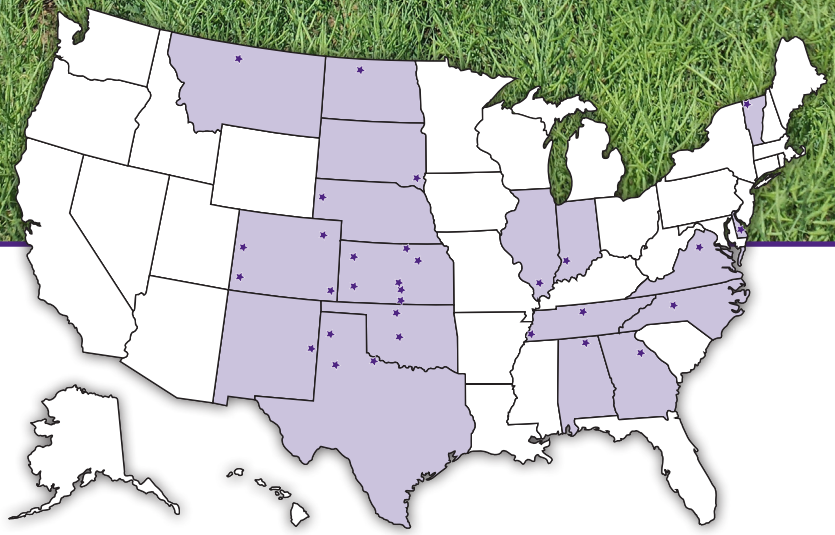
2020

National Winter Canola Variety Trial



Report of Progress 1164

K-STATE Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

2020 National Winter Canola Variety Trial
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Contribution no. 21-274-S from the Kansas Agricultural Experiment Station

2020 National Winter Canola Variety Trial

Objectives

The objectives of the National Winter Canola Variety Trial (NWCVT) are to evaluate the performance of released and experimental varieties, determine where these varieties are best adapted, and increase the visibility of winter canola across the United States. Breeders, marketers, and producers use data collected from the trials to make informed variety selections. The NWCVT is planted at locations in the Great Plains, Northern Plains, Midwest, and Southeast.

Procedures

Seed for the NWCVT was distributed to 31 test sites in 18 states for the 2019–2020 growing season. The locations receiving seed are illustrated on the map on the front cover. See the back cover for a listing of participating cooperators. Of the 24 entries, 10 are commercial and 14 are experimental. These entries were provided by eight seed suppliers. All entries in the trial were treated with insecticide and fungicide seed treatments to control insects and seedling diseases through the late fall and early winter months.

Open-pollinated and hybrid cultivars were planted in separate, side-by-side trials at sites where all 24 entries were planted. Results for each trial were analyzed individually and are presented in separate tables for each test site.

Management guidelines were provided to cooperators, but previous growing experience influenced final management decisions. All trials were planted in small research plots (approximately 100 ft^2) with three or four replications. Cultural practices, site descriptions, growing conditions, and performance data are provided for each harvested location. Results are presented alphabetically by seed supplier. Yield results for some locations include 2-year summaries.

Near infrared spectroscopy was used for total oil and protein analyses. The Kansas State University canola breeding program provided these analyses for all test sites.

The NWCVT continues in the 2020–2021 growing season and includes 32 entries. Seven seed suppliers contributed to the trial, and it was distributed to 32 locations in 17 states.

2019–2020 Growing Conditions

Temperature and precipitation data are shown at the top of the page for each test site. Thick black lines on the temperature graphs represent long-term average high and low temperatures (°F) for the test site. The upper thin line represents actual daily high temperatures, and the lower thin line represents actual daily low temperatures. On the precipitation graph, the line labeled “normal” represents long-term average precipitation, and the line labeled “19-20” represents actual precipitation. If weather information was not provided, data were taken from a nearby town.

In general, the 2019–2020 growing season was marked by dry conditions that made establishment especially difficult. Temperatures were moderate but winter kill was a factor where plant size was too small for overwintering. Spring weather including severe storms and late freezes negatively impacted the crop at the reproductive stage.

Test Sites and Results

Nine harvested test sites in six states are included in this report: Fruita, CO; Vincennes, IN; Belleville, Garden City, and Manhattan, KS; Clovis, NM; Chickasha and Lahoma, OK; and Alburgh, VT. Nineteen locations were not harvested because of poor stand establishment, winterkill, or spring weather. A handful of locations were abandoned because of operational restrictions as a result of the COVID-19 pandemic. A new cooperator in 2019–2020 was Moccasin, MT.

The “percentage of test average” yield calculation is included in the results. This relative yield calculation allows for some comparison of performance across environments. Entries yielding greater than 100% of the test average across multiple test sites merit some consideration.

Overall, yield was much below normal. Open pollinated trial means ranged from 554 to 3,677 lb/acre. Hybrid trial means ranged from 264 to 4,486 lb/acre. Wide variability in yield was common among entries at most test sites.

Caution should be used when evaluating data from test sites with coefficient of variation (CV) values greater than 20. Lower values suggest less error was observed at the test site. Inestimable differences in soil type, weather, and environmental conditions play a part in increasing experimental error and CV values. Six test sites have CV values of greater than 20. Even if yield data are unreliable, other data collected by the cooperator may be useful.

Variety Selection

Winter hardiness is an important trait to consider when selecting a winter canola variety. This trait has been improved, but variability still exists where differential winterkill occurs. Winter canola varieties should show consistent survival across multiple years and sites. Other traits to consider include herbicide resistance, tolerance to carryover from sulfonylurea herbicides, maturity, disease tolerance, yield potential, and oil content. More than one year of data should be used to make an informed variety selection decision. Canola weighs 50 lb/bushel, so a 2,000 lb/acre yield is 40 bushels/acre.

Table 18 provides information on the tolerance of varieties to blackleg fungus. The 2019–2020 blackleg nursery was planted at Stillwater, OK, by Oklahoma State University. Data is provided with permission. View Table 19 for seed sources, contact information, brand names, and traits of the winter canola varieties and hybrids grown in the NWCVT.

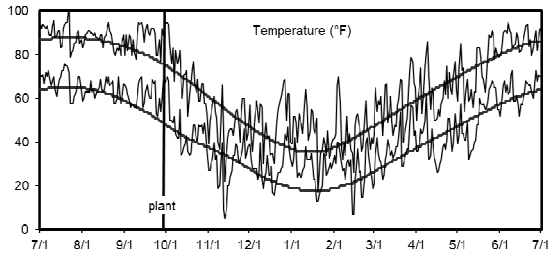
Acknowledgments

This work was funded in part by the fees paid by seed suppliers, the United States Department of Agriculture National Institute of Food and Agriculture Supplemental and Alternative Crops Competitive Grants Program, and the Kansas Agricultural Experiment Station. The project would like to extend sincere gratitude to former assistant scientist, Scott Dooley, for his dedication and 10 years of service to supporting all NWCVT activities. Sincere appreciation is expressed to all participating researchers and seed suppliers who have a vested interest in expanding winter canola acres and increasing production in the United States.

Vincennes, Indiana

Chuck Mansfield
Vincennes University

Planted: 9/30/2019 in 6-in. rows
Seeding Rate OP: 350,000 seeds/a
Seeding Rate Hybrid: 210,000 seeds/a
Dessicant: 1.5 pt/a Reglone on 6/13/2020
Harvested: 6/19/2020
Herbicides: 12 oz/a Dual, 4 oz/a Command
Insecticides: 1.92 oz/a Warrior
Fungicide: 2.85 oz/a Proline, 6 oz/a Quadris Top
Previous crop: Soybean
Soil test: P=32 ppm, K=124 ppm, pH=6.9, OM=1.3%
Fertilizer: 0-0-0-0 lb/a N-P-K-S fertilizer in fall
138-0-22-10-22-1 lb/a N-P-K-Mg-S-B fertilizer in spring
Soil type: Lomax Loam
Elevation: 430 ft Latitude: 38° 74'N
Comments: A mid-November cold snap caused stand losses. Yields were slightly below normal for the location.



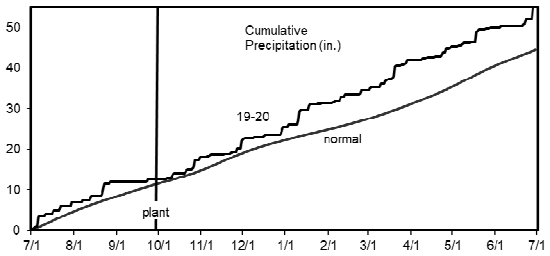


Table 1. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Vincennes, IN

Name	Yield (lb/a)			Yield (% of test avg.)	Winter survival (%)			Fall stand	Fall vigor	Plant height	Test weight	Oil
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(0-10)	(1-5)	(in)	(lb/bu)	(%)
CROPLAN by WinField												
CP115WRR	1995	2576	2285	92	77	---	---	9	3.8	50	52.2	---
CP225WRR	1900	2376	2138	88	88	---	---	10	4.2	49	52.7	---
CP320WRR	2224	2687	2455	102	88	---	---	10	3.8	47	52.6	---
Kansas State University												
KS4662	2184	---	---	101	85	---	---	9	3.7	54	52.0	---
KS4719	**2497**	**3214**	2855	115	93	---	---	10	4.3	54	52.2	---
KSR4723	**2349**	3014	2682	108	88	---	---	9	4.0	53	52.6	---
KSR4767	2028	2842	2435	93	93	---	---	9	4.2	51	52.4	---
KSR4844S	2076	---	---	96	87	---	---	10	3.8	51	52.5	---
KSR4848	1965	---	---	91	78	---	---	9	3.3	54	51.6	---
Riley	2192	**3183**	2687	101	85	---	---	10	4.0	49	52.3	---
Surefire	2325	**3050**	2688	107	83	---	---	9	3.8	52	52.2	---
Wichita	**2696**	**3217**	2956	124	88	---	---	9	3.8	53	52.1	---
Ohlde Seed Farms												
Torrington	**2397**	**3183**	2790	110	88	---	---	10	4.0	53	52.0	---
Star Specialty Seed												
Star 930W	2158	2604	2381	99	88	---	---	9	3.8	49	52.5	---
University of Idaho												
UI.WC.15.7.5	1561	---	---	72	82	---	---	10	3.8	55	52.1	---
Grand Mean	2170	2849	---	---	86	---	---	9	3.9	52	52.3	---
CV	10	7	---	---	4	---	---	4	7.8	3	0.7	---
LSD (0.05)	363	342	---	---	6.2	---	---	NS	NS	3	0.6	---

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 2. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Vincennes, IN

Name	Yield (lb/a)			Yield (% of test avg.)	Winter survival (%)			Fall stand	Fall vigor	Plant height	Test weight	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(0-10)	(1-5)	(in)	(lb/bu)	(%)
Bayer Crop Science												
CWH189D	2167	2700	2433	88	78	---	---	9	3	48	52.2	---
CWH190D	1994	2427	2211	81	73	---	---	9	3	51	52.5	---
CWH249D	**2500**	3043	2771	102	87	---	---	9	4	47	52.4	---
CWH317D	**2470**	**3184**	2827	101	90	---	---	9	4	48	52.2	---
KWS-MOMONT												
MH 15HT227	**2824**	**3515**	3170	115	90	---	---	9	4	52	51.7	---
MH 16HIC231	2295	---	---	94	90	---	---	10	5	53	52.4	---
MH 16JC076	2265	---	---	92	88	---	---	10	4	56	51.9	---
MH 16JD085	**2808**	---	---	115	92	---	---	9	4	54	50.9	---
Rubisco Seeds												
Plurax CL	**2743**	**3288**	3016	112	87	---	---	9	4	51	52.2	---
Grand Mean	2452	3128	---	---	86	---	---	9	4	51	52.0	---
CV	10	8	---	---	4	---	---	3	6	2	0.5	---
LSD (0.05)	427	441	---	---	6	---	---	0.5	0.4	2	0.4	---

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Fruita, Colorado

Reza Keshavarz
Colorado State University

Planted:	9/5/2019 in 10-in. rows
Seeding Rate OP:	500,000 seeds/a
Seeding Rate Hybrid:	300,000 seeds/a
Harvested:	7/7/2020
Herbicides:	1.5 pt/a Treflan HFP, 8 oz/a Assure II, 4 oz/a Stinger
Irrigation:	Furrow
Previous crop:	Wheat
Soil test:	NA
Fertilizer:	32-40-26-9 lb/a N-P-K-S fertilizer in fall 115-0-0-0 lb/a N-P-K-S fertilizer in spring
Soil type:	Silty clay
Elevation:	4604 ft Latitude: 39° 17'N
Comments:	Low yields and oil contents were caused by severe aphid pressure in the spring.

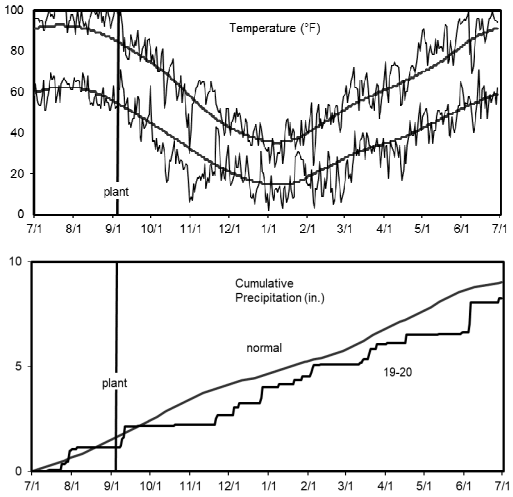


Table 3. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Fruita, CO

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Moisture	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
CROPLAN by WinField												
CP115WRR	410	1629	1020	84	---	100	---	---	---	5.0	22.2	21.8
CP225WRR	431	1805	1118	88	---	97	---	---	---	5.5	22.6	21.7
CP320WRR	382	1928	1155	78	---	92	---	---	---	5.5	21.2	21.9
Kansas State University												
KS4662	665	---	---	135	---	---	---	---	---	5.2	25.1	20.8
KS4719	578	2182	1380	118	---	97	---	---	---	5.7	23.9	21.3
KSR4723	441	2070	1256	90	---	100	---	---	---	5.7	24.1	21.6
KSR4767	581	1647	1114	118	---	100	---	---	---	5.3	24.4	21.0
KSR4844S	304	---	---	62	---	---	---	---	---	5.2	23.3	22.5
KSR4848	611	---	---	124	---	---	---	---	---	5.4	24.5	20.8
Riley	490	2141	1316	100	---	92	---	---	---	5.4	22.9	21.9
Surefire	654	1999	1327	133	---	100	---	---	---	5.9	24.4	22.0
Wichita	552	1719	1136	112	---	93	---	---	---	5.3	22.8	22.4
Ohlde Seed Farms												
Torrington	581	1174	877	118	---	93	---	---	---	5.1	25.4	20.8
Star Specialty Seed												
Star 930W	311	1870	1091	63	---	92	---	---	---	5.3	24.3	21.0
University of Idaho												
UI.WC.15.7.5	374	---	---	76	---	---	---	---	---	5.2	21.5	23.1
Grand Mean	491	1861	---	---	---	95	---	---	---	5.4	23.5	21.6
CV	36	29	---	---	---	5	---	---	---	10.6	7.3	2.4
LSD (0.05)	NS	NS	---	---	---	7	---	---	---	NS	NS	1.1

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Table 4. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Fruita, CO

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Moisture	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
Bayer Crop Science												
CWH189D	836	1438	1137	79	---	88	---	---	---	5.0	26.0	22.1
CWH190D	**1461**	1705	1583	138	---	90	---	---	---	4.7	28.7	20.4
CWH249D	**1724**	953	1339	163	---	95	---	---	---	4.9	27.6	20.2
CWH317D	**1461**	1416	1438	138	---	87	---	---	---	4.9	25.8	20.4
KWS-MOMONT												
MH 15HT227	1085	1349	1217	102	---	97	---	---	---	5.1	26.5	20.6
MH 16HIC231	1066	---	---	101	---	---	---	---	---	5.1	26.9	19.6
MH 16JC076	614	---	---	58	---	---	---	---	---	5.0	25.7	22.2
MH 16JD085	525	---	---	50	---	---	---	---	---	5.0	25.4	21.6
Rubisco Seeds												
Plurax CL	758	1122	940	72	---	95	---	---	---	4.9	24.9	20.5
Grand Mean	1059	1332	---	---	---	93	---	---	---	4.9	26.4	20.9
CV	31	29	---	---	---	6	---	---	---	5.8	3.3	1.3
LSD (0.05)	563	NS	---	---	---	6	---	---	---	NS	2.0	0.6

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Belleville, Kansas

Scott Dooley
Kansas State University

Planted: 9/11/2019 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Swathed: 6/17/2020
Harvested: 6/25/2020
Herbicides: 1.5 pt/a Trifluralin HR, 10 oz/a Assure II
Insecticides: None
Irrigation: None
Previous crop: Wheat
Soil test: NA
Fertilizer: 30-0-0-0 lb/a N-P-K-S fertilizer in fall
120-0-0-0 lb/a N-P-K-S fertilizer in spring
Soil type: Crete silt loam
Elevation: 1530 ft Latitude: 39° 48'N
Comments: Yields were lower than normal as a result of cool conditions in the spring. Late freezes reduced plant height.

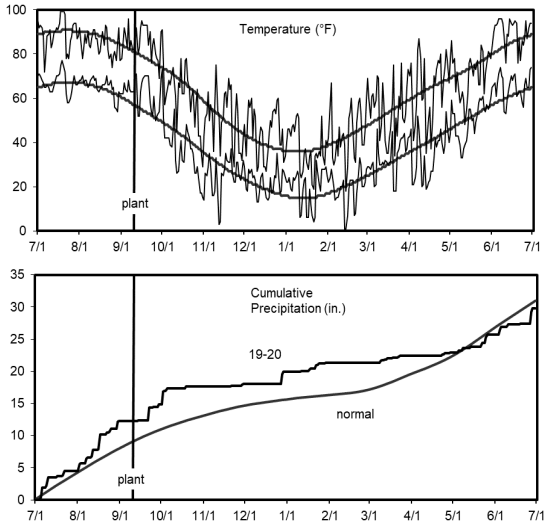


Table 5. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Belleville, KS

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			Fall stand	Spring stand	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(0-10)	(%)	(in.)	(%)	(%)	(%)
CROPLAN by WinField													
CP115WRR	1155	488	821	90	---	47	---	7.0	70	31	5	36.3	27.4
CP225WRR	364	589	476	28	---	27	---	7.5	33	31	35	35.6	26.6
CP320WRR	573	758	665	45	---	62	---	7.5	45	28	13	35.9	26.8
Kansas State University													
KS4662	**1686**	---	---	132	---	---	---	9.0	80	38	10	37.3	26.3
KS4719	**2377**	**1597**	1987	186	---	93	---	7.0	95	37	1	38.0	25.7
KSR4723	860	1021	940	67	---	53	---	8.0	55	31	30	35.7	27.1
KSR4767	982	**1106**	1044	77	---	70	---	9.0	70	37	20	35.2	27.2
KSR4844S	722	---	---	57	---	---	---	7.5	45	33	13	37.8	26.4
KSR4848	555	---	---	43	---	---	---	8.0	45	34	25	35.4	25.9
Riley	1580	**1120**	1350	124	---	80	---	8.5	78	34	15	38.7	25.7
Surefire	1213	997	1105	95	---	77	---	8.5	58	34	30	35.9	27.7
Wichita	**1867**	**1107**	1487	146	---	65	---	8.0	80	31	11	36.3	27.2
Ohlde Seed Farms													
Torrington	**1620**	**1412**	1516	127	---	85	---	9.0	78	37	8	37.9	25.5
Star Specialty Seed													
Star 930W	1084	**1155**	1120	85	---	72	---	7.5	55	31	15	36.9	26.3
University of Idaho													
UI.WC.15.7.5	**2535**	---	---	198	---	---	---	9.0	85	42	13	37.3	26.5
Mean	1278	969	---	---	---	63	---	8.1	65	34	16	36.7	26.5
CV	34	31	---	---	---	27	---	9.6	28	5	82	3.3	2.9
LSD (0.05)	926	526	---	---	---	28	---	1.0	25	4	NS	2.0	1.3

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Table 6. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Belleville, KS

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			Fall stand	Spring stand	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(0-10)	(%)	(in.)	(%)	(%)	(%)
Bayer Crop Science													
CWH189D	**3090**	**1491**	2290	79	---	57	---	8.3	87	31	0	37.7	24.9
CWH190D	**2783**	**1769**	2276	14	---	67	---	8.0	47	32	2	31.5	25.9
CWH249D	**2779**	**1857**	2318	25	---	70	---	7.3	40	35	7	34.9	26.4
CWH317D	1981	**1642**	1812	92	---	87	---	8.0	93	37	0	37.8	24.8
KWS-MOMONT													
MH 15HT227	1497	527	1012	164	---	27	---	8.3	93	37	2	37.4	26.5
MH 16HIC231	1736	---	---	105	---		---	8.0	77	36	3	37.1	25.9
MH 16JC076	463	---	---	147	---		---	9.0	93	37	0	37.5	26.5
MH 16JD085	264	---	---	148	---		---	8.7	93	36	2	39.2	25.8
Rubisco Seeds													
Plurax CL	**2373**	**1351**	1862	126	---	43	---	8.3	92	33	0	40.0	24.5
Mean	1885	1009	---	---	---	42	---	8.2	79	35	2	37.0	25.7
CV	24	32	---	---	---	31	---	9.8	12	7	187	3.7	3.1
LSD (0.05)	779	565	---	---	---	22	---	NS	16	4	NS	2.3	1.4

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Garden City, Kansas

John Holman and Scott Maxwell
Kansas State University

Planted: 8/30/2019 in 18-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a

Harvested: 6/24/2020
Herbicides: 3 pt/a Prowl
Insecticides: None
Irrigation: 6.38 in.
Previous crop: corn in 2018, fallow in 2019
Soil test: NA
Fertilizer: 5.5-26-0-9 lb/a N-P-K-S fertilizer in fall
100-0-0 lb/a N-P-K fertilizer in spring
Soil type: Ulyssess Richfield silt loam
Elevation: 2835 ft Latitude: 37° 99'N
Comments: Yields were lower than the previous year as a result of dry conditions.

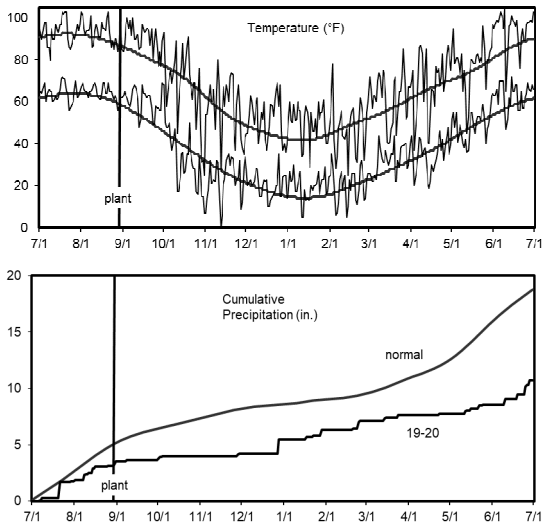


Table 7. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Garden City, KS

Name	Yield (lb/a)			Yield (% of test avg.)	Winter Survival (%)			Fall vigor	Plant height	Test weight	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(1-5)	(in.)	(lb/a)	(%)	(%)
CROPLAN by WinField												
CP115WRR	1252	2969	2110	80	100	90	95	3.0	33	45	34.4	28.5
CP225WRR	1822	3116	2469	117	88	91	89	4.0	36	47	36.0	26.4
CP320WRR	1851	3331	2591	119	100	96	98	4.0	41	48	35.6	26.5
Kansas State University												
KS4662	1785	---	---	115	100	---	---	4.0	41	47	35.4	26.0
KS4719	1914	3317	2615	123	95	84	89	4.0	42	47	34.4	27.2
KSR4723	1482	3216	2349	95	94	94	94	4.0	39	47	35.9	25.7
KSR4767	1495	3049	2272	96	100	88	94	3.5	40	48	34.7	26.9
KSR4844S	1835	---	---	118	81	---	---	3.5	42	50	36.6	26.6
KSR4848	1689	---	---	109	88	---	---	4.0	36	48	34.3	27.0
Riley	1531	3514	2523	98	93	80	86	3.0	35	46	36.9	25.1
Surefire	**2374**	3587	2980	153	89	92	90	4.0	42	51	35.5	27.5
Wichita	**1973**	3454	2713	127	94	92	93	4.0	38	48	34.4	27.1
Ohlde Seed Farms												
Torrington	1723	3492	2607	111	100	89	94	3.5	41	49	35.3	27.2
Star Specialty Seed												
Star 930W	1084	3430	2257	85	100	88	94	3.5	40	49	36.1	26.4
University of Idaho												
UI.WC.15.7.5	1536	---	---	99	89	---	---	4.0	42	46	34.4	27.5
Mean	1735	3395	---	---	94	90	---	3.7	39	48	35.3	26.8
CV	14	13	---	---	7	9	---	8.7	5	4	2.3	2.6
LSD[1]	421	NS	---	---	---	NS	---	0.7	4	4	NS	1.5

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Winter survival and yield significant at P<0.2 and P<0.1, respectively. All other measurements significant at P<0.05.

Table 8. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Garden City, KS

Name	Yield (lb/a)			Yield (% of test avg.)	Winter Survival (%)			Fall vigor	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(1-5)	(in.)	(%)	(%)	(%)
Bayer Crop Science												
CWH189D	**2370**	**4244**	3307	106	100	96	98	3.0	39	48	35.8	25.6
CWH190D	**2677**	**4248**	3462	120	94	100	97	3.3	42	50	36.8	25.3
CWH249D	**2798**	**4127**	3463	125	100	100	100	3.0	40	49	36.1	25.7
CWH317D	**2838**	**4438**	3638	127	100	100	100	3.7	42	49	36.0	25.0
KWS-MOMONT												
MH 15HT227	2260	3889	3074	101	100	100	100	3.0	37	44	38.4	23.9
MH 16HIC231	2038	---	---	91	100	---	---	3.0	37	45	37.0	24.0
MH 16JC076	1859	---	---	83	67	---	---	3.0	38	46	36.6	25.5
MH 16JD085	720	---	---	32	27	---	---	2.3	34	43	36.5	26.7
Rubisco Seeds												
Plurax CL	**2546**	3651	3099	114	100	90	95	3.3	40	49	38.6	24.3
Mean	2234	4082	---	---	88	96		3.1	39	47	36.9	25.1
CV	14	6	---	---	5	7		11.9	9	6	1.9	2.4
LSD (0.05)	552	445	---	---	8	10		0.6	NS	5	1.6	1.4

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Manhattan, Kansas

Michael Stamm
Kansas State University

Planted: 9/17/2019 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Swathed: 6/9/2020
Harvested: 6/15/2020
Herbicides: 2 pt/a Treflan, 0.4 oz/a Muster, 10 oz/a Assure II
Insecticides: None
Irrigation: None
Previous crop: Wheat
Soil test: NA
Fertilizer: 37-0-0-24 lb/a N-P-K-S fertilizer in fall
90-0-0-0 lb/a N-P-K-S fertilizer in spring
Soil type: Smolan silt loam
Elevation: 1064 ft Latitude: 39° 12'N
Comments: Fluctuating temperatures caused weakened lower stems. Wet spring conditions led to lodging problems. Yield potential was reduced as a result.

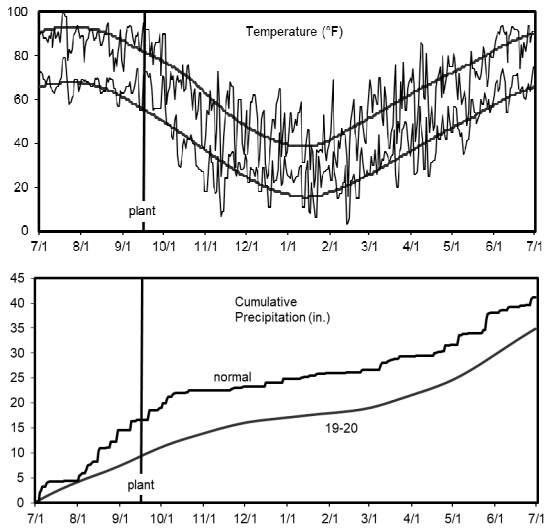


Table 9. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Manhattan, KS

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
CROPLAN by WinField												
CP115WRR	1315	2333	1824	67	98	---	---	101	39	63	38.6	23.6
CP225WRR	**2173**	2741	2457	110	100	---	---	102	41	40	40.5	22.2
CP320WRR	1195	**2931**	2063	60	97	---	---	101	37	67	38.6	23.0
Kansas State University												
KS4662	**2500**	---	---	126	98	---	---	102	43	43	40.7	22.3
KS4719	**3107**	**2895**	3001	157	98	---	---	103	49	12	41.0	22.2
KSR4723	1678	2807	2243	85	95	---	---	102	42	57	40.0	22.6
KSR4767	**2231**	**3112**	2672	113	98	---	---	101	43	37	40.1	22.1
KSR4844S	1192	---	---	60	97	---	---	102	40	60	39.3	23.5
KSR4848	**2249**	---	---	114	98	---	---	103	41	33	39.0	22.4
Riley	1948	**3367**	2657	99	98	---	---	100	39	37	41.4	22.0
Surefire	1856	**2936**	2396	94	100	---	---	102	45	33	40.1	23.0
Wichita	1633	**3256**	2445	83	98	---	---	102	41	57	39.7	23.2
Ohlde Seed Farms												
Torrington	**2275**	**3127**	2701	115	100	---	---	101	43	30	41.2	21.7
Star Specialty Seed												
Star 930W	1997	**3015**	2506	101	100	---	---	101	39	47	40.2	22.6
University of Idaho												
UI.WC.15.7.5	**2303**	---	---	117	100	---	---	103	43	23	40.8	22.1
Mean	1977	2912	---	---	98	---	---	102	42	43	40.1	22.6
CV	35	12	---	---	3	---	---	0.4	10	61	3.0	4.2
LSD[2]	953	502	---	---	NS	---	---	0.7	5	NS	NS	NS

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

[2]Plant height is significant at P<0.2. Yield is signficant at P<0.1. All other traits are signficant at p<0.05.

Table 10. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Manhattan, KS

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
Bayer Crop Science												
CWH189D	1391	**3789**	2590	75	98	---	---	101	43	38	39.6	23.1
CWH190D	**1937**	3210	2574	104	100	---	---	101	45	14	40.5	22.6
CWH249D	1457	**3874**	2666	78	93	---	---	101	42	43	39.4	23.4
CWH317D	**2138**	**3904**	3021	115	98	---	---	101	41	11	40.1	22.5
KWS-MOMONT												
MH 15HT227	**2422**	3182	2802	130	98	---	---	101	43	22	42.8	21.1
MH 16HIC231	**2564**	---	---	138	98	---	---	100	43	27	43.2	19.5
MH 16JC076	648	---	---	35	88	---	---	101	36	97	37.4	24.4
MH 16JD085	**1816**	---	---	98	95	---	---	100	42	14	42.2	21.3
Rubisco Seeds												
Plurax CL	**2353**	3309	2831	127	95	---	---	100	45	22	41.9	21.4
Mean	1859	3487	---	---	96	---	---	101	42	32	40.8	22.2
CV	43	9	---	---	5	---	---	0.8	8	96	3.8	7.5
LSD[2]	862	518	---	---	6	---	---	NS	NS	44	2.7	NS

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

[2]Winter survival and yield signficant at P<0.2. Lodging significant at P<0.1. All other traits are signficant at P<0.05.

Clovis, New Mexico

Sangu Angadi
New Mexico State University

Planted: 9/11/2019 in 6-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Herbicides: 1.5 pt/a Trifluralin HFP, 5.33 oz/a Section 3 Herbicide
Insecticides: 20 oz/a Prevathon
Irrigation: 7.75 in.
Previous crop: Wheat
Soil test: N=11.8 ppm, P=16.5 ppm, K=54 ppm, pH=8.0, OM=2.00%
Fertilizer: 135-35-0-23 lb/a N-P-K-S fertilizer in fall
Soil type: Olton clay loam
Elevation: 4437 ft Latitude: 34° 36'N
Comments: Fluctuating temperatures throughout the growing season provided some stress to the crop. Yields were lower than normal.

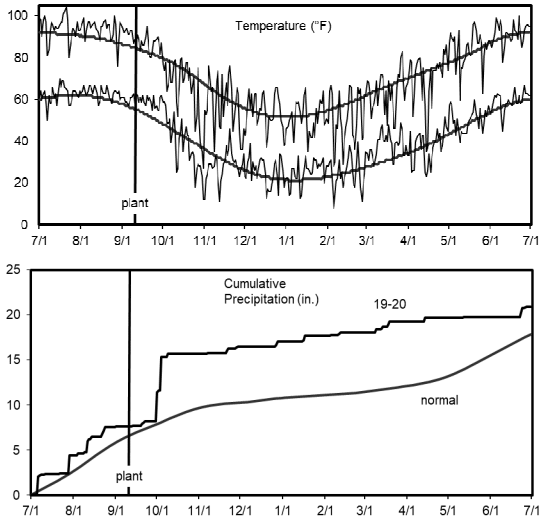


Table 11. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Clovis, NM

Name	Yield (lb/a)			Yield (% of test avg.)	Winter survival (%)			Fall stand	Moisture	Test weight	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(plants per 2m)	(%)	(lb/bu)	(%)	(%)
CROPLAN by WinField												
CP115WRR	1657	1894	1776	102	---	---	---	42	4.6	48.6	33.1	30.1
CP225WRR	1643	2840	2241	101	---	---	---	44	4.4	50.4	35.7	27.2
CP320WRR	**1941**	2855	2398	119	---	---	---	43	4.4	51.5	34.2	27.8
Kansas State University												
KS4662	1652	---	---	101	---	---	---	39	6.2	51.6	35.7	27.0
KS4719	1610	**3431**	2520	99	---	---	---	33	4.9	50.7	36.3	27.1
KSR4723	1596	**3547**	2571	98	---	---	---	42	4.3	47.4	35.7	27.0
KSR4767	1557	**3513**	2535	96	---	---	---	42	4.3	50.2	33.3	28.8
KSR4844S	1460	---	---	90	---	---	---	37	4.3	51.7	34.3	28.8
KSR4848	1355	---	---	83	---	---	---	37	5.5	49.2	34.3	29.2
Riley	**1753**	**3500**	2627	108	---	---	---	40	4.5	50.1	35.0	28.7
Surefire	**1749**	**3219**	2484	107	---	---	---	38	4.5	50.5	33.4	30.6
Wichita	**1881**	**3322**	2601	115	---	---	---	40	4.3	52.2	33.3	29.9
Ohlde Seed Farms												
Torrington	**1820**	**3326**	2573	112	---	---	---	36	4.6	49.9	36.5	27.3
Star Specialty Seed												
Star 930W	1547	**3171**	2359	95	---	---	---	37	4.3	50.3	35.5	27.0
University of Idaho												
UI.WC.15.7.5	1234	---	---	76	---	---	---	---	3.9	51.1	37.3	26.6
Mean	1630	3188	---	---	---	---	---	39	4.6	50.4	34.9	28.2
CV	9	16	---	---	---	---	---	22	22.5	3.4	5.4	5.6
LSD (0.05)	197	870	---	---	---	---	---	NS	NS	NS	NS	NS

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 12. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Clovis, NM

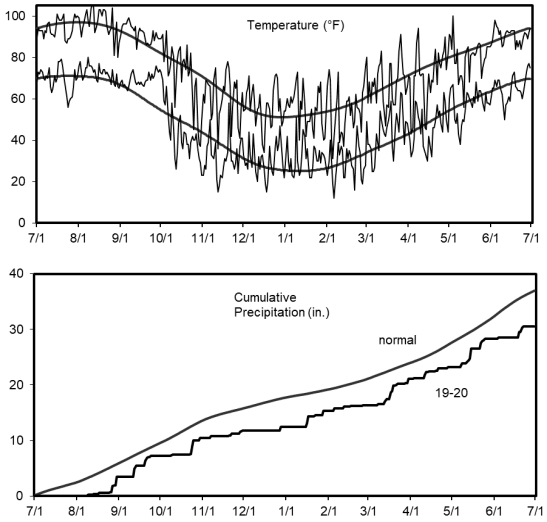
Name	Yield (lb/a)			Yield (% of test avg.)	Winter survival (%)			Fall stand	Moisture	Test weight	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(plants/2m row)	(%)	(lb/bu)	(%)	(%)
Bayer Crop Science												
CWH189D	1887	**3734**	2811	94	---	---	---	31	5.0	48.6	34.2	28.7
CWH190D	1875	**3896**	2886	93	---	---	---	33	4.3	51.3	35.6	28.2
CWH249D	2164	**3684**	2924	108	---	---	---	25	4.5	51.3	33.0	30.1
CWH317D	2010	**3119**	2564	100	---	---	---	28	7.5	48.4	35.0	27.2
KWS-MOMONT		---										
MH 15HT227	2134	**4046**	3090	106	---	---	---	27	10.3	49.7	37.9	26.2
MH 16HIC231	1976	---	---	98	---	---	---	27	4.8	49.7	35.1	27.2
MH 16JC076	2001	---	---	100	---	---	---	30	4.9	52.3	35.8	27.3
MH 16JD085	1945	---	---	97	---	---	---	31	4.4	48.4	36.8	27.8
Rubisco Seeds												
Plurax CL	2070	**3045**	2558	103	---	---	---	30	6.3	50.0	35.5	27.1
Mean	2007	3458	---	---	---	---	---	29	5.8	49.9	35.4	27.8
CV	10	21	---	---	---	---	---	19	24.9	3.4	4.0	5.9
LSD (0.05)	NS	1230	---	---	---	---	---	NS	2.5	NS	NS	NS

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Chickasha, Oklahoma

Josh Lofton
Oklahoma State University

Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a



Soil type: McClain silty clay loam
Elevation: 1085 ft Latitude: 35° 02'N
Comments: Yields were reduced by severe thunderstorm winds.

Table 13. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Chickasha, OK

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
CROPLAN by WinField					---	---	---	---	---	---	---	---
CP115WRR	1560	1427	1493	106	---	---	---	---	---	---	---	---
CP225WRR	1253	2173	1713	85	---	---	---	---	---	---	---	---
CP320WRR	1337	2238	1787	90	---	---	---	---	---	---	---	---
Kansas State University					---	---	---	---	---	---	---	---
KS4662	1442	---	---	98	---	---	---	---	---	---	---	---
KS4719	1452	2129	1790	98	---	---	---	---	---	---	---	---
KSR4723	1187	842	1014	80	---	---	---	---	---	---	---	---
KSR4767	1493	1152	1323	101	---	---	---	---	---	---	---	---
KSR4844S	1378	---	---	93	---	---	---	---	---	---	---	---
KSR4848	1710	---	---	116	---	---	---	---	---	---	---	---
Riley	1227	2112	1669	83	---	---	---	---	---	---	---	---
Surefire	1677	1584	1630	114	---	---	---	---	---	---	---	---
Wichita	1268	1658	1463	86	---	---	---	---	---	---	---	---
Ohlde Seed Farms					---	---	---	---	---	---	---	---
Torrington	1427	1361	1394	97	---	---	---	---	---	---	---	---
Star Specialty Seed					---	---	---	---	---	---	---	---
Star 930W	1792	1065	1428	121	---	---	---	---	---	---	---	---
University of Idaho					---	---	---	---	---	---	---	---
UI.WC.15.7.5	1957	---	---	132	---	---	---	---	---	---	---	---
Mean	1477	1566	---	---	---	---	---	---	---	---	---	---
CV	39	---	---	---	---	---	---	---	---	---	---	---
LSD (0.05)	NS	---	---	---	---	---	---	---	---	---	---	---

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Table 14. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Chickasha, OK

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			50% bloom	Plant height	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(DOY)	(in.)	(%)	(%)	(%)
Bayer Crop Science					---	---	---	---	---	---	---	---
CWH189D	1667	1627	1647	119	---	---	---	---	---	---	---	---
CWH190D	1370	2051	1710	98	---	---	---	---	---	---	---	---
CWH249D	1618	2325	1972	116	---	---	---	---	---	---	---	---
CWH317D	1285	2513	1899	92	---	---	---	---	---	---	---	---
KWS-MOMONT					---	---	---	---	---	---	---	---
MH 15HT227	1120	2971	2046	80	---	---	---	---	---	---	---	---
MH 16HIC231	1513	---	---	108	---	---	---	---	---	---	---	---
MH 16JC076	1235	---	---	89	---	---	---	---	---	---	---	---
MH 16JD085	1552	---	---	111	---	---	---	---	---	---	---	---
Rubisco Seeds					---	---	---	---	---	---	---	---
Plurax CL	1197	2491	1844	86	---	---	---	---	---	---	---	---
Mean	1395	2418	---	---	---	---	---	---	---	---	---	---
CV	28	---	---	---	---	---	---	---	---	---	---	---
LSD (0.05)	NS	---	---	---	---	---	---	---	---	---	---	---

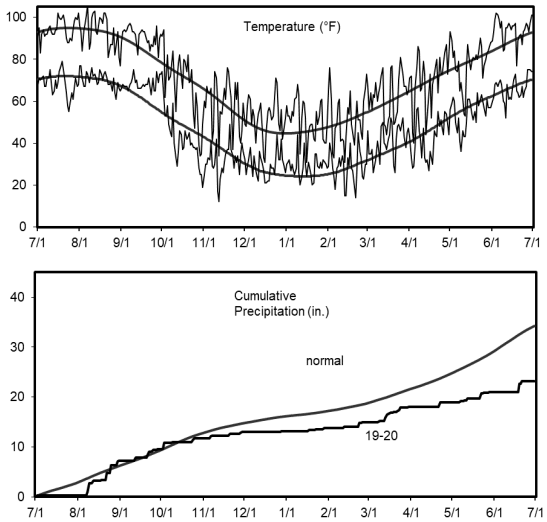
Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Lahoma, Oklahoma

Josh Lofton
Oklahoma State University

Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a



Soil type: Grant silt loam
Elevation: 1236 ft Latitude: 36° 23N
Comments: Outstanding yields were recorded at this location.

Table 15. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Lahoma, OK

Name	Yield (lb/a)			Yield (% of test avg.)	Winter survival (%)			Moisture	Test weight	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(%)	(lb/bu)	(%)	(%)	(%)
CROPLAN by WinField												
CP115WRR	2549	---	---	88	---	---	---	6.5	50.4	---	---	---
CP225WRR	2472	---	---	86	---	---	---	6.7	51.4	---	---	---
CP320WRR	2869	---	---	99	---	---	---	5.7	51.5	---	---	---
Kansas State University												
KS4662	2715	---	---	94	---	---	---	6.5	49.5	---	---	---
KS4719	2824	---	---	98	---	---	---	7.5	49.5	---	---	---
KSR4723	3032	---	---	105	---	---	---	6.5	51.3	---	---	---
KSR4767	2763	---	---	96	---	---	---	6.1	50.4	---	---	---
KSR4844S	**3213**	---	---	111	---	---	---	7.0	50.4	---	---	---
KSR4848	2443	---	---	85	---	---	---	8.6	51.3	---	---	---
Riley	2451	---	---	85	---	---	---	7.5	49.4	---	---	---
Surefire	**3677**	---	---	127	---	---	---	7.4	50.6	---	---	---
Wichita	**3288**	---	---	114	---	---	---	7.9	52.0	---	---	---
Ohlde Seed Farms												
Torrington	**3299**	---	---	114	---	---	---	7.1	50.5	---	---	---
Star Specialty Seed												
Star 930W	2773	---	---	96	---	---	---	6.0	52.3	---	---	---
University of Idaho												
UI.WC.15.7.5	2931	---	---	102	---	---	---	7.8	50.8	---	---	---
Mean	2887	---	---	---	---	---	---	7.0	50.7	---	---	---
CV	18	---	---	---	---	---	---	14.9	3.1	---	---	---
LSD (0.05)	551	---	---	---	---	---	---	1.2	NS	---	---	---

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 16. Results for the 2020 National Winter Canola Variety Trial, hybrid cultivars, at Lahoma, OK

Name	Yield (lb/a)[1]			Yield (% of test avg.)	Winter survival (%)			Moisture	Test weight	Lodging	Oil	Protein
	2020	2019	2-yr.	2020	2020	2019	2-yr.	(%)	(lb/bu)	(%)	(%)	(%)
Bayer Crop Science												
CWH189D	**3736**	---	---	109	---	---	---	8.3	53.6	---	---	---
CWH190D	2859	---	---	83	---	---	---	8.8	53.4	---	---	---
CWH249D	**4240**	---	---	124	---	---	---	8.0	53.3	---	---	---
CWH317D	**4486**	---	---	131	---	---	---	8.8	52.3	---	---	---
KWS-MOMONT												
MH 15HT227	3368	---	---	98	---	---	---	9.9	52.7	---	---	---
MH 16HIC231	2637	---	---	77	---	---	---	8.1	52.7	---	---	---
MH 16JC076	**3672**	---	---	107	---	---	---	8.2	52.7	---	---	---
MH 16JD085	**3645**	---	---	106	---	---	---	8.7	52.9	---	---	---
Rubisco Seeds												
Plurax CL	2536	---	---	74	---	---	---	8.9	52.8	---	---	---
Mean	3424	---	---	---	---	---	---	8.7	53.0	---	---	---
CV	22	---	---	---	---	---	---	8.3	1.9	---	---	---
LSD (0.05)	1115	---	---	---	---	---	---	0.8	NS	---	---	---

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

Alburgh, Vermont

Heather Darby and Rory Malone
University of Vermont

Planted: 8/26/2019 in 6-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a

Harvested: 7/14/2020
Herbicides: NA
Insecticides: NA
Irrigation: None
Previous crop: Corn
Soil test: P=1.2 ppm, K=65 ppm, pH=6.3
Fertilizer: 2 ton/a lime in fall
57-57-57-0 lb/a N-P-K-S fertilizer in spring
Soil type: Covington silty clay loam
Elevation: 131 ft Latitude: 45° 0'N
Comments: Yields were lower than normal and variability was observed among the replications. Oil contents were especially high.

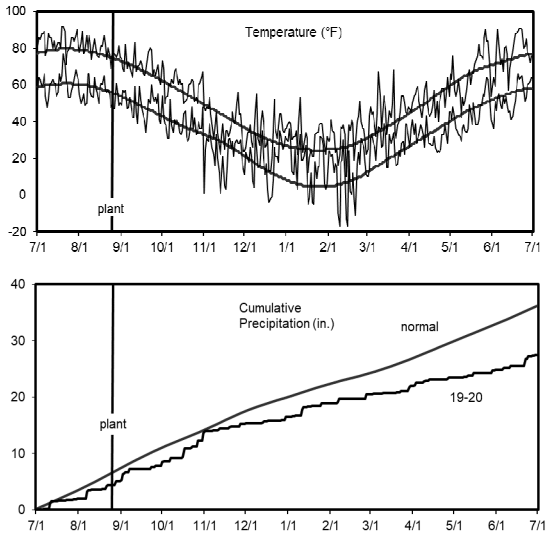


Table 17. Results for the 2020 National Winter Canola Variety Trial, open-pollinated cultivars, at Alburgh, VT

Name	Type[1]	Yield (lb/a)[2]			Yield (% of test avg.)	Winter survival (%)			Fall vigor	50% bloom	Plant height	Oil	Protein
		2020	2019	2-yr.	2020	2020	2019	2-yr.	(1-5)	(DOY)	(in.)	(%)	(%)
Bayer Crop Science													
CWH189D	H	1408	2559	1984	113	60	68	64	3.0	146	47	45.4	18.1
CWH190D	H	1117	2005	1561	89	24	91	58	3.3	145	50	45.4	19.1
CWH249D	H	1693	2494	2094	136	53	82	67	3.5	145	44	43.8	19.8
CWH317D	H	1882	2003	1943	151	66	70	68	4.0	143	47	44.2	19.0
Kansas State University													
KS4662	OP	1198	---	---	96	44	---	---	3.5	146	44	43.2	20.3
KS4719	OP	1319	---	---	106	45	---	---	3.8	145	48	44.8	19.0
Riley	OP	1225	2230	1728	98	39	95	67	4.3	144	43	45.3	19.2
Surefire	OP	1232	1899	1566	99	53	89	71	3.8	146	43	42.3	21.5
KWS-MOMONT													
MH 15HT227	H	1002	---	---	80	48	---	---	4.0	146	45	46.6	15.8
MH 16HIC231	H	1241	---	---	99	53	---	---	4.5	144	46	45.4	17.7
MH 16JC076	H	1008	---	---	81	44	---	---	4.0	146	47	44.2	18.3
MH 16JD085	H	782	---	---	63	35	---	---	4.8	145	44	46.0	19.2
Ohlde Seed Farms													
Torrington	OP	1422	1959	1691	114	45	78	62	4.5	146	48	43.7	19.7
Rubisco Seeds													
Plurax CL	H	1336	1603	1470	107	45	87	66	4.3	144	43	45.6	17.4
University of Idaho													
UI.WC.15.7.5	OP	876	---	---	70	46	---	---	3.5	146	50	42.6	20.4
Mean		1249	2207	---	---	47	84	---	3.9	145	46	44.6	19.0
CV		54	34	---	---	52	16	---	15.7	1	8	2.2	5.8
LSD (0.05)		NS	NS	---	---	NS	NS	---	0.9	2	3	2.1	2.4

Bold: Superior LSD group. Unless two entries differ by more than the LSD, little confidence can be placed in one being superior to the other.

[1]Type: H=hybrid, OP=open pollinated

[2]Use yield data with caution. A CV greater than 20 indicates higher experimental error. Make variety selection decisions based on more than one year's data.

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Table 18. Results for the 2020 Blackleg (*Leptosphaeria maculans*) Trial, at Stillwater, OK
National Winter Canola Variety Trial

J.P. Damicone and Z. Hubhachen, Oklahoma State University
M.J. Stamm, Kansas State University

Entry	Yield[1] (lb/a)	Incidence[2] (%)	Incidence (≥3)[3] (%)	Severity[4] (1-5)
Checks				
Bristol	2146 a	90.0 ab	72.7 ab	3.67 ab
Eurol	1909 d	90.0 ab	63.3 a-d	3.33 abc
Bayer CropScience				
CWH189D	2672 a	55.3 c-f	20.7 e-h	2.07 e-j
CWH190D	2657 a	86.7 ab	50.0 a-e	2.70 cde
CWH249D	2898 a	27.3 fg	10.0 hg	1.50 ij
CWH317D	3271 a	43.3 efg	10.0 hg	1.60 hij
CROPLAN by WinField				
CP115WRR	2429 a	93.3 ab	63.3 a-d	3.03 a-d
CP225WRR	2155 a	93.3 ab	63.3 a-d	3.33 abc
CP320WRR	2299 a	83.3 abc	66.7 abc	3.10 a-d
Kansas State University				
KS4662	2330 a	80.0 abc	50.0 a-e	2.63 c-f
KS4719	2884 a	66.7 b-e	40.0 b-g	2.43 d-h
KSR4723	2731 a	100.0 aw	76.7 a	3.70 a
KSR4767	2436 a	83.3 ab	56.7 a-d	2.90 a-e
KSR4844S	2039 a	80.0 abc	50.0 a-e	2.77 cde
KSR4848	2445 a	83.3 abc	43.3 b-f	2.50 c-g
Riley	2737 a	80.0 abc	50.0 a-e	2.80 b-e
Surefire	2768 a	76.7 abc	23.3 e-h	2.07 e-j
Wichita	2430 a	86.0 ab	30.7 d-h	2.37 d-i
KWS-MOMONT				
MH 15HT227	3111 a	20.0 g	0.0 h	1.20 j
MH 16HIC231	2297 a	73.3 a-d	36.7 c-g	2.40 d-h
MH 16JC076	2112 a	46.7 d-g	13.3 fgh	1.63 g-j
MH 16JDO85	3488 a	36.7 fg	3.3 h	1.43 j
Ohlde Seed Farms				
Torrington	2468 a	80.0 abc	56.7 a-d	3.00 a-d
Rubisco Seeds				
Plurax CL	1904 a	46.7 d-g	23.3 e-h	1.80 g-j
Star Specialty Seed				
Star 930W	2573 a	93.3 ab	66.7 abc	3.33 abc
University of Idaho				
UI.WC.15.7.5	2843 a	83.3 abc	36.7 c-g	2.60 c-f
P>F	0.47	<0.01	<0.01	<0.01

[1]Values in a column followed by the same letter are not statistically different at P=0.05.

[2]Percentage of plants with blackleg after swathing on May 28, 2020.

[3]Percentage of plants with severe blackleg (severity rating of ≥3) after swathing on May 28, 2020.

[4]Severity of internal stem decay from blackleg on a 1 to 5 scale where 1 = no disease, 2 = >0 to ≤25% stem decay, 2 = >25 to ≤50% stem decay, 3 = >50% to ≤75% stem decay, 4 = >75% to <100% stem decay, 5 = 100% stem decay.

Table 19. Seed sources for entries in the 2019-2020 National Winter Canola Variety Trial

Source	Type[1]	Trait[2]	Release Date	Maturity[3]
Bayer CropScience				
Matthew Clarke (matthew.clarke@bayer.com)				
CWH189D	H	SD, CL	---	M
CWH190D	H	SD, CL	---	M
CWH249D	H	SD, CL	---	M
CWH317D	H	SD	---	M
CROPLAN by WinField				
Mick Miller (MMiller5@landolakes.com)				
CP115WRR	OP	RR/SURT	2008	E
CP225WRR	OP	RR/SURT	2010	M
CP320WRR	OP	RR	2017	E
Kansas State University Canola Breeding Program				
Michael J. Stamm (mjstamm@ksu.edu)				
KS4662	OP	---	---	M
KS4719	OP	---	2020	F
KSR4723	OP	RR	---	M
KSR4767	OP	RR	---	M
KSR4844S	OP	RR/SURT	---	M
KSR4848	OP	RR	---	M
Riley	OP	---	2010	M
Surefire	OP	SU	2017	MF
Wichita	OP	---	1999	M
University of Idaho				
Jim Davis (jdavis@uidaho.edu)				
UI.WC.15.7.5	OP	---	2020	M
KWS-MOMONT				
Thierry Momont (thierry.momont@kws.com)				
MH 15HT227	H	---	---	M
MH 16HIC231	H	---	---	M
MH 16JC076	H	---	---	M
MH 16JD085	H	---	---	M
Ohlde Seed Farms				
Shane Ohlde (shane@ohldeseed.com)				
Torrington	OP	---	2016	M
Rubisco Seeds LLC				
Claire Caldbeck (info@rubiscoseeds.com)				
Plurax CL	H	CL	2018	M
Star Specialty Seeds, Inc.				
Jim Johnson (jimj_star@hotmail.com)				
Star 930W	OP	RR	2013	ME

[1]OP=open pollinated. H=hybrid.

[2]CL=Clearfield (imidazolinone resistant). RR=Roundup Ready (glyphosate resistant). SD=semi-dwarf hybrid. SU, SURT=sulfonylurea carryover tolerant.

[3]E=Early. ME=Medium early. M=Medium. MF=Medium full. F=Full.

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