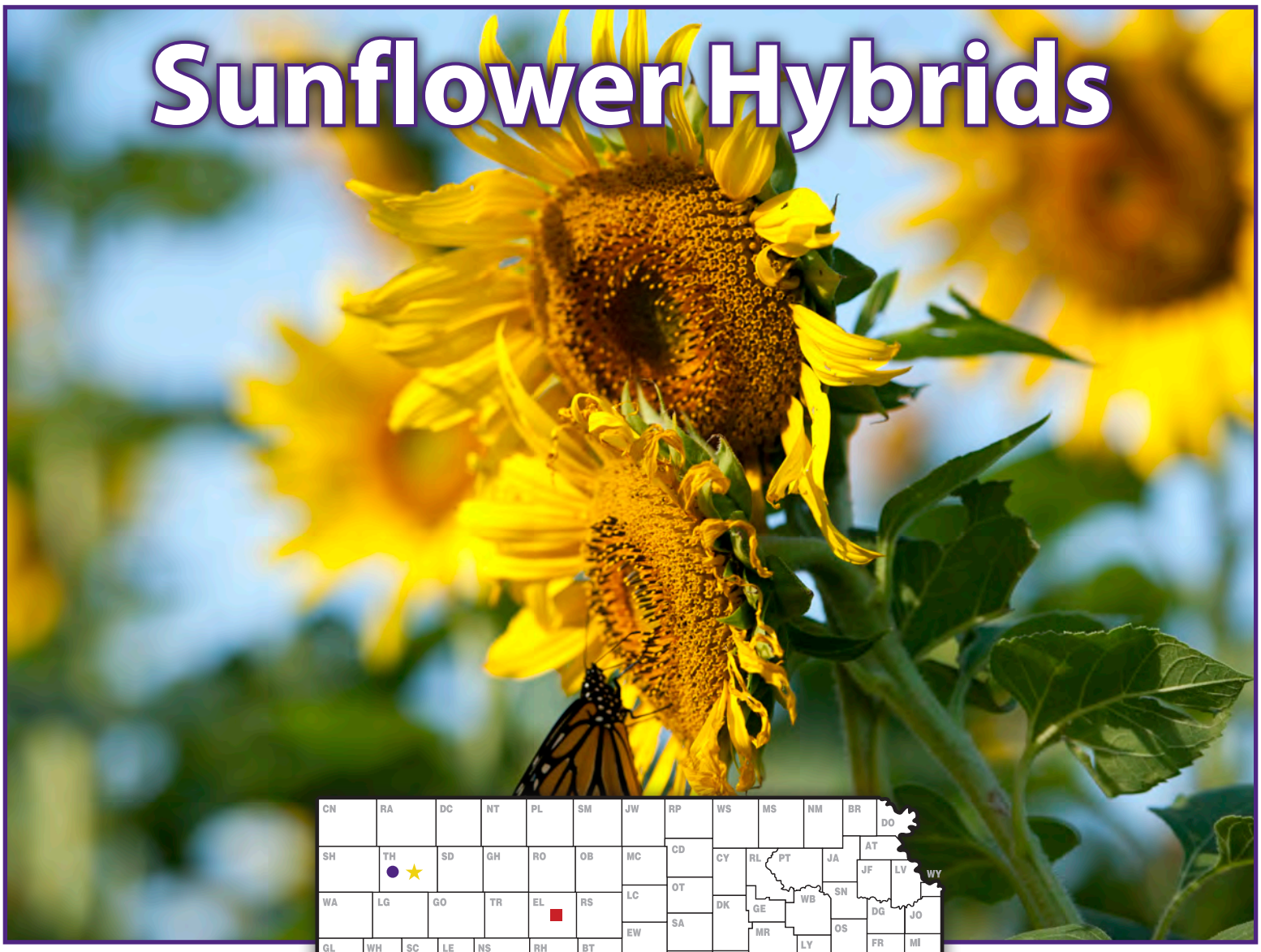
2017 Kansas Performance Tests with

Sunflower Hybrids



Report of Progress 1140

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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Contribution No. 18-278-S from the Kansas Agricultural Experiment Station.

INTRODUCTION

Objectives and Procedures

Sunflower performance tests were conducted in 2017 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. As a result, not all hybrids grown in the state were included in the tests, and hybrids were not grown uniformly at all locations.

Test locations in 2017 were Thomas County—irrigated and fallow; Ellis County—dryland; and Labette County—dryland. Oilseed entries were grown at all locations. Confectionary entries were evaluated in Thomas County—irrigated and fallow. Due to the limited number of confectionary entries, those were evaluated adjacent to the oilseed entries. Hybrids were planted in four-row, replicated plots at all locations. To ensure uniform and adequate stands, all tests except those in Thomas County were planted at a high seeding rate and were hand thinned after emergence to desired stands. Tests in Thomas County were planted to stand with a modified Monosem Vacuum Planter.

Environmental factors affecting test results and cultural practices are presented for each individual test site. Test results for 2017 and period-of-years average data are included in Tables 1 through 6. Entrants and entries in 2017 tests are listed in Table 7.

Data Interpretation

Yields are reported as pounds of seed per acre adjusted to 10% moisture content.

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

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

Oil percentage was obtained from samples submitted under code number to the Kansas Wheat Quality Laboratory using Perten DA 7250 NIR analysis and is reported on a grain moisture basis. Samples for all tests were derived by compositing replications by entry for each location and subsampling.

Oil yields are reported as net pounds of oil per acre.

Seed-size percentage analysis for confectionary-type entries was performed at the Kansas Wheat Quality Lab on cleaned samples submitted from each of the tests. Separation by seed size was made by industry standards of large, medium and small.

Statistical analysis: Conducting perfect tests is virtually impossible because soil fertility, moisture, and other environmental factors vary. Therefore, small differences in results might have no real meaning. To help interpret data, we applied a statistical technique, analysis of variance, whenever 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, 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. Trials with a CV ranging from 10% to 15% are usually acceptable for performance comparisons. Trials with a CV greater than 15% provide only a rough guide to hybrid performance.

ACKNOWLEDGEMENTS

Cooperation of Rob Aiken, Raenette Martin, Ram Perumal, Troy Ostmeyer, Gretchen Sassenrath, and Lonnie Mengarelli for field operations is sincerely appreciated. Vicki Brown, secretary, assisted in soliciting entries, and temporary worker Danielle Foster helped with seed counting, plot thinning, and maintenance. Mary Knapp at the Weather Data Library provided climatological data.

NORTHWEST KANSAS FALLOW OILSEED SUNFLOWER TEST

Colby, Thomas County
K-State Northwest Research Center
Planted: 6/15/2017
Harvested: 11/12/2017
90-0-0 lb/a N, P, K
Keith silt loam
Previous crop: fallow
Cooperators: Rob Aiken and Raenette Martin

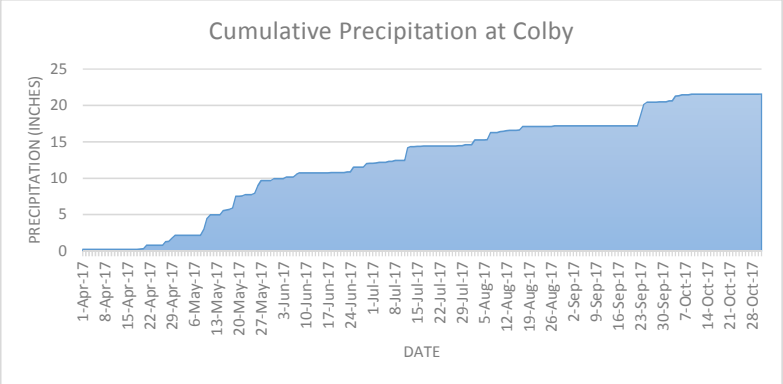

Table 1. Colby Fallow Oilseed Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
AGVENTURE	AF3H681ES	2561	109	44	1124	57	67	1	29	18
AGVENTURE	AF3N692ES	1819	78	42	779	57	73	1	25	16
AGVENTURE	AF3N94CD	1626	69	43	623	57	60	1	31	13
AGVENTURE	AF4H95CD	2980	128	47	1332	58	64	1	28	11
AGVENTURE	AF4N08CD	2954	126	44	1308	57	59	1	29	13
CROPLAN	3732	2468	105	48	1176	57	55	0	28	12
CROPLAN	3845 HO	2431	104	49	1136	57	55	0	28	18
CROPLAN	432 E	2470	106	39	967	56	60	0	27	17
CROPLAN	450 CL HO	1797	77	44	791	57	62	0	28	16
CROPLAN	455 CL HO	2659	114	41	1019	56	61	1	28	14
CROPLAN	458 E HO	2797	120	43	1196	58	68	1	24	14
CROPLAN	545 CL	2097	90	47	978	57	58	1	28	11
CROPLAN	549 CL HO	2912	125	40	1176	57	67	0	28	15
CROPLAN	568 CL HO	2245	96	50	1122	57	59	0	28	11
CROPLAN	7919 CL HO	3116	133	47	1480	58	69	3	26	15
NUSEED	CAMARO II	2364	101	45	1066	57	63	2	30	15
NUSEED	HORNET	2525	108	44	1105	58	57	1	27	12
NUSEED	N4HM354	1938	83	42	813	57	53	0	28	14
NUSEED	N4HM521	2439	104	50	1073	58	61	1	26	16
	Average	2328	100	44	1020	57	61	1	27	15
	CV (%)	11	11	--	--	1	8	--	6	--
	LSD (0.05)	389	16	--	--	1	7	1	2	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

2-Year Averages (2016 and 2017)

AGVENTURE	AF3H681ES	2192	115	46	991	57	59	1	24	14
AGVENTURE	AF3N94CD	1440	76	45	600	57	52	1	25	11
AGVENTURE	AF4H95CD	2158	108	46	967	58	54	1	24	9
CROPLAN	3732	2065	108	49	1003	57	49	0	25	11
CROPLAN	432 E	2058	108	43	871	56	52	0	24	16
CROPLAN	455 CL HO	2036	104	43	828	56	54	1	25	13
CROPLAN	458 E HO	2075	105	45	916	58	56	1	22	12
CROPLAN	545 CL	1889	101	47	876	57	53	1	24	10
CROPLAN	549 CL HO	2107	106	44	901	57	61	0	24	11
CROPLAN	7919 CL HO	2299	116	47	1089	58	56	3	24	13
NUSEED	CAMARO II	1856	95	45	830	57	53	2	25	12
NUSEED	HORNET	2019	104	46	908	58	52	1	23	12
NUSEED	N4HM354	1817	98	46	822	57	48	0	24	12
	Averages	2000	103	46	892	57	54	1	24	12

Table 1 continued. Colby Fallow Oilseed Sunflower Performance Test, 2017

3-Year Averages (2015- 2017)

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
CROPLAN	432 E	1751	105	40	705	56	49	1	25	14
CROPLAN	458 E HO	1614	90	40	682	58	53	5	23	11
CROPLAN	545 CL	1647	101	42	710	59	51	3	24	10
CROPLAN	549 CL HO	1771	103	40	714	58	57	2	24	10
	Averages	1696	100	41	703	58	53	3	24	11

NORTHWEST KANSAS IRRIGATED OILSEED SUNFLOWER TEST

Colby, Thomas County
K-State Northwest Research Center
Planted: 6/15/2017
Harvested: 11/12/2017
140-25-0 lb/a N, P, K
Keith silt loam
Previous crop: wheat
Cooperators: Rob Aiken and Raenette Martin

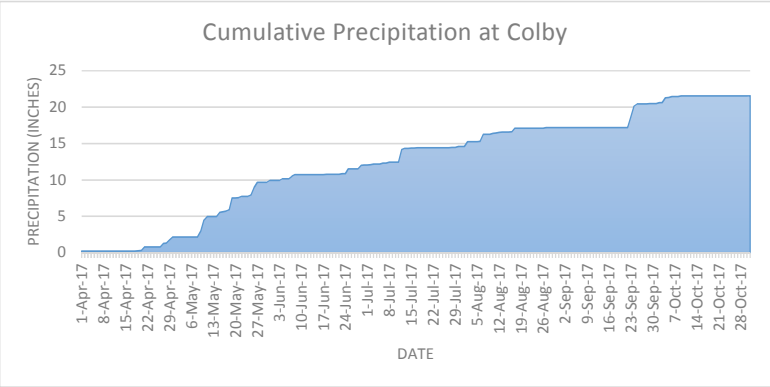

Table 2. Colby Irrigated Oilseed Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
AGVENTURE	AF3H681ES	2324	96	45	1025	54	72	3	32	14
AGVENTURE	AF3N692ES	2661	110	47	1311	54	73	5	30	14
AGVENTURE	AF3N94CD	2398	100	48	1136	54	65	7	32	11
AGVENTURE	AF4H95CD	2479	103	50	1120	55	70	6	29	10
AGVENTURE	AF4N08CD	2834	118	47	1002	54	64	4	31	10
CROPLAN	3732	1951	81	52	1014	56	53	4	29	12
CROPLAN	3845 HO	2704	112	51	1369	55	58	2	30	17
CROPLAN	432 E	2658	110	47	1012	52	65	3	29	17
CROPLAN	450 CL HO	2543	106	48	1185	55	68	6	29	13
CROPLAN	455 CL HO	2541	106	50	1076	53	68	7	30	11
CROPLAN	458 E HO	2696	112	52	1074	54	77	3	29	10
CROPLAN	545 CL	2659	110	49	1379	55	63	2	31	9
CROPLAN	549 CL HO	2952	123	49	1411	53	73	5	31	11
CROPLAN	568 CL HO	2995	124	53	1464	55	69	8	29	10
CROPLAN	7919 CL HO	2669	111	51	1348	55	65	5	27	11
DYNA-GRO	XH71H11CL	2076	86	49	1025	52	57	6	31	11
DYNA-GRO	XH71H27CL	2737	114	50	1441	54	68	10	30	11
DYNA-GRO	XH71N33CL	2379	99	51	1176	53	64	6	31	11
DYNA-GRO	XH71N44CL	2612	108	47	1255	55	65	3	32	11
DYNA-GRO	XH72H38CL	1917	79	48	950	54	64	7	29	14
DYNA-GRO	XH72H47CL	1762	73	54	974	54	67	7	28	9
DYNA-GRO	XH72H61CL	1850	77	51	953	52	66	8	29	10
DYNA-GRO	XH72N54CP	2396	99	51	1283	55	69	4	32	8
NUSEED	CAMARO II	2473	103	49	1209	54	66	7	31	11
NUSEED	HORNET	2510	104	51	1223	55	70	8	29	9
NUSEED	N4HM354	2539	105	52	1299	53	65	6	31	10
NUSEED	N4HM521	2093	87	53	924	55	71	7	27	10
	Average	2397	100	50	1171	54	65	5	29	11
	CV (%)	11	11	--	--	1	6	--	3	--
	LSD (0.05)	397	16	--	--	1	5	3	1	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

2-Year Averages (2016 and 2017)

AGVENTURE	AF3H681ES	2315	94	47	1065	54	71	8	31	14
AGVENTURE	AF3N94CD	2306	95	49	1123	54	69	7	31	9
AGVENTURE	AF4H95CD	2325	95	51	1111	55	70	10	29	9
CROPLAN	3732	2282	93	52	1186	56	59	9	29	13
CROPLAN	432 E	2447	100	48	1056	52	68	6	29	15
CROPLAN	455 CL HO	2629	107	49	1191	53	69	11	28	13
CROPLAN	458 E HO	2630	107	51	1173	54	76	8	28	12
CROPLAN	545 CL	2641	108	49	1331	55	67	6	29	10
CROPLAN	549 CL HO	2762	113	50	1343	53	76	6	30	11
CROPLAN	7919 CL HO	2638	107	52	1351	55	67	9	27	11

Table 2 continued. Colby Irrigated Oilseed Sunflower Performance Test, 2017

2-Year Averages (2016 and 2017)

NUSEED	CAMARO II	2524	103	48	1213	54	66	4	31	13
NUSEED	HORNET	2639	108	52	1330	55	71	9	29	9
NUSEED	N4HM354	2618	106	52	1354	53	64	5	30	11
	Averages	2520	103	50	1217	54	69	8	29	12

3-Year Averages (2015- 2017)

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
CROPLAN	3732	2401	99	48	1151	56	57	8	28	13
CROPLAN	458 E HO	2400	94	47	1041	56	72	6	28	12
CROPLAN	545 CL	2814	116	46	1307	58	65	3	28	10
CROPLAN	549 CL HO	2830	117	46	1281	55	73	5	29	11
NUSEED	CAMARO II	2514	104	45	1141	56	64	3	30	12
NUSEED	HORNET	2647	109	48	1251	58	68	8	29	9
	Averages	2601	107	47	1195	57	67	6	29	11

SOUTHEAST KANSAS DRYLAND OILSEED SUNFLOWER TEST

Parsons, Labette County
K-State Southeast Research Center
Planted: 7/26/17
Harvested: 12/1/2017
80-45-60 lb/a N, P, K
Parsons silt loam
Herbicide: 1 qt Gramoxone, 1 pt Dual Mag, 6 oz Spartan
Previous crop: soybean
Cooperators: Gretchen Sassenrath and
Lonnie Mengarelli

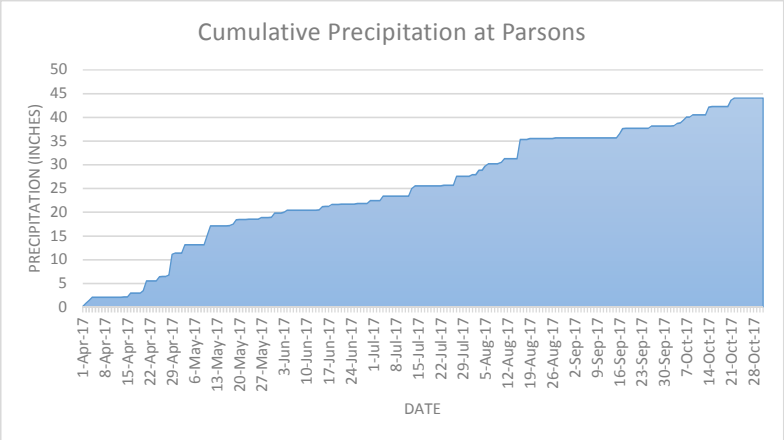

Table 3. Parsons Dryland Oilseed Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
CROPLAN	3732	640	88	--	--	42	46	4	25	--
CROPLAN	3845 HO	635	88	--	--	40	46	2	27	--
CROPLAN	432 E	681	94	--	--	45	53	5	27	--
CROPLAN	450 CL HO	947	131	--	--	44	52	0	28	--
CROPLAN	455 CL HO	782	108	--	--	44	54	2	27	--
CROPLAN	458 E HO	785	108	--	--	46	57	3	26	--
CROPLAN	545 CL	777	107	--	--	45	52	2	28	--
CROPLAN	549 CL HO	907	125	--	--	42	62	4	28	--
CROPLAN	568 CL HO	703	97	--	--	45	45	4	28	--
CROPLAN	7919 CL HO	553	76	--	--	46	38	2	25	--
NUSEED	CAMARO II	695	96	--	--	44	57	5	27	--
NUSEED	HORNET	632	87	--	--	48	60	12	27	--
NUSEED	N4HM354	736	102	--	--	45	53	0	28	--
NUSEED	N4HM521	630	87	--	--	46	43	7	27	--
	Average	722	100	--	--	44	51	4	27	--
	CV (%)	11	11	--	--	1	7	--	6	--
	LSD (0.05)	120	16	--	--	0	5	9	2	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

2-Year Averages (2016 and 2017)

CROPLAN	3732	673	88	--	--	45	47	11	26	--
CROPLAN	432 E	954	123	--	--	45	57	5	27	--
CROPLAN	455 CL HO	744	98	--	--	45	54	9	28	--
CROPLAN	458 E HO	752	98	--	--	49	57	6	26	--
CROPLAN	545 CL	961	124	--	--	48	56	6	28	--
CROPLAN	549 CL HO	854	112	--	--	45	63	17	28	--
CROPLAN	7919 CL HO	488	64	--	--	49	45	12	27	--
	Averages	775	101			47	54	9	27	

WESTERN KANSAS DRYLAND OILSEED SUNFLOWER TEST

Hays, Ellis County
K-State Western Kansas Agricultural Research Center
Planted: 6/20/17
Harvested: 10/19/2017
80-0-0 lb/a N, P, K
Harney silt loam
Previous crop: wheat
Cooperators: Ram Perumal and Troy Ostmeyer

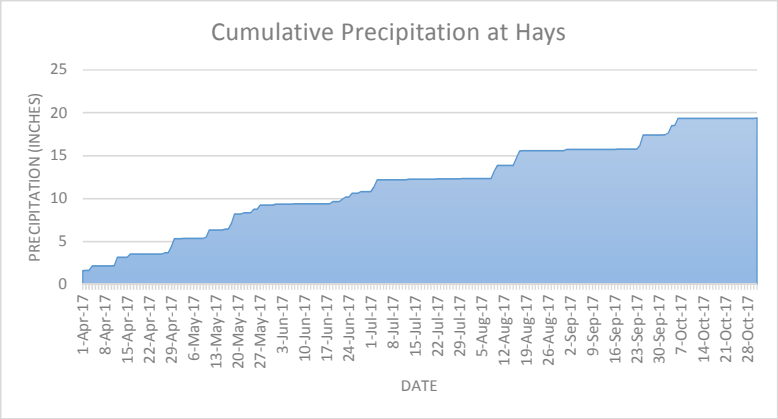

Table 4. Hays Dryland Oilseed Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
CROPLAN	3732	622	54	--	--	57	--	--	30	--
CROPLAN	3845 HO	728	63	--	--	55	--	--	28	--
CROPLAN	432 E	1453	127	--	--	56	--	--	26	--
CROPLAN	450 CL HO	1301	114	--	--	59	--	--	27	--
CROPLAN	455 CL HO	1049	92	--	--	57	--	--	24	--
CROPLAN	458 E HO	771	67	--	--	62	--	--	26	--
CROPLAN	545 CL	1686	148	--	--	59	--	--	25	--
CROPLAN	549 CL HO	1186	104	--	--	58	--	--	27	--
CROPLAN	568 CL HO	1397	122	--	--	60	--	--	26	--
CROPLAN	7919 CL HO	1782	156	--	--	59	--	--	24	--
DYNA-GRO	XH71H11CL	1095	96	--	--	56	--	--	24	--
DYNA-GRO	XH71H27CL	1215	106	--	--	60	--	--	25	--
DYNA-GRO	XH71N33CL	787	69	--	--	57	--	--	23	--
DYNA-GRO	XH71N44CL	1384	121	--	--	59	--	--	28	--
DYNA-GRO	XH72H47CL	219	19	--	--	60	--	--	18	--
DYNA-GRO	XH72H61CL	751	66	--	--	56	--	--	29	--
DYNA-GRO	XH72N54CP	1653	145	--	--	61	--	--	23	--
NUSEED	CAMARO II	1001	87	--	--	58	--	--	29	--
NUSEED	HORNET	1377	121	--	--	59	--	--	25	--
NUSEED	N4HM354	957	84	--	--	58	--	--	26	--
NUSEED	N4HM521	1477	129	--	--	59	--	--	26	--
	Average	1138	100	--	--	58	--	--	26	--
	CV (%)	17	17	--	--	2	--	--	13	--
	LSD (0.05)	279	24	--	--	1	--	--	4	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

NORTHWEST KANSAS CONFECTIONARY SUNFLOWER TESTS

Colby, Thomas County
K-State Northwest Research Center
Planted: 6/15/2017
Harvested: 11/12/2017
90-0-0 lb/a N, P, K
Keith silt loam
Previous crop: fallow
Cooperators: Raenette Martin and Rob Aiken

Table 5. Colby Fallow Confectionary Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing Large (%)	Medium (%)	Small (%)
NUSEED	4334	865	37	66	19	18	58	--	--	--
NUSEED	5009	1828	78	54	21	25	57	--	--	--
	Average	2328	100	61	27	22	58	--	--	--
	CV (%)	11	11	8	6	--	1	--	--	--
	LSD (0.05)	389	16	7	2	--	1	--	--	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

2-Year Averages (2017 and 2016)

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing Large (%)	Medium (%)	Small (%)
NUSEED	4334	1040	65	55	16	22	58	--	--	--

Colby, Thomas County
Planted: 6/15/2017
Harvested: 11/12/2017
140-25-0 lb/a N, P, K
Keith silt loam
Previous crop: wheat
Irrigation: 10.56 inches

Table 6. Colby Irrigated Confectionary Sunflower Performance Test, 2017

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing Large (%)	Medium (%)	Small (%)
NUSEED	4334	1483	61	60	20	27	55	62	25	2
NUSEED	5009	1627	67	46	19	31	55	12	76	2
	Average	2397	100	65	29	29	54	37	51	2
	CV (%)	11	11	6	3	--	1	--	--	--
	LSD (0.05)	397	16	5	1	--	1	--	--	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

2-Year Averages (2017 and 2016)

Brand	Hybrid	Yield (lb/a)	Yield as % of test average	Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing Large (%)	Medium (%)	Small (%)
NUSEED	4334	1735	79	52	21	33	55	42	51	3

Table 7. Entrants and Entries in the 2017 Sunflower Performance Tests

AgVenture-Pinnacle
P.O. Box 70
Minden, NE 68959
308-832-1050

- AF3H681ES
- AF3N692ES
- AF3N94CD
- AF4H95CD
- AF4N08CD

Dyna-Gro
1111 U.S. HWY 62
Ralls, TX 79357
806-253-2584

- XH71H11CL
- XH71H27CL
- XH71N33CL
- XH71N44CL
- XH72H38CL
- XH72H47CL
- XH72H61CL
- XH72N54CP

Croplan Genetics
525 55th Street SE
Minot, ND 58701
701-852-3556

- 3732
- 3845 HO
- 432 E
- 450 CL HO
- 455 CL HO
- 458 E HO
- 545 CL
- 549 CL HO
- 568 CL HO
- 7919 CL HO

Nuseeds America Inc
11901 S. Austin Avenue
Alsip, IL 60803
701-630-8122

- 4334
- 5009
- CAMARO II
- HORNET
- N4HM354
- N4HM521

To access crop performance testing information electronically, visit our website. The information contained in this publication, plus more, is available for viewing or downloading at:

www.agronomy.k-state.edu/services/crop-performance-tests/index.html

Excerpts from the University Research Policy Agreement with Cooperating Seed Companies

Permission is hereby given to Kansas State University (KSU) to test varieties and/or hybrids designated on the attached entry forms in the manner indicated in the test announcements. I certify that seed submitted for testing is a true sample of the seed being offered for sale.

I understand that all results from Kansas Crop Performance Tests belong to the University and the public and shall be controlled by the University so as to produce the greatest benefit to the public. Performance data may be used in the following ways: 1) Tables may be reproduced in their entirety provided the source is referenced and data are not manipulated or reinterpreted; 2) Advertising statements by an individual company about the performance of its entries may be made as long as they are accurate statements about the data as published, with no reference to other companies' names or cultivars. In both cases, the following must be included with the reprint or ad citing the appropriate publication number and title: "See the official Kansas State University Agricultural Experiment Station and Cooperative Extension Service Report of Progress 1140, '2017 Kansas Performance Tests with Sunflower Hybrids,' or the Kansas Crop Performance Test website, *www.agronomy.k-state.edu/services/crop-performance-tests/index.html*, for details. Endorsement or recommendation by Kansas State University is not implied."

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