235	34.3
Pioneer brand 63M80	2187	31.9
Triumph 636	2145	29.0
Pioneer brand 63A70	1990	31.3
DEKALB DKF36-40 NS	1525	32.5
Average	2342	32.1

Table 4. Irrigated confection sunflower performance at Burlington¹ in 2002.

Hybrid	Yield	Moist.	Test		Plant		
			Wt.	Ht.	Density	Bloom ²	Lodging
	lb/ac	%	lb/bu	in	plants/a	days	%
Seeds 2000 X3987	2873	5.7	24.4	73	13636	62	3.8
Red River RRC EX2215	2684	6.8	24.1	66	11506	60	12.9
Sigco Sun Goliath	2611	7.2	23.5	68	11932	61	6.2
Garst/Interstate IS 33139	2504	6.3	24.3	72	12689	61	11.9
Red River RRC 2582	2364	6.6	25.5	62	13305	60	8.2
Triumph 777C	2362	8.8	22.7	76	11979	61	18.3
Seeds 2000 Grizzly	2350	5.2	23.0	62	9990	62	5.3
Red River RRC 2213	2328	6.5	25.2	65	13968	58	9.2
Triumph 700CLS	2282	9.3	22.4	68	10890	62	14.3
Triumph TRX2355CLS	2196	7.7	20.9	63	10843	60	17.3
Triumph TRX2354CLS	2122	10.2	22.8	75	10464	62	18.0
Triumph TRX2353CLS	2098	6.0	20.5	61	11269	61	20.3
Triumph 757C	2026	6.8	21.2	65	13068	60	21.0
Red River RRC EX2418	1962	10.3	24.1	80	12784	61	18.2
Garst/Interstate IS 8048	1961	7.4	25.6	65	12547	59	8.2
Average	2315	7.4	23.3	68	12058	61	12.9
LSD _(0.30)	186						

¹Trial conducted on the Ryan Weaver farm; seeded 5/30 and harvested 10/21.

²Days from planting.

Table 6. Irrigated sunflower confection at Burlington in 2002, percent of seed by screen size.

Hybrid	Percent		Jumbo
	above 20/64	below 20/64	Percent above 22/64
Garst/Interstate IS 33139	25.2	23.0	51.8
Garst/Interstate IS 8048	24.9	13.2	61.9
Red River RRC EX2215	38.4	19.0	42.6
Red River RRC 2213	39.0	26.9	34.1
Red River RRC 2582	31.4	34.8	33.8
Red River RRC EX2418	43.1	22.5	34.4
Seeds 2000 Grizzly	20.3	27.7	52.0
Seeds 2000 X3987	30.8	28.9	40.3
Sigco Sun Goliath	29.0	22.6	48.4
Triumph 700CLS	35.4	11.3	53.3
Triumph 757C	12.4	7.6	80.0
Triumph 777C	18.7	15.0	66.3
Triumph TRX2353CLS	13.5	6.6	79.9
Triumph TRX2354CLS	25.9	13.9	60.2
Triumph TRX2355CLS	14.1	7.7	78.2

Table 5. 2-Yr average irrigated confection sunflower performance at Burlington/Idalia, 2001-02.

Hybrid	Test	
	Yield	Wt.
	lb/ac	lb/bu
Seeds 2000 X3987	2481	25
Triumph 777C	2133	23
Seeds 2000 Grizzly	2069	24
Red River RRC 2213	1832	26
Red River RRC 2582	1817	26
Garst/Interstate IS 8048	1507	26
Average	1973	25

Table 7. Colorado NuSun irrigated sunflower performance at Burlington¹ in 2002.

Hybrid	Yield	Moist.	Test	Plant	Lodging	Bloom ²	Head		Oil	
			Wt.	Ht.			Density	Size		Maturity ³
	lb/ac	%	lb/bu	in	plants/a	%	days	in	days	%
Pioneer XF3119	3508	5.2	29.8	57	12831	1.1	59	7	104	42.4
Mycogen 8N421	3401	6.0	32.3	67	12500	2.2	60	7	105	41.4
Interstate 990213NS	3399	6.6	33.5	60	14394	1.0	59	7	107	41.9
Interstate Hysun 521	3387	7.3	33.1	51	13541	5.1	57	7	102	40.3
Interstate 971136NS	3361	6.7	30.5	60	13068	4.4	56	7	103	40.0
Triumph 645	3353	8.1	30.3	66	14583	8.7	59	8	107	43.8
Pioneer 63A81	3334	5.9	31.1	60	15057	2.8	57	7	99	46.0
Triumph 665	3329	8.5	31.7	61	15625	6.7	57	9	106	43.4
Interstate Hysun 450	3299	6.8	33.4	52	14536	3.7	60	6	108	41.0
Nidera EN 1601NS	3294	7.1	32.4	61	13968	5.9	59	6	106	42.4
Pioneer 63M52	3245	5.0	31.6	56	13873	4.1	58	7	102	43.5
Mycogen 260	3207	4.8	31.0	49	14583	1.4	59	7	99	43.6
Pioneer XF4735	3192	7.3	30.5	61	14204	2.9	61	7	106	40.2
Triumph 636	3187	7.5	29.9	65	14488	7.8	57	9	108	42.4
Seeds 2000 Blazer	3155	7.4	31.6	49	13778	1.0	58	7	106	41.2
Interstate 4049	3128	5.8	31.9	64	14725	2.3	59	7	103	41.3
Pioneer 63M80	3096	7.6	31.2	56	13968	1.5	57	8	106	40.6
Red River RR2011	3062	6.6	28.9	62	13163	3.0	56	8	103	39.4
Mycogen 8488NS	3061	7.7	33.4	60	13826	2.3	58	7	104	41.9
Mycogen 8N327	3019	5.5	32.2	54	14488	5.5	56	8	98	42.9
Seeds 2000 Bronco	2986	8.3	32.9	60	13115	4.0	62	7	110	41.1
Interstate F90430NS	2962	7.6	33.4	58	15293	6.5	60	7	107	43.2
Interstate F63105NS	2951	7.6	33.0	54	14441	2.4	61	7	103	40.6
Triumph 658	2945	7.1	30.6	61	11458	4.6	60	7	105	43.1
Mycogen 8377NS	2880	7.5	31.1	60	14583	1.6	57	8	99	41.9
Pioneer 63M91	2798	9.1	33.3	59	14346	3.3	60	8	101	42.0
Interstate 982727NS	2768	6.4	32.2	61	13163	2.5	58	6	104	40.0
Croplan CL 322	2764	7.1	31.9	59	13257	1.8	57	7	102	39.8
Interstate Hysun 530	2705	7.3	32.0	61	13257	3.3	58	7	102	40.8
Monsanto DKF 33-33NS	2694	6.4	31.9	57	14630	5.5	57	9	96	38.3
Pioneer XF3120	2680	5.5	30.7	57	13210	0.4	57	8	103	39.8
Croplan CL 385	2665	8.2	32.7	54	11695	3.4	61	7	110	40.5
Croplan 803	2614	5.7	32.5	59	14536	2.2	57	8	97	45.2
Croplan CL 345	2569	8.1	30.1	58	13494	0.0	57	8	96	40.2
Mycogen 270	2520	5.7	31.5	49	15199	1.5	57	6	101	41.0
Triumph TRX 2241CL	2496	6.0	31.2	52	14725	2.3	58	7	96	39.1
Monsanto DKF 31-01NS	1759	8.3	33.0	60	14867	8.8	58	7	96	40.1
Average	2994	7	32	58	13959	3	58	7	103	42
LSD _(0.30)	178									

¹Trial conducted on the Ryan Weaver farm; seeded 5/30 and harvested 10/17.²Days from planting.³Days from planting.

Seed Company Entrants in the 2002 Colorado Sunflower Performance Trials

Entrant	Brand/Hybrid	Address	Telephone
Croplan Genetics	Croplan	PO Box 1291, Minot, ND 58702	(701) 852-3556
Garst/Interstate Seed Co	Garst/Interstate	PO Box 338, West Fargo, ND 58078	(701) 282-7423
Kaystar Seed	Kaystar	PO Box 947, Huron, SD 57350	(605) 352-8791
Monsanto	DEKALB	800 N. Lindberg Blvd., St. Louis, MO 63167	(800) 833-5252
Mycogen Seeds	Mycogen	9330 Zionsville Rd., Indianapolis, IN 46268	(317) 337-4653
Pioneer Hi-Bred Int'l, Inc	Pioneer	390 Union Blvd., Suite 500A, Lakewood, CO 80228	(800) 258-5604
Proseed	Proseed	705 E. Brewster, Harvey, ND 58341	(701) 324-4177
Red River Commodities, Inc	Red River	1320 East College Drive, Colby, KS 67701	(785) 462-3911
SEEDS 2000	SEEDS 2000	PO Box 200, Breckenridge, MN 56520	(218) 643-2410
SIGCO Sun Products, Inc	SIGCO	PO Box 331, Breckenridge, MN 56520	(218) 643-8467
Triumph Seed Co, Inc	Triumph	PO Box 1050, Ralls, TX 79357	(800) 530-4789

Entry Forms for 2003 Trials

Entry forms for 2003 trials may be obtained from the Department of Soil and Crop Sciences, Colorado State University, Cynthia Johnson, C-03 Plant Science Building, Fort Collins, CO 80523-1170; Telephone (970) 491-1914; Fax (970) 491-2758; e-mail cjohnson@agsci.colostate.edu or web site <http://www.colostate.edu/Depts/SoilCrop/extension/CropVar/index.html>.

Additional copies of this report may be ordered from the Department of Soil and Crop Sciences, Colorado State University, Cynthia Johnson, C-03 Plant Science Building, Fort Collins, CO 80523-1170; Telephone (970) 491-1914; Fax (970) 491-2758; or e-mail cjohnson@agsci.colostate.edu.

Colorado State University does not discriminate on the basis of race, color, religion, national origin, sex, age, veteran status, or handicap. The University complies with the Civil Right Act of 1964, related Executive Orders 11246 and 11375, Title IX of the Education Amendments Act of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veteran's Readjustment Act of 1974, the Age Discrimination in Employment Act of 1967, as amended, and all civil rights laws of the State of Colorado. Accordingly, equal opportunity for employment and admission shall be extended to all persons and the University shall promote equal opportunity and treatment through a positive and continuing affirmative action program. The Office of Equal Opportunity is located in Room 21, Spruce Hall. In order to assist Colorado State University in meeting its affirmative action responsibilities, ethnic minorities, women, and other protected class members are encouraged to apply and to so identify themselves.