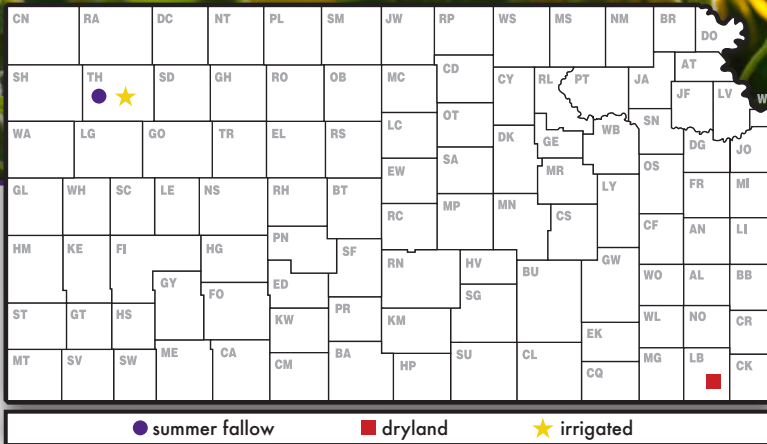


2016 Kansas Performance Tests with

Sunflower Hybrids



Report of Progress 1133



Table of Contents

Introduction

Test Objectives and Procedures 1
Data Interpretation 1

Performance Test Results

Oilseed Tests

Table 1. Colby Fallow, Thomas County2
Table 2. Colby Irrigated, Thomas County3
Table 3. Parsons Dryland, Labette County5

Confectionary Tests

Table 4. Colby Fallow, Thomas County6
Table 5. Colby Irrigated, Thomas County.....7

Table 6. Entrants and Entries in the 2016 Tests.....8
Electronic Access, University Research Policy, and Duplication Policy.....back cover

Introduction

Objectives and Procedures

Sunflower performance tests were conducted in 2016 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 2016 were Thomas County, irrigated and fallow; Ellis County, dryland; and Labette and Reno counties, dryland. Oilseed entries were grown at all locations. Confectionary entries were evaluated in Thomas County, irrigated and fallow. 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 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. The dryland oilseed tests at Ellis and Reno counties were abandoned for adverse conditions during the growing season. Test results for 2016 and period-of-years average data are included in Tables 1 through 5. Entrants and entries in 2016 tests are listed in Table 6.

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.

Acknowledgments

Cooperation of Rob Aiken and research center personnel who performed the field operations is sincerely appreciated. Vicki Brown, secretary, and Jane Lingenfelter, Kansas Crop Performance Tests coordinator, assisted in preparing this report, and temporary workers Raenette Martin and 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: 6/11/2016

Harvested: 10/5/2016

90-0-0 lb/a N, P, K

Keith silt loam

Previous crop: fallow

Herbicide: Dual + Spartan sprayed 6/13/2016

Agronomists: Patrick Evans and Rob Aiken

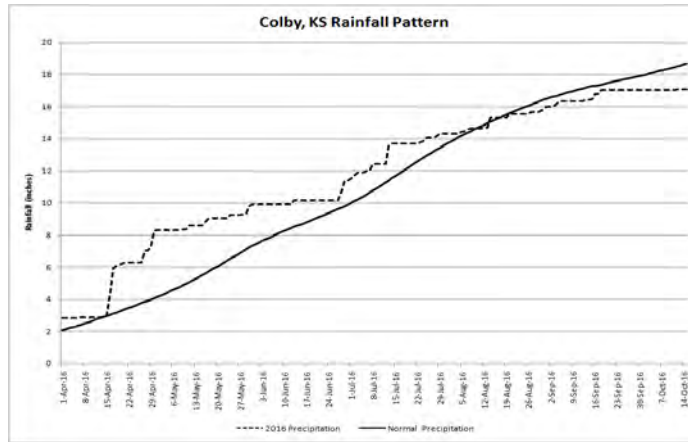


Table 1. Colby Fallow Oilseed Sunflower Performance Test, 2016

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	1823	121	47	857	--	50	--	19	10
AGVENTURE	AF3N672ES	1589	105	48	763	--	49	--	19	10
AGVENTURE	AF3N680ES	1578	104	48	757	--	45	--	20	12
AGVENTURE	AF3N94CD	1254	83	46	577	--	44	--	21	8
AGVENTURE	AF4H95CD	1336	88	45	601	--	44	--	20	6
AGVENTURE	PSF64HE00	1656	110	49	811	--	43	--	19	10
CROPLAN GENETICS	432E	1646	109	47	774	--	43	--	21	14
CROPLAN GENETICS	455 E HO	1413	93	45	636	--	47	--	21	12
CROPLAN GENETICS	458 E HO	1353	89	47	636	--	44	--	19	10
CROPLAN GENETICS	545 CL	1681	111	46	773	--	48	--	19	9
CROPLAN GENETICS	549 CL HO	1302	86	48	625	--	55	--	19	6
CROPLAN GENETICS	553 CL HO	1377	91	46	633	--	47	--	17	10
MYCOGEN	8H 449CLDM	1729	114	50	864	--	44	--	19	8
MYCOGEN	8H 456CL	1491	99	52	775	--	46	--	18	10
NUSEED AMERICAS	CAMARO II	1348	89	44	593	--	43	--	19	8
NUSEED AMERICAS	COBOLT II	1336	88	46	615	--	36	--	18	10
NUSEED AMERICAS	FALCON NS/SU	1331	88	48	639	--	44	--	22	8
NUSEED AMERICAS	HORNET	1512	100	47	711	--	46	--	19	12
NUSEED AMERICAS	N4HM354	1696	112	49	831	--	43	--	19	10
SYNGENTA	3732NS	1661	110	50	830	--	43	--	21	10
SYNGENTA	SY7919	1483	98	47	697	--	42	--	21	10
	Average	1505	100	47	714	--	45	--	20	10
	CV (%)	16	16	--	--	--	5	--	13	--
	LSD (0.05)*	343	22	--	--	--	3	--	3	--

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

2-Year Averages (2015 and 2016)

CROPLAN GENETICS	458 E HO	1023	75	39	426	58	45	13	22	10
CROPLAN GENETICS	545 CL	1423	107	41	576	60	48	6	23	9
CROPLAN GENETICS	549 CL HO	1200	92	40	483	57	52	5	22	8
CROPLAN GENETICS	553 CL HO	1438	112	40	572	61	45	3	20	9
MYCOGEN	8H 449CLDM	1375	102	42	605	59	44	4	19	9
MYCOGEN	8H 456CL	1273	96	43	564	59	46	0	22	10
SYNGENTA	3732NS	1285	95	41	560	58	43	4	24	11
AVERAGES		1288	97	41	541	59	46	5	22	9

3-Year Averages (2014- 2016)

CROPLAN GENETICS	432E	1400	108	33	421	57	43	6	24	11
MYCOGEN	8H 449CLDM	1392	106	36	437	59	42	6	21	8
SYNGENTA	3732NS	1335	102	34	396	58	41	5	24	10
AVERAGES		1376	105	34	418	58	42	6	23	10

NORTHWEST KANSAS IRRIGATED OILSEED SUNFLOWER TEST

Colby, Thomas County

K-State Northwest Research Center

Planted: 6/10/2016

Harvested: 11/10/2016

140-25-0 lb/a N, P, K

Keith silt loam

Previous crop: wheat

Herbicide: Dual + Spartan sprayed 6/13/2016

Agronomists: Patrick Evans and Rob Aiken

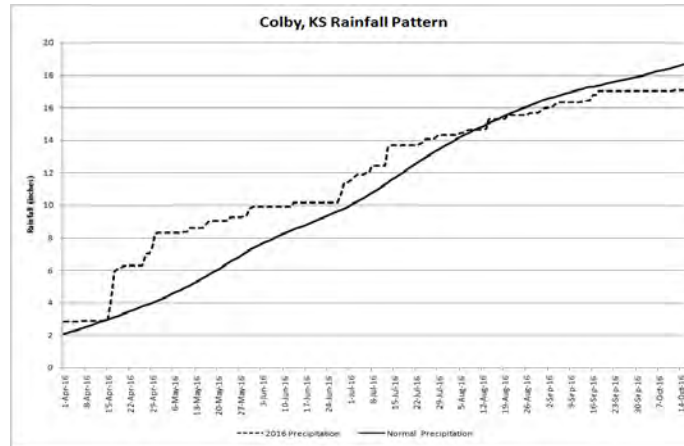


Table 2. Colby Irrigated Oilseed Sunflower Performance Test, 2016

Brand	Hybrid	Yield as %		Oil content (%)	Oil yield (lb/a)	Days to half bloom	Plant height (in.)	Lodging (%)	Test weight (lb/bu)	Seed weight (g/200)
		Yield (lb/a)	of test average							
AGVENTURE	AF3H681ES	2305	92	48	1104	--	70	12	30	14
AGVENTURE	AF3N672ES	2417	97	48	1153	--	75	12	28	16
AGVENTURE	AF3N680ES	2330	93	49	1137	--	67	10	29	16
AGVENTURE	AF3N94CD	2214	89	50	1110	--	71	7	29	8
AGVENTURE	AF4H95CD	2170	87	51	1101	--	69	15	28	8
AGVENTURE	PSF64HE00	2494	100	51	1260	--	66	6	30	10
CROPLAN GENETICS	432E	2235	89	49	1100	--	70	8	29	12
CROPLAN GENETICS	455 E HO	2716	109	48	1305	--	70	14	27	14
CROPLAN GENETICS	458 E HO	2564	103	50	1272	--	75	5	27	14
CROPLAN GENETICS	545 CL	2623	105	49	1282	--	71	4	26	10
CROPLAN GENETICS	549 CL HO	2572	103	50	1275	--	79	6	29	10
CROPLAN GENETICS	553 CL HO	2851	114	50	1422	--	80	9	28	10
MYCOGEN	8H 449CLDM	2990	120	51	1520	--	71	10	29	12
MYCOGEN	8H 456CL	2021	81	48	977	--	73	10	28	12
NUSEED AMERICAS	CAMARO II	2574	103	47	1216	--	66	0	30	14
NUSEED AMERICAS	COBOLT II	1809	72	48	870	--	56	1	28	12
NUSEED AMERICAS	FALCON NS/SU	2606	104	49	1277	--	66	6	30	10
NUSEED AMERICAS	HORNET	2767	111	52	1437	--	71	9	28	8
NUSEED AMERICAS	N4HM354	2696	108	52	1408	--	63	4	29	12
SYNGENTA	3732NS	2612	105	52	1357	--	65	14	28	14
SYNGENTA	SY7919	2607	104	52	1354	--	68	13	26	10
	Average	2484	100	50	1235	--	69	8	28	12
	CV (%)	14	14	--	--	--	7	--	5	--
	LSD (0.05)	514	20	--	--	--	7	7	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 (2015 and 2016)

AGVENTURE	PSF64HE00	2508	103	--	--	57	64	6	30	12
CROPLAN GENETICS	432E	2135	88	--	--	56	65	7	28	13
CROPLAN GENETICS	458 E HO	2252	93	--	--	58	70	8	28	13
CROPLAN GENETICS	545 CL	2887	119	--	--	60	69	2	28	11
CROPLAN GENETICS	549 CL HO	2769	114	--	--	58	74	5	29	11
CROPLAN GENETICS	553 CL HO	2621	108	--	--	61	72	7	28	10
MYCOGEN	8H 449CLDM	2949	121	--	--	59	65	5	29	12
MYCOGEN	8H 456CL	2158	89	--	--	61	67	10	28	12
NUSEED AMERICAS	CAMARO II	2534	104	--	--	58	63	2	29	13
NUSEED AMERICAS	COBOLT II	1814	75	--	--	57	56	2	28	12
NUSEED AMERICAS	FALCON NS/SU	2638	109	--	--	57	63	5	29	10
NUSEED AMERICAS	HORNET	2715	112	--	--	60	67	7	29	9
SYNGENTA	3732NS	2626	108	--	--	57	59	10	28	14
AVERAGES		2508	103	--	--	58	66	6	29	12

Table 2 continued. Colby Irrigated Oilseed Sunflower Performance Test, 2016

3-Year Averages (2014- 2016)

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 GENETICS	432E	2245	88	--	--	57	64	3	27	14
MYCOGEN	8H 449CLDM	3008	119	--	--	60	63	2	29	12
NUSEED AMERICAS	CAMARO II	2546	101	--	--	59	63	4	28	13
NUSEED AMERICAS	FALCON NS/SU	2659	105	--	--	58	62	5	29	11
NUSEED AMERICAS	HORNET	2783	110	--	--	61	65	6	26	11
SYNGENTA	3732NS	2696	107	--	--	58	59	4	28	13
AVERAGES		2656	105	--	--	59	63	4	28	12

SOUTHEAST KANSAS DRYLAND OILSEED SUNFLOWER TEST

Parsons, Labette County
 K-State Southeast Research Center
 Planted: 7/21/2016
 Harvested: 12/2/2016
 70-46-30 lb/a N, P, K
 Parsons silt loam
 Previous crop: soybean
 Agronomist: Lonnie Mengarelli

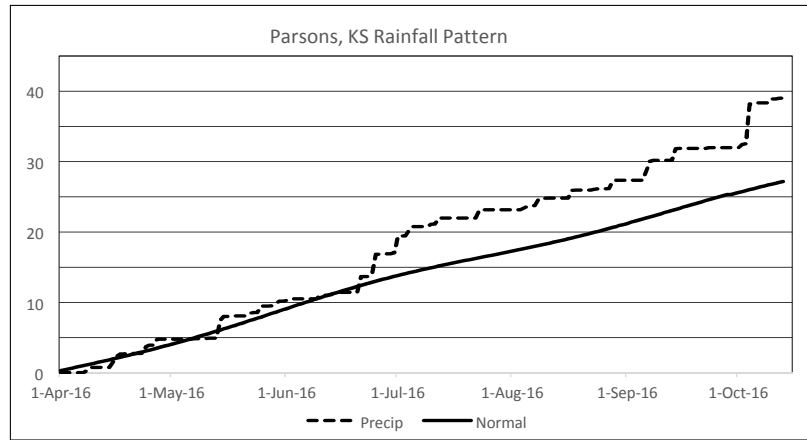


Table 3. Parsons Dryland Oilseed Sunflower Performance Test, 2016

Brand	Hybrid	Yield as %								
		Yield (lb/a)	of test average	content (%)	yield (lb/a)	half bloom	height (in.)	Lodging (%)	weight (lb/bu)	weight (g/200)
CROPLAN GENETICS	432E	1227	151	--	--	44	60	12	28	--
CROPLAN GENETICS	455 E HO	705	87	--	--	45	53	16	28	--
CROPLAN GENETICS	458 E HO	719	88	--	--	51	56	9	25	--
CROPLAN GENETICS	545 CL	1144	141	--	--	50	59	9	27	--
CROPLAN GENETICS	549 CL HO	801	99	--	--	48	64	29	28	--
CROPLAN GENETICS	553 CL HO	809	100	--	--	49	67	14	29	--
MYCOGEN	8H 449CLDM	733	90	--	--	49	52	14	30	--
MYCOGEN	8H 456CL	823	101	--	--	51	59	8	27	--
SYNGENTA	3732NS	705	87	--	--	47	48	17	27	--
SYNGENTA	SY7919	423	52	--	--	51	51	23	28	--
	Average	809	809	--	--	48	57	15	28	--
	CV (%)	17	17	--	--	3	--	--	--	--
	LSD (0.05)	200	24	--	--	2	--	--	--	--

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

NORTHWEST KANSAS DRYLAND CONFECTIONARY SUNFLOWER TEST

Colby, Thomas County

K-State Northwest Research Center

Planted: 6/11/2016

Harvested: 10/3/2016

90-0-0 lb/a N, P, K

Keith silt loam

Previous crop: wheat

Herbicide: Dual + Spartan sprayed 6/13/2016

Agronomists: Patrick Evans and Rob Aiken

Table 4. Colby Dryland Confectionary Sunflower Performance Test, 2016

Brand	Hybrid	Yield as %			Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing		
		Yield (lb/a)	of test average	Height (in)				Large (%)	Medium (%)	Small (%)
NUSEED AMERICAS	4334	1215	92	43	13	26	--	--	--	--
NUSEED AMERICAS	5334	1419	108	43	17	34	--	--	--	--
NUSEED AMERICAS	NSK12MO48	1625	124	43	23	32	--	--	--	--
RED RIVER COMMODITIES	2205	1056	80	41	14	26	--	--	--	--
RED RIVER COMMODITIES	2215	1619	123	45	20	32	--	--	--	--
RED RIVER COMMODITIES	8015	1138	87	41	20	34	--	--	--	--
RED RIVER COMMODITIES	8042	1242	95	41	16	26	--	--	--	--
RED RIVER COMMODITIES	2215CL	1261	96	44	19	30	--	--	--	--
RED RIVER COMMODITIES	2217CP	1192	91	45	12	30	--	--	--	--
	Average	1307	100	43	17	30	--	--	--	--
	CV (%)	19	19	8	--	--	--	--	--	--
	LSD (0.05)	368	28	5	10	--	--	--	--	--

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

NORTHWEST KANSAS IRRIGATED CONFECTIONARY SUNFLOWER TEST

Colby, Thomas County

K-State Northwest Research Center

Planted: 6/10/2016

Harvested: 10/17/2016

140-25-0 lb/a N, P, K

Keith silt loam

Previous crop: wheat

Herbicide: Dual + Spartan sprayed 6/13/2016

Agronomists: Patrick Evans and Rob Aiken

Table 5. Colby Irrigated Confectionary Sunflower Performance Test, 2016

Brand	Hybrid	Yield as %		Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing		
		Yield (lb/a)	of test average					Large (%)	Medium (%)	Small (%)
NUSEED AMERICAS	4334	1987	97	44	21	38	--	21	76	3
NUSEED AMERICAS	5334	1935	95	62	17	36	--	25	59	16
NUSEED AMERICAS	NSK12MO48	1344	66	59	16	40	--	24	69	7
RED RIVER COMMODITIES	2205	2667	131	63	21	34	--	4	80	16
RED RIVER COMMODITIES	2215	1747	85	56	18	36	--	0	72	28
RED RIVER COMMODITIES	8015	1974	97	52	15	30	--	31	60	9
RED RIVER COMMODITIES	8042	2815	138	60	16	30	--	89	10	1
RED RIVER COMMODITIES	2215CL	1938	95	66	15	32	--	6	76	18
RED RIVER COMMODITIES	2217CP	1899	93	28	15	32	--	37	46	17
	Average	2034	100	54	17	34	--	26	61	13
	CV (%)	13	13	--	15	--	--	--	--	--
	LSD (0.05)	393	19	--	4	--	--	--	--	--

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

2-Year Averages (2015 and 2016)

Brand	Hybrid	Yield as %		Height (in)	Test weight (lb/bu)	Seed weight (g/200)	Days to half bloom	Seed Sizing						
		Yield (lb/a)	of test average					>22 (%)	21-22 (%)	20-21 (%)	19-20 (%)	18-19 (%)	16-18 (%)	<16 (%)
RED RIVER COMMODITIES	2215	2699	92	56	18	31	59	27	23	20	18	5	5	2
RED RIVER COMMODITIES	8015	2041	100	52	14	29	58	23	17	18	22	11	6	2
RED RIVER COMMODITIES	8042	2404	114	60	16	30	61	22	28	21	14	7	6	2
RED RIVER COMMODITIES	2215CL	2069	104	66	15	28	60	30	24	17	15	9	8	4
	AVERAGES	2303	103	59	16	30	60	28	22	19	18	8	6	3

3-Year Averages (2014- 2016)

RED RIVER COMMODITIES	2215	2529	103	--	18	27	59	27	23	20	18	5	5	2
RED RIVER COMMODITIES	8015	2917	117	--	16	28	58	23	17	18	22	11	6	2
	AVERAGES	2723	110	--	17	28	59	25	20	19	20	8	6	2

Table 6. Entrants and Entries in the 2016 Sunflower Performance Tests

AgVenture

7300 NW 62nd Avenue
Johnston, IA 50131
888-999-0859
AF3N672ES
AF3N680ES
AF3S681ES
AF4H95CD
PSF64HE00

Mycogen Seed

9330 Zionsville Rd
Indianapolis, IN 46268
800-MYCOGEN
8H 449CLDM
8H 456CL

Red River Commodities

1320 East College Drive
Colby, KS 67701
785-462-3911
2205
2215
2215CL
2217CP
8015
8042

Croplan Genetics

P.O. Box 64406
St. Paul, MN 55112
800-851-8810
432E
455 E HO
458 E HO
545 CL
549 CL HO
553 CL HO

Nuseeds Americas

11901 S. Austin Avenue
Alsip, IL 60803
708-377-1330
4334
5334
Camaro II
Cobalt II
Falcon NS/SU
Hornet
N4HM354
NSK12M048

Syngenta Seed

2369 330th Street
Slater, IA 50244
800-831-6630
3732NS
SY7919

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 1133, '2016 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."

Contributors

Patrick Evans, Research Technologist (Senior Author), Colby
Rob Aiken, Crops Research Scientist, Colby
Jane Lingenfelter, Assistant Agronomist, Manhattan
Mary Knapp, Kansas State Climatologist, Manhattan
Gary Cramer, Agronomist, Hutchinson
Lonnie Mengarelli, Parsons
Gerald Rohleder, Hays

Copyright 2017 Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, give credit to the author(s), 2016 Kansas Performance Tests with Sunflower Hybrids, Kansas State University, February 2017. Contribution no. 17-279-S from the Kansas Agricultural Experiment Station.

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Publications from Kansas State University are available at:

www.ksre.ksu.edu

Kansas State University Agricultural Experiment Station and Cooperative Extension Service