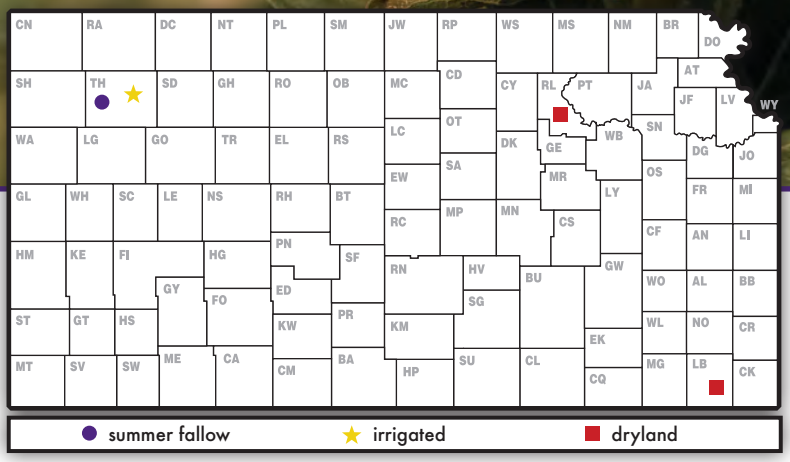
2020 Kansas Performance Tests with

Sunflower Hybrids



Report of Progress 1163

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

TABLE OF CONTENTS

Contribution No. 21-330-S from the Kansas Agricultural Experiment Station.

INTRODUCTION

Objectives and Procedures

Sunflower performance tests were conducted in 2020 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 2020 were Thomas County—irrigated and fallow; Riley County—dryland; and Labette County—dryland. Oilseed entries were grown at all locations. 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 2020 and period-of-years average data are included in Tables 1 through 4. Entrants and entries in 2020 tests are listed in Table 5.

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.

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, Russell Dille, Dustan Ridder, 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.

Table 1. 2020 Colby Dryland Oilseed Sunflower Performance Test, Thomas County

Brand	Name	Yield (lb/a)	PAvg (%)	TW (lb/bu)	HT (in)
DYNA-GRO	H48HO15CL	1676	87	23	54
DYNA-GRO	H49HO19CL	1828	95	25	54
DYNA-GRO	H49NS14CL	2937	153	27	50
NUSEED	Hornet	1555	81	22	50
NUSEED	N4H302	1422	74	21	51
NUSEED	N4H422	1784	93	24	52
NUSEED	N4H470 CL Plus	1798	93	23	51
NUSEED	N4H521	1730	90	25	52
NUSEED	N4HM354	1581	82	27	51
PIONEER	P64ME01	2229	116	27	52
S&W SEED	SF110	2305	120	25	46
S&W SEED	SF440	2227	116	22	52
	Average	1923	100	24	51
	CV (%)	13	13	15	8
	LSD (0.05)	357	19	4	5

*Yields must differ by more than the LSD value to be considered statistically different.

Planted: 6/11/2020

Harvested: 10/7/2020

Fertilizer: 100-30-0 lb/a N, P, K

Previous crop: wheat

Herbicide: 22 oz/a Bucaneer 5 Extra; 16 oz/a Dicamba; 6.4 oz/a Staredown; 5 oz/a Spartan Charge

Monthly rainfall (in)	May	June	July	August	**Total**
2020	2.0	1.5	4.1	2.0	**9.6**
Long-term average	1.3	2.5	3.8	2.8	**10.4**
Departure					**-0.8**

2-Year Averages (2020 and 2019)		**Yield**	**PAvg**	**TW**	**HT**
DYNA-GRO	H48HO15CL	2068	94	21	56
DYNA-GRO	H49HO19CL	2186	100	21	53
DYNA-GRO	H49NS14CL	2954	139	23	53
PIONEER	P64ME01	2574	119	20	53
S&W SEED	SF110	2232	105	19	50
S&W SEED	SF440	2511	114	20	53
AVERAGES		2345	2345	21	53

3-Year Averages (2018-2020)		**Yield**	**PAvg**	**TW**	**HT**
DYNA-GRO	H48HO15CL	1526	79	21	53
DYNA-GRO	H49HO19CL	1556	77	22	49
DYNA-GRO	H49NS14CL	2396	140	24	51
AVERAGES		1826	99	22	51

Table 2.Colby, Kansas Irrigated Oilseed Sunflower Performance Test, Thomas County, 2020

Brand	Name	Yield (lb/a)	PAvg (%)	TW (lb/bu)	HT (in)
DYNA-GRO	H48HO15CL	4080	106	23	57
DYNA-GRO	H49HO19CL	3500	91	22	56
DYNA-GRO	H49NS14CL	3794	99	25	55
DYNA-GRO	XHOO57	3304	86	25	58
NUSEED	Hornet	4380	114	24	57
NUSEED	N4H302	3692	96	23	57
NUSEED	N4H422	4029	105	21	50
NUSEED	N4H470 CL Plus	3589	94	24	62
NUSEED	N4H521	3972	103	25	57
NUSEED	N4HM354	3857	101	26	54
S&W SEED	SF110	3925	102	24	55
S&W SEED	SF440	3931	102	26	59
	Average	3838	100	24	56
	CV (%)	14	14	5	7
	LSD (0.05)	794	10	2	7

*Yields must differ by more than the LSD value to be considered statistically different.

Planted: 7/2/2020

Harvested: 10/15/2020

Fertilizer: 200-30-0 lb/a N, P, K

Herbicide: 8 oz/a Buccaneer 5 Extra; 8.5 oz/a Spartan Charge; 10 oz/a Select Max

Previous crop: fallow

Monthly rainfall (in)	May	June	July	August	**Total**
2020	2.0	1.5	4.1	2.0	**9.6**
Long-term average	1.3	2.5	3.8	2.8	**10.4**
Departure					**-0.8**

2-Year Averages (2020 and 2018)		**Yield**	**PAvg**	**TW**	**HT**
DYNA-GRO	H48HO15CL	3066	97	24	63
DYNA-GRO	H49HO19CL	3017	100	25	63
DYNA-GRO	H49NS14CL	3156	104	27	57
NUSEED	Hornet	3286	104	26	63
NUSEED	N4H302	2793	95	25	61
NUSEED	N4H521	3112	92	26	61
NUSEED	N4HM354	3151	103	27	60
AVERAGES		3083	3083	26	61

Table 3. Ashland Bottoms, Kansas Dryland Sunflower Performance Test, Riley County, 2020

Brand	Name	Yield (lb/a)	PAvg (%)	TW (lb/bu)
DYNA-GRO	H48HO15CL	1381	91	29
DYNA-GRO	H49HO19CL	1202	79	29
DYNA-GRO	H49NS14CL	2064	136	30
DYNA-GRO	XH91H54CL	1849	122	30
NUSEED	Hornet	1455	96	30
NUSEED	N4H302	998	66	28
NUSEED	N4H422	1811	119	29
NUSEED	N4H470 CL Plus	1229	81	29
NUSEED	N4H521	1997	131	28
NUSEED	N4HM354	1518	100	30
PIONEER	CHECK	1819	120	29
S&W SEED	SF110	1022	67	29
S&W SEED	SF440	1736	114	29
	Average	1522	100	29
	CV (%)	19	19	1
	LSD (0.05)	439	29	3

*Yields must differ by more than the LSD value to be considered statistically different.
Planted: 6/10/2020
100-0-0 lb/a N, P, K
Herbicide: 2 oz/a Brawl II
Previous crop: grain sorghum

Monthly rainfall (in)	May	June	July	August	**Total**
2020	5.6	3.5	6.6	1.8	**17.5**
Long term average	5.1	5.7	4.4	4.1	**19.3**
Departure					**-1.8**

Table 4. Parsons, Kansas Dryland Sunflower Performance Test, 2020

Brand	Name	Yield (lb/a)	PAvg (%)	Days (1/2 bloom)	TW (lb/bu)	HT (in)	LDG (%)
NUSEED	Hornet	1397	107	86	30	46	2
NUSEED	N4H302	1324	101	82	30	48	12
NUSEED	N4H422	1571	120	84	30	49	3
NUSEED	N4H470 CL Plus	1074	82	85	31	48	6
NUSEED	N4H521	1221	93	84	30	50	1
NUSEED	N4HM354	1170	90	84	31	48	1
PIONEER	CHECK	1865	143	83	30	48	2
S&W SEED	SF110	886	68	82	31	43	6
S&W SEED	SF440	1256	96	86	29	46	5
	Average	1307	100	84	30	47	4
	CV (%)	18	18	1	3	4	--
	LSD (0.05)	354	26	1	1	3	--

*Yields must differ by more than the LSD value to be considered statistically different.
Planted: 6/9/2020
80-46-0 lb/a N, P, K
Herbicide: 2 qt/a glyphosate; 2 pt/a Brawl II; 4 oz/a Spartan
Previous crop: soybean

Monthly rainfall (in)	May	June	July	August	**Total**
2020	11.0	1.0	4.9	1.5	**18.4**
Long-term average	3.6	5.5	3.9	3.3	**16.3**
Departure					**2.1**

2-Year Averages (2020 and 2019)		**Yield**	**PAvg**	**TW**	**HT**
PIONEER	CHECK	2070	125	29	48
S&W SEED	SF110	1581	87	30	42
S&W SEED	SF440	1817	104	29	46
AVERAGES		1822	105	30	45

3-Year Averages (2018-2020)		**Yield**	**PAvg**	**TW**	**HT**
NUSEED	Hornet	1226	107	30	56
NUSEED	N4H302	947	80	30	56
NUSEED	N4HM354	919	79	31	57
AVERAGES		1030	89	30	56

Table 5. Entrants and Entries in the 2020 Sunflower Performance Tests

Dyna-Gro
1111 U.S. HWY 62
Ralls, TX 79357
806-402-0463

H48HO15CL
H49HO19CL
H49NS14CL
XH0057
XH91H54CL

NuSeed
P.O. Box 200
Breckenridge, MN 56520
701-630-8122

Hornet
N4H30
N4H422 CL
N4H470
N4H521
N4HM354

S&W Seed Company
2101 Ken Pratt Blvd, Suite 101
Longmont, CO 80501
720-506-9191

SF110
SF440

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 1163, '2020 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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