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Agricultural Experiment Station

Colorado State University Crops Testing

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

MAKING BETTER DECISIONS

2010 Colorado Sunflower Variety Performance Trials

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Department of Soil and Crop Sciences
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2010 Colorado Sunflower Hybrid Performance Trials

Introduction

CSU's Crops Testing personnel assist 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 plant breeding and biotechnology, acquisitions and mergers of seed companies, and rapid development of new hybrid lines means that unbiased crop performance information is increasingly important to Colorado sunflower producers.

Each year, Colorado sunflower producers purchase over $4 million of seed which means that good variety performance information is essential to making better sunflower variety decisions.

Colorado State University personnel evaluated commercial oil and confection sunflower hybrids under irrigation at two locations and in two dryland locations. The dryland trials at Akron were lost to irregular emergence and drought. Viable results are in the following tables which are intended to be stand-alone and self-explanatory. Personnel salaries and operational costs for conducting these trials come from Colorado State University, the Colorado Sunflower Administrative Committee, and entry fees from sunflower seed companies.

Four Colorado sunflower trial locations in 2010

2010 Irrigated Oil Sunflower Variety Performance Trial at Bethune

Source	Hybrid	Yield[a]	Moisture	Test Weight	Plant Height	Population	Oil Content
		lb/ac	percent	lb/bu	in	plants/ac	percent
Mycogen Seeds	8N433DM	3145	6.5	29.2	73	21,780	44.6
Syngenta	3845 HO	3114	5.7	30.6	66	19,457	45.3
Mycogen Seeds	8N453DM	2907	7.1	33.1	74	20,134	45.9
Mycogen Seeds	8N510	2852	6.1	30.4	70	20,985	41.4
Syngenta	3433 NS/DM	2731	5.8	32.4	71	19,482	44.6
Triumph Seed	TRX 8341	2660	9.2	30.6	75	19,747	43.4
Triumph Seed	s678	2653	10.3	32.7	63	21,133	44.8
Triumph Seed	TRXs10325	2647	7.8	32.0	60	21,683	37.4
Croplan Genetics	356A NS	2614	8.7	30.7	70	17,193	42.3
Mycogen Seeds	8H449DM	2582	7.8	33.7	75	19,207	45.1
Croplan Genetics	460 E NS	2542	7.9	29.2	75	19,966	42.5
Triumph Seed	s673	2523	6.6	29.2	57	18,769	43.1
Seeds 2000	X9464-CL	2515	6.9	28.0	78	20,752	38.9
Syngenta	3732 NS	2513	6.6	30.9	68	20,618	41.6
Mycogen Seeds	8N358CLDM	2464	6.1	31.3	72	18,005	43.7
Triumph Seed	s668	2425	7.3	31.2	60	20,812	44.8
Seeds 2000	Sierra	2387	13.2	26.2	74	19,557	38.2
Triumph Seed	657	2377	9.0	26.4	75	19,070	44.1
Advanta US Inc.	F91034NS,SU	2354	6.3	29.5	71	20,634	37.7
Seeds 2000	Firebird Express	2329	8.7	28.2	71	19,454	38.6
Seeds 2000	Blazer CL	2298	10.7	29.3	78	20,687	41.6
Triumph Seed	664	2242	9.4	29.9	81	16,863	44.0
Syngenta	3980 NS/CL	2207	9.2	28.3	75	21,393	38.6
Seeds 2000	X9866-CL DMR	2061	11.0	29.7	72	19,365	40.0
Croplan Genetics	559 CL DMR NS	2046	7.8	29.6	78	18,295	41.2
Triumph Seed	610CLD	2027	8.2	29.0	76	20,134	42.4
Croplan Genetics	555 CL DMR NS	2011	8.4	30.2	76	19,844	40.4
Advanta US Inc.	F89057NS,SU	1993	8.3	28.6	83	20,909	37.8
Syngenta	4651 NS/DM	1968	10.6	29.5	77	19,462	40.5
Average		**2455**	**8.2**	**30.0**	**72**	**19,841**	**41.9**
[b]$LSD_{0.30}$		252					
$LSD_{0.05}$		482					

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with three replications

Plot size: 5' x 30'

Site Information

Collaborator:	Shulte Bros.
Planting Date:	6/3/2010
Seeding Rate:	Overplanted and thinned to a target of 20,000 plants/acre
Harvest Date:	10/5/2010
Previous Crop:	Corn
Fertilizer:	N-P-K (100-30-0) lbs/ac
Herbicide:	Round-Up, Spartan, and Advance
Irrigation:	Center Pivot
Soil Type:	Kuma-Kieth Silt Loam

2010 Irrigated Confection Sunflower Variety Performance Trial at Bethune

Source	Hybrid	Yield[a]	Moisture	Test Weight	Plant Height	Population	Seed Size				
							Above 24/64	23/64 to 22/64	21/64 to 20/64	19/64 to 16/64	16/64 and below
		lb/ac	percent	lb/bu	in	plants/ac	percent				
Croplan Genetics	179	2618	12.9	20.5	74	12,111	6.4	16.6	37.0	38.6	1.4
Triumph Seed	TRX10454C	2545	11.7	21.2	73	14,283	16.2	35.6	34.2	12.2	1.8
Seeds 2000	X9151	2480	10.5	23.0	70	13,906	8.2	25.4	37.6	26.4	2.4
Red River Commodities	2215	2433	10.4	20.2	77	13,721	12.4	39.8	34.2	11.8	1.8
Triumph Seed	768C	2261	17.5	19.7	77	13,595	6.2	22.0	41.8	27.8	2.2
Red River Commodities	8015	2219	14.5	17.5	74	14,774	14.0	38.8	32.8	12.2	2.2
Dahlgren & Company	9579	2183	12.6	18.2	73	15,972	9.8	28.0	42.0	18.4	1.8
Mycogen Seeds	8C451	2172	12.0	19.4	74	14,934	22.0	38.6	24.8	13.2	1.4
Red River Commodities	2217	2135	10.8	20.0	76	15,758	21.4	36.0	29.6	11.4	1.6
Dahlgren & Company	9530	2103	12.2	19.8	78	15,955	5.4	38.4	39.4	15.4	1.4
Seeds 2000	Jaguar	2071	12.6	20.4	70	14,888	12.2	36.0	34.8	15.0	2.0
Red River Commodities	2215 CL	2049	12.8	19.8	81	15,198	15.6	32.6	34.0	15.8	2.0
Dahlgren & Company	9592	2016	9.6	19.9	76	16,528	16.0	35.4	34.0	12.6	2.0
Seeds 2000	Panther II	1977	14.5	20.5	70	14,070	11.4	29.4	39.0	18.4	1.8
Triumph Seed	747C	1964	20.1	19.9	73	14,255	4.6	16.6	37.2	39.0	2.6
Dahlgren & Company	95EXCL-9530CL	1927	11.0	21.1	74	13,918	9.6	35.4	37.8	15.8	1.4
Triumph Seed	770CL	1835	16.4	18.8	84	11,077	23.4	40.6	20.4	10.6	5.0
Triumph Seed	777C	1675	15.9	18.3	83	13,068	21.8	35.4	26.8	14.2	1.8
Average		**2148**	**13.2**	**19.9**	**75**	**14,334**	**13.1**	**32.3**	**34.3**	**18.3**	**2.0**
[b]$LSD_{0.30}$		280									
$LSD_{0.05}$		540									

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with three replications

Plot size: 5' x 30'

Site Information

Collaborator:	Shulte Bros.
Planting Date:	6/3/2010
Seeding Rate:	Overplanted and thinned to a target of 15,000 plants/acre
Harvest Date:	10/6/2010
Previous Crop:	Corn
Fertilizer:	N-P-K (100-30-0) lbs/ac
Herbicide:	Round-Up, Spartan, and Advance
Irrigation:	Center Pivot
Soil Type:	Kuma-Kieth Silt Loam

2010 Irrigated Oil Sunflower Performance Trial at Burlington

Source	Hybrid	Yield[a]	Moisture	Test Weight	Population	Oil Content
		lb/ac	percent	lb/bu	plants/ac	percent
Seeds 2000	Blazer CL	3519	9.6	30.2	19,650	39.1
Seeds 2000	Firebird Express	3496	6.1	30.2	19,166	39.3
Mycogen Seeds	8N453DM	3404	6.6	33.5	19,457	43.6
Triumph Seed	s673	3362	6.4	30.5	18,586	42.1
Triumph Seed	TRX 8341	3317	9.2	30.2	19,650	42.1
Syngenta	4651 NS/DM	3243	11.9	29.5	19,263	39.8
Mycogen Seeds	8N433DM	3187	6.6	30.5	19,554	43.8
Syngenta	3980 NS/CL	3147	7.4	29.4	19,360	38.4
Triumph Seed	s668	3136	7.9	31.5	20,038	43.0
Mycogen Seeds	8N358CLDM	3036	5.5	31.3	20,071	41.1
Mycogen Seeds	8N510	2998	5.9	31.5	19,941	40.8
Seeds 2000	Sierra	2987	9.8	27.8	19,181	37.4
Triumph Seed	s678	2975	8.7	32.5	19,081	41.8
Triumph Seed	s878H	2955	9.0	31.3	17,134	40.4
Croplan Genetics	460 E NS	2886	8.2	30.9	19,988	43.2
Triumph Seed	664	2845	11.1	31.4	16,448	43.3
Seeds 2000	X9866-CL DMR	2810	10.3	28.5	20,094	35.1
Syngenta	3732 NS	2773	5.7	30.3	15,854	41.4
Croplan Genetics	559 CL DMR NS	2746	5.6	31.1	19,951	39.6
Croplan Genetics	356A NS	2717	6.4	30.8	18,779	41.1
Seeds 2000	X9464-CL	2623	8.7	29.8	19,278	36.7
Syngenta	3845 HO	2593	6.9	31.1	15,664	43.2
Mycogen Seeds	8H449DM	2556	6.7	32.8	16,266	44.5
Triumph Seed	657	2537	9.3	27.9	14,506	42.3
Croplan Genetics	555 CL DMR NS	2379	6.5	30.0	15,692	38.4
Syngenta	3433 NS/DM	2121	6.9	32.2	15,605	42.4
Average		**2936**	**7.8**	**30.6**	**18,394**	**40.9**
[b]$LSD_{0.30}$		354				
$LSD_{0.05}$		680				

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with three replications

Plot size: 5' x 30'

Site Information

Collaborator:	Galen Travis
Planting Date:	6/9/2010
Seeding Rate:	Overplanted and thinned to a target of 18,000 plants/acre
Harvest Date:	10/19/2010
Previous Crop:	Corn
Fertilizer:	50 lbs/ac N
Herbicide:	Spartan
Insecticide:	Warrior
Irrigation:	Sprinkler
Soil Type:	Kuma-Kieth Silt Loam

2010 Irrigated Confection Sunflower Performance Trial at Burlington

Source	Hybrid	Yield[a]	Moisture	Test Weight	Population	Seed Size: Above 24/64	23/64 to 22/64	21/64 to 20/64	19/64 to 16/64	16/64 and below
		lb/ac	percent	lb/bu	plants/ac	percent				
Red River Commodities	2215 CL	3142	9.4	19.0	17,280	12.8	35.2	36.4	13.8	1.8
Triumph Seed	770CL	2973	16.1	18.0	16,555	44.4	33.2	12.4	7.2	2.8
Mycogen Seeds	8C451	2965	9.0	19.2	16,636	11.4	36.6	34.8	13.2	4.0
Red River Commodities	8015	2858	11.0	18.5	16,548	16.4	28.2	35.2	17.8	2.4
Seeds 2000	Jaguar	2647	8.9	21.1	16,829	6.4	19.6	35.6	35.4	3.0
Croplan Genetics	179	2601	10.1	20.4	16,480	4.2	12.8	24.8	54.2	4.0
Red River Commodities	2215	2367	11.3	20.4	16,737	22.2	37.4	25.8	13.2	1.4
Triumph Seed	747C	2321	11.8	20.0	16,950	5.2	12.4	35.2	45.0	2.2
Triumph Seed	777C	2189	12.7	18.9	15,935	23.8	33.2	28.2	13.2	1.6
Red River Commodities	2217	2187	8.7	19.2	15,947	22.8	36.2	24.2	15.0	1.8
Triumph Seed	768C	2171	16.3	18.3	16,841	9.6	18.2	34.6	34.8	2.8
Triumph Seed	TRX10454C	1984	9.6	20.4	16,546	11.0	36.4	36.8	15.0	0.8
Seeds 2000	Panther II	1979	11.3	19.8	12,537	27.2	25.6	24.2	20.8	2.2
Average		**2491**	**11.3**	**19.5**	**16,294**	**16.7**	**28.1**	**29.9**	**23.0**	**2.4**
[b]$LSD_{0.30}$		287								
$LSD_{0.05}$		558								

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with three replications

Plot size: 5' x 30'

Site Information

Collaborator:	Galen Travis
Planting Date:	6/9/2010
Seeding Rate:	Overplanted and thinned to a target of 17,000 plants/acre
Harvest Date:	10/19/2010
Previous Crop:	Corn
Fertilizer:	50 lbs/ac N
Herbicide:	Spartan
Insecticide:	Warrior
Irrigation:	Sprinkler
Soil Type:	Kuma-Kieth Silt Loam

2010 Irrigated Confection Sunflower Performance Trial at Brandon

Source	Hybrid	Yield[a]	Moisture	Test Weight	Plant Height	Population	Seed Size: Above 24/64	23/64 to 22/64	21/64 to 20/64	19/64 to 16/64	16/64 and below
		lb/ac	percent	lb/bu	in	plants/ac	percent				
Triumph Seed	777C	1707	11.7	17.1	65	10,094	24.2	43.6	20.6	9.6	2.0
Mycogen Seeds	8C451	1646	9.3	18.0	63	10,415	21.8	35.6	26.8	13.6	2.2
Seeds 2000	Panther II	1418	9.8	17.7	55	9,896	27.0	35.2	23.8	11.6	2.4
Average		**1590**	**10.3**	**17.6**	**61**	**10,135**	**24.3**	**38.1**	**23.7**	**11.6**	**2.2**
[b]$LSD_{0.30}$		141									
$LSD_{0.05}$		303									

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with four replications

Plot size: 5' x 30'

Site Information

Collaborator:	Burl Scherler
Planting Date:	6/8/2010
Seeding Rate:	Overplanted and thinned to a target of 10,000 plants/acre
Harvest Date:	10/4/2010
Previous Crop:	Wheat
Fertilizer:	N-P-K-S (90-11-0-5) lbs/ac
Herbicide:	Spartan Charge and 2,4-D preplant. Round-Up & 2,4-D in spring and twice more in the fall.
Insecticide:	Mustang Max 4 oz. plus Methyl Parathion at full bloom
Soil Type:	Fort Collins Sandy Loam

2010 Irrigated Oil Sunflower Performance Trial at Brandon

Source	Hybrid	Yield[a]	Moisture	Test Weight	Plant Height	Population	Oil Content
		lb/ac	percent	lb/bu	in	plants/ac	percent
Mycogen Seeds	8N510	2132	7.9	27.2	50	12,850	40.6
Seeds 2000	Blazer CL	2106	9.3	26.9	54	12,269	39.1
Seeds 2000	X9866-CL DMR	2038	9.9	26.6	58	13,391	37.3
Triumph Seed	s668	2026	7.7	27.5	47	13,939	40.8
Seeds 2000	Firebird Express	1999	8.2	25.1	54	12,575	38.1
Syngenta	4651 NS/DM	1982	11.5	26.0	61	12,052	40.2
Seeds 2000	Sierra	1965	9.2	25.2	56	12,165	37.6
Mycogen Seeds	8H449DM	1950	8.8	29.1	55	11,689	40.5
Triumph Seed	859HCL	1941	9.2	26.6	58	12,632	38.2
Triumph Seed	s673	1925	8.2	27.2	46	13,867	41.5
Mycogen Seeds	8N453DM	1907	8.3	29.6	49	11,761	40.2
Syngenta	3980 NS/CL	1888	10.0	26.3	57	11,600	36.9
Syngenta	3845 HO	1865	7.5	27.5	52	11,561	43.4
Triumph Seed	s878H	1856	9.7	27.9	52	13,504	40.7
Mycogen Seeds	8N358CLDM	1841	7.6	28.2	50	11,883	40.9
Triumph Seed	664	1829	8.4	27.1	59	11,150	38.8
Triumph Seed	s678	1826	9.1	28.3	53	14,157	41.7
Mycogen Seeds	8N433DM	1803	8.4	26.1	51	12,516	39.7
Syngenta	3732 NS	1773	8.1	26.9	49	11,709	39.1
Syngenta	3433 NS/DM	1768	8.6	28.6	53	11,639	40.1
Triumph Seed	s870HCL	1706	7.6	27.5	44	12,923	41.2
Seeds 2000	X9464-CL	1659	8.0	25.7	58	12,538	36.2
Triumph Seed	845H	1642	9.5	25.1	61	11,883	42.1
Triumph Seed	s655	1609	8.8	27.0	36	13,116	39.1
Triumph Seed	TRX9331HCL	1345	8.4	26.0	52	13,721	39.7
Average		**1855**	**8.7**	**27.0**	**52**	**12,524**	**39.8**
[b]$LSD_{0.30}$		126					
$LSD_{0.05}$		241					

[a]Yields corrected to 10% moisture

[b]$LSD_{0.30}$ is most useful for producers using these results to select a variety but some collaborators find $LSD_{0.05}$ useful

Experimental Design: randomized complete block design with four replications

Plot size: 5' x 30'

Site Information

Collaborator:	Burl Scherler
Planting Date:	6/8/2010
Seeding Rate:	Overplanted and thinned to a target of 14,000 plants/acre
Harvest Date:	10/4/2010
Previous Crop:	Wheat
Fertilizer:	N-P-K-S (90-11-0-5) lbs/ac
Herbicide:	Spartan Charge and 2,4-D preplant. Round-Up & 2,4-D in spring and twice more in the fall.
Insecticide:	Mustang Max 4 oz. plus Methyl Parathion at full bloom
Soil Type:	Fort Collins Sandy Loam

2010 All U.S. Sunflower Production- USDA Report

USDA Annual Crop Production Report, October 8, 2010

STATE	Harvested Acres 2009	Harvested Acres 2010	% of 2009	Yield/Acre 2009	Yield/Acre 2010	% of 2009	Production 2009	Production 2010	% of 2009
				(Lbs/Acre)			(Total Lbs)		
California	41,500	36,000	87%	1,229	1,233	100%	51,000,000	44,400,000	87%
Colorado	87,000	120,000	138%	1,403	1,093	78%	122,060,000	131,200,000	107%
Kansas	155,000	126,000	81%	1,582	1,252	79%	245,200,000	157,700,000	64%
Minnesota	64,000	84,000	131%	1,353	1,489	110%	86,600,000	125,100,000	144%
Nebraska	47,000	59,000	126%	1,334	1,519	114%	62,700,000	89,600,000	143%
N. Dakota	868,000	862,000	99%	1,518	1,638	108%	1,317,200,000	1,412,300,000	107%
Oklahoma	15,000	11,800	79%	1,167	1,456	125%	17,500,000	17,180,000	98%
S. Dakota	558,000	495,000	89%	1,800	1,652	92%	1,004,400,000	817,750,000	81%
Texas	118,000	79,000	67%	1,100	1,400	127%	129,800,000	110,600,000	85%
US Total	1,953,500	1,872,800	96%	1,554	1,552	100%	3,036,460,000	2,905,830,000	96%

*** Estimates for acres, yield and production include a combination of oil and non-oil sunflowers -refer to USDA's June report for a breakout between oil and non-oil.**

STATE	Oil Sunflower Acres Harvested 2009	Oil Sunflower Acres Harvested 2010	% of 2009	Non-Oil Sunflower Acres Harvested 2009	Non-Oil Sunflower Acres Harvested 2010	% of 2009	All Types Acres Harvested 2009	All Types Acres Harvested 2010	% of 2009
California	33,500	28,000	84%	8,000	8,000	100%	41,500	36,000	87%
Colorado	68,000	88,000	129%	19,000	32,000	168%	87,000	120,000	138%
Kansas	140,000	100,000	71%	15,000	26,000	173%	155,000	126,000	81%
Minnesota	44,000	53,000	120%	20,000	31,000	155%	64,000	84,000	131%
Nebraska	26,000	24,000	92%	21,000	35,000	167%	47,000	59,000	126%
N. Dakota	760,000	685,000	90%	108,000	177,000	164%	868,000	862,000	99%
Oklahoma	12,500	10,500	84%	2,500	1,300	52%	15,000	11,800	79%
S. Dakota	510,000	400,000	78%	48,000	95,000	198%	558,000	495,000	89%
Texas	59,000	26,000	44%	59,000	53,000	90%	118,000	79,000	67%
US Total	1,653,000	1,414,500	86%	300,500	458,300	153%	1,953,500	1,872,800	96%

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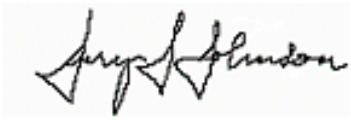
Crops Testing



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