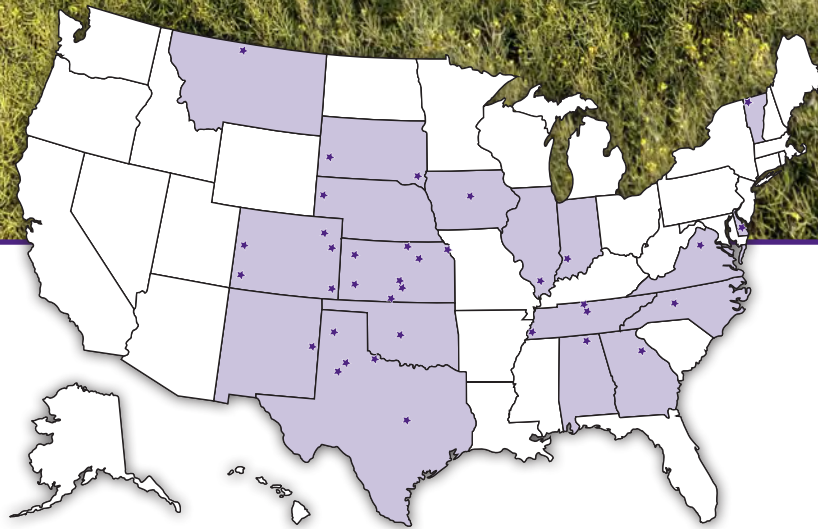


2019

National Winter Canola Variety Trial



Report of Progress 1157

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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Contribution no. 20-309-S from the Kansas Agricultural Experiment Station

2019 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, Midwest, northern U.S., and Southeast.

Procedures

Seed for the NWCVT was distributed to 36 locations in 18 states for the 2018–2019 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 29 entries, 17 are commercial and 12 are experimental. These entries were provided by eight global 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 29 entries were planted. Results for each trial were analyzed individually and are presented in separate tables.

Management guidelines were provided to cooperators, but previous growing experience influenced final management decisions. All trials were planted in small research plots (approximately 100 ft²) 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 analysis for all Kansas sites and the Brassica Breeding and Research Program at the University of Idaho performed analysis for all remaining sites.

The NWCVT continues in the 2019–2020 growing season and includes 24 entries. Seven seed suppliers contributed to the trial, and it was distributed to 33 locations in 18 states.

2018–2019 Growing Conditions

Temperature and precipitation data are shown at the top of the page for each location. Thick black lines on the temperature graphs represent long-term average high and low temperatures (°F) for the location. 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 “18-19” represents actual precipitation. If weather information was not provided, data were taken from a nearby town.

In general, the 2018–2019 growing season was marked by fluctuating temperatures and above-normal precipitation. Fall temperatures were moderate and moisture was adequate to surplus allowing for excellent crop establishment. A colder than normal February and March slowed green up in the spring. For some central Great Plains locations, this resulted in stand thinning and crown damage. Spring rains brought excessive moisture and saturated soils. Temperatures moderated, resulting in record high yields at some locations. Saturated soils and crown rot caused severe lodging to occur at a few locations. Overall, yields were excellent despite the challenges shown by the weather.

Test Sites and Results

Twenty-three harvested locations in 13 states are included in this report: Akron, Burlington, Fruita, Walsh, and Yellow Jacket, CO; Georgetown, DE; Athens, GA; Vincennes, IN; Belleville, Garden City, Hutchinson, Kiowa, Manhattan, and Norwich, KS; Havre, MT; Scottsbluff, NE; Clovis, NM; Chickasha, OK; Springfield, TN; Bushland and Chillicothe, TX; Orange, VA; and Alburgh, VT. Thirteen locations were not harvested because of poor stand establishment, winterkill, or too much rainfall before harvest. New cooperators in

2018–2019 include: Georgetown, DE; Carbondale, IL; and Havre, 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 locations merit some consideration.

Overall, yield performance was above average across much of the United States. Open pollinated trial means ranged from 377 to 3,395 lb/acre. Hybrid trial means ranged from 340 to 4,082 lb/acre. Yields in the southern Great Plains, Midwest, and Southeast were high because of above normal precipitation.

Caution should be used when evaluating data from locations with coefficient of variation (CV) values greater than 20. Lower values suggest less error was observed at the location. Inestimable differences in soil type, weather, and environmental conditions play a part in increasing experimental error and CV values. Eight trial 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 locations. 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 43 provides information on the tolerance of varieties to blackleg fungus. The 2018–2019 blackleg nursery was planted at Stillwater, OK, by Oklahoma State University. Data is provided with permission. View Table 44 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. Assistant scientist Scott Dooley assisted with organizing, packaging, planting, harvesting, data collection, and preparation of this publication. 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.

Georgetown, Delaware

Victor Green
University of Delaware

Planted: 9/27/2018 in 15-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Harvested: 6/12/2019
 Herbicides: 1 pt/a Treflan
 Insecticides: None
 Irrigation: Yes
 Previous crop: Corn
 Soil test: NA
 Fertilizer: 21-0-192-0.5 lb N-P-K-B fertilizer in fall
 100-0-0-0.5 lb N-P-K-B fertilizer in spring
 Soil type: Rosedale loamy sand
 Elevation: 48 ft Latitude: 38° 38'N
 Comments: Good to excellent yields and oil contents are reported for this site in its first year growing a trial.

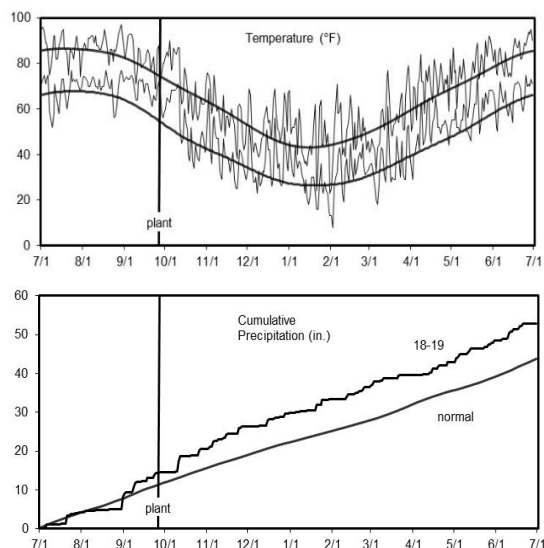


Table 1. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Georgetown, DE

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Plant height (in.)	50% bloom (DOY)	Test			
		2019	2018	2-yr.	2019	2019	2018			2-yr.	weight (lb/bu)	Oil (%)	Protein (%)
CROPLAN by WinField													
CP115WRR	OP	1368	---	---	81	---	---	---	40	101	44.0	42.4	21.0
CP225WRR	OP	1597	---	---	94	---	---	---	41	104	46.6	42.1	20.8
CP320WRR	OP	1682	---	---	99	---	---	---	39	104	45.5	43.6	20.0
Kansas State University													
KS4670	OP	1572	---	---	93	---	---	---	41	105	46.4	43.7	20.1
KS4719	OP	1553	---	---	92	---	---	---	45	105	45.2	43.1	20.6
KSR4723	OP	1524	---	---	90	---	---	---	42	103	48.5	42.2	21.3
KSR4767	OP	1388	---	---	82	---	---	---	42	105	41.8	41.8	20.9
Riley	OP	1708	---	---	101	---	---	---	38	102	47.6	43.5	20.9
Sumner	OP	1682	---	---	99	---	---	---	40	103	47.0	42.3	22.2
Surefire	OP	1602	---	---	95	---	---	---	43	103	48.2	42.1	21.8
Wichita	OP	1864	---	---	110	---	---	---	40	104	46.0	---	---
KWS-MOMONT													
QUARTZ	OP	2415	---	---	143	---	---	---	36	104	45.6	42.5	19.2
Ohlde Seed Farms													
Torrington	OP	1885	---	---	111	---	---	---	41	103	42.2	43.3	20.4
Star Specialty Seeds, Inc.													
Star 915W	OP	1787	---	---	106	---	---	---	41	105	45.3	43.2	21.0
Star 930W	OP	1769	---	---	104	---	---	---	39	103	48.7	44.3	20.1
Mean		1693	---	---	---	---	---	---	40	104	45.9	42.9	20.7
CV		16	---	---	---	---	---	---	4	1	6.1	1.6	2.1
LSD (0.05)		463	---	---	---	---	---	---	3	2	6.0	NS	1.0

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.

¹Type: H=hybrid. OP=open pollinated.

Table 2. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Georgetown, DE

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	50% bloom (DOY)	Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	weight (lb/bu)	Oil (%)			Protein (%)	
Bayer CropScience														
CWH189D	H	2479	---	---	88	---	---	---	40	105	41.3	43.6	20.1	
CWH190D	H	2509	---	---	89	---	---	---	40	104	40.7	43.4	20.7	
CWH249D	H	2703	---	---	96	---	---	---	36	105	41.5	43.1	20.0	
CWH317D	H	2992	---	---	106	---	---	---	37	102	42.1	44.0	19.3	
KWS-MOMONT														
HAMOUR	H	3073	---	---	109	---	---	---	43	104	42.8	42.8	19.2	
MH 14ES125	H	3310	---	---	118	---	---	---	44	105	42.9	---	---	
MH 15AY085	H	2955	---	---	105	---	---	---	42	105	39.0	45.7	18.8	
MH 15HT227	H	3133	---	---	111	---	---	---	38	105	41.6	45.9	18.5	
MH 15HT229	H	2799	---	---	100	---	---	---	42	104	42.1	45.8	19.4	
Limagrain Cereals														
Advocat	H	2055	---	---	73	---	---	---	36	103	39.9	45.2	19.4	
Architect	H	3120	---	---	111	---	---	---	40	105	43.1	44.5	19.5	
Rubisco Seeds LLC														
Phoenix CL	H	2504	---	---	89	---	---	---	42	103	41.8	45.8	19.3	
Plurax CL	H	2748	---	---	98	---	---	---	37	100	42.7	46.1	18.5	
Popular	H	2976	---	---	106	---	---	---	36	101	41.5	46.1	19.1	
Mean		2811	---	---	---	---	---	---	40	104	41.6	44.8	19.4	
CV		20	---	---	---	---	---	---	5	1	6.6	1.9	1.8	
LSD (0.05)		927	---	---	---	---	---	---	4	2	4.6	1.8	0.8	

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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

Athens, Georgia

Daniel Mailhot
University of Georgia

Planted: 10/2/2018 in 7-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Harvested: 6/9/2019
 Herbicides: Treflan
 Insecticides: None
 Irrigation: None
 Previous crop: Fallow
 Soil test: P=Medium, K=Medium, pH=6.3
 Fertilizer: 50-240-230 lb N-P-K fertilizer in fall
 123-0-0 lb N-P-K fertilizer in spring
 Soil type: Wickam sandy loam
 Elevation: 500 ft Latitude: 33° 43'N
 Comments: Consistent, outstanding yields at this location for two consecutive growing seasons.

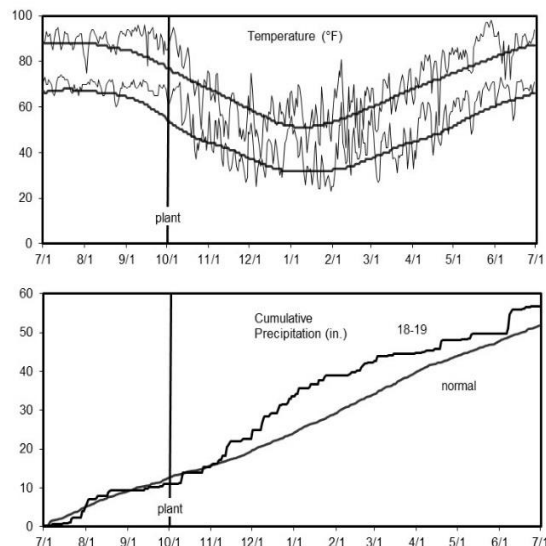


Table 3. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Athens, GA

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Plant height (in.)	50% bloom (DOY)	Test		
		2019	2018	2-yr.	2019	2018	2-yr.			weight (lb/bu)	Oil (%)	Protein (%)
CROPLAN by WinField												
CP115WRR	OP	3034	3503	3269	90	---	---	55	77	41.6	41.6	23.4
CP225WRR	OP	3088	3845	3466	92	---	---	57	78	43.1	40.9	23.6
CP320WRR	OP	3100	3867	3483	92	---	---	57	76	40.3	39.2	24.6
Kansas State University												
KS4670	OP	3287	3261	3274	98	---	---	61	77	40.1	40.5	24.4
KS4719	OP	3711	---	---	110	---	---	62	84	40.2	40.4	24.1
KSR4723	OP	3816	3536	3676	113	---	---	60	78	44.5	40.3	24.2
KSR4767	OP	3288	---	---	98	---	---	60	78	43.2	40.1	24.8
Riley	OP	3398	3808	3603	101	---	---	61	78	41.8	42.1	24.0
Sumner	OP	3896	3476	3686	116	---	---	60	77	44.1	39.4	24.3
Surefire	OP	3283	3369	3326	98	---	---	61	87	42.6	39.0	25.4
Wichita	OP	3460	3599	3530	103	---	---	62	83	41.7	39.6	24.8
KWS-MOMONT												
QUARTZ	OP	3558	4175	3866	106	---	---	59	78	43.0	37.4	24.6
Ohlde Seed Farms												
Torrington	OP	3290	3322	3306	98	---	---	61	79	42.2	40.0	24.4
Star Specialty Seeds, Inc.												
Star 915W	OP	3177	3840	3509	94	---	---	60	80	36.7	41.5	24.0
Star 930W	OP	3210	3710	3460	95	---	---	59	77	44.3	39.2	24.3
Mean		3363	3622	---	---	---	---	60	79	41.9	40.1	24.3
CV		10	12	---	---	---	---	5	2	6.3	2.4	2.2
LSD (0.05)		491	369	---	---	---	---	NS	2	3.9	2.1	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.

¹Type: H=hybrid. OP=open pollinated.

Table 4. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Athens, GA

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	50% bloom (DOY)	Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	weight (lb/bu)	Oil (%)			Protein (%)	
Bayer CropScience														
CWH189D	H	4599	4661	4630	118	---	---	---	61	84	41.5	38.3	24.0	
CWH190D	H	4160	4362	4261	107	---	---	---	61	82	39.5	38.9	24.0	
CWH249D	H	3844	---	---	98	---	---	---	60	82	42.2	37.8	24.7	
CWH317D	H	4368	---	---	112	---	---	---	55	77	43.4	38.2	23.1	
KWS-MOMONT														
HAMOUR	H	4019	3637	3828	103	---	---	---	65	85	41.6	40.6	21.8	
MH 14ES125	H	3505	---	---	90	---	---	---	64	86	42.0	39.9	22.5	
MH 15AY085	H	3125	3752	3439	80	---	---	---	62	82	35.6	43.2	21.6	
MH 15HT227	H	3755	---	---	96	---	---	---	55	78	35.6	42.5	21.3	
MH 15HT229	H	3090	4427	3758	79	---	---	---	60	80	37.6	42.6	23.0	
Limagrain Cereals														
Advocat	H	3711	---	---	95	---	---	---	62	80	39.8	40.4	22.6	
Architect	H	4167	---	---	107	---	---	---	63	81	42.2	41.7	22.2	
Rubisco Seeds LLC														
Phoenix CL	H	3933	4674	4303	101	---	---	---	61	77	36.7	42.0	22.0	
Plurax CL	H	4275	4623	4449	109	---	---	---	59	76	44.9	41.0	22.7	
Popular	H	4125	3994	4059	106	---	---	---	57	77	41.7	40.5	22.9	
Mean		3905	4377	---	---	---	---	---	60	80	40.3	40.4	22.8	
CV		9	10	---	---	---	---	---	4	1	6.7	2.8	2.9	
LSD (0.05)		580	769	---	---	---	---	---	4	2	4.6	2.6	1.6	

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.

¹Type: H=hybrid. OP=open pollinated.

Orange, Virginia

Greg Lillard and Wade Thomason
Virginia Tech University

Planted: 10/5/2018
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 6/12/2019
Herbicides: Treflan
Insecticides: None
Irrigation: None
Previous crop: NA
Soil test: NA
Fertilizer: 30-80-60-0 lb N-P-K-S fertilizer in fall
120-0-0 lb N-P-K fertilizer in spring
Soil type: Davidson silty clay
Elevation: 510 ft Latitude: 38° 13'N
Comments: Above average precipitation resulted in excellent yields at this location.

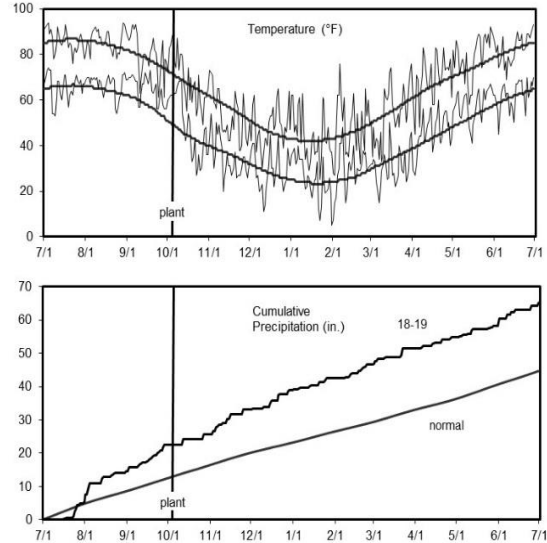


Table 5. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Orange, VA

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)	50% bloom (DOY)	Plant height (in.)	Test weight (lb/bu)	Oil (%)	Protein (%)
		2019	2017	2-yr.	2019	2019	2017	2-yr.	(in.)	(lb/bu)	(%)	(%)	
CROPLAN by WinField													
CP115WRR	OP	3199	1837	2518	101	---	---	---	105	51	49.0	40.4	25.4
CP225WRR	OP	3460	2071	2766	109	---	---	---	105	53	48.5	40.8	26.0
CP320WRR	OP	3050	2004	2527	96	---	---	---	104	49	48.2	40.8	26.0
Kansas State University													
KS4670	OP	2936	---	---	92	---	---	---	105	51	49.0	40.0	25.6
KS4719	OP	3641	---	---	115	---	---	---	105	49	49.5	41.4	24.4
KSR4723	OP	3344	---	---	105	---	---	---	105	48	48.7	40.6	25.4
KSR4767	OP	2934	---	---	92	---	---	---	102	50	49.7	41.2	25.0
Riley	OP	2993	1678	2336	94	---	---	---	103	48	48.8	40.9	25.3
Sumner	OP	3042	2055	2548	96	---	---	---	103	45	49.5	40.3	25.8
Surefire	OP	3156	1961	2558	99	---	---	---	102	47	48.7	42.0	25.6
Wichita	OP	3175	2138	2656	100	---	---	---	104	46	49.6	41.1	25.7
KWS-MOMONT													
QUARTZ	OP	3120	2278	2699	98	---	---	---	105	49	49.4	40.7	26.6
Ohlde Seed Farms													
Torrington	OP	3177	2048	2613	100	---	---	---	105	51	49.0	40.8	23.9
Star Specialty Seeds, Inc.													
Star 915W	OP	3257	1900	2578	103	---	---	---	105	51	49.2	41.6	25.6
Star 930W	OP	3163	1847	2505	100	---	---	---	103	51	49.5	39.8	25.9
Mean		3176	1918	---	---	---	---	---	104	49	49.1	40.8	25.5
CV		13	11	---	---	---	---	---	1	9	1.8	2.2	3.4
LSD (0.05)		NS	364	---	---	---	---	---	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.

¹Type: H=hybrid. OP=open pollinated.

Table 6. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Orange, VA

Name	Type ¹	Yield (lb/a)			Yield (% of	Winter survival			50%	Plant	Test		
		2019	2017	2-yr.	test avg.)	2019	2017	2-yr.	bloom	height	weight	Oil	Protein
									(DOY)	(in.)	(lb/bu)	(%)	(%)
Bayer CropScience													
CWH189D	H	3603	2280	2941	106	---	---	---	105	53	46.7	43.8	23.4
CWH190D	H	3127	2401	2764	92	---	---	---	105	54	45.9	39.7	24.5
CWH249D	H	2553	---	---	75	---	---	---	105	53	47.9	40.6	24.2
CWH317D	H	3866	---	---	114	---	---	---	105	57	49.0	42.2	23.5
KWS-MOMONT													
HAMOUR	H	4266	2466	3366	125	---	---	---	105	53	47.9	43.4	22.9
MH 14ES125	H	3885	---	---	114	---	---	---	104	54	48.3	41.2	24.9
MH 15AY085	H	2969	---	---	87	---	---	---	103	50	48.3	41.8	24.5
MH 15HT227	H	3765	---	---	111	---	---	---	103	54	49.5	41.1	24.1
MH 15HT229	H	2923	---	---	86	---	---	---	105	55	45.3	39.1	25.5
Limagrain Cereals													
Advocat	H	3802	---	---	112	---	---	---	102	55	48.7	42.3	23.0
Architect	H	3050	---	---	90	---	---	---	102	49	48.5	41.4	23.4
Rubisco Seeds LLC													
Phoenix CL	H	3269	---	---	96	---	---	---	104	47	47.8	41.8	24.6
Plurax CL	H	3702	2382	3042	109	---	---	---	104	56	48.0	40.1	24.3
Popular	H	3464	2277	2870	102	---	---	---	104	55	48.9	41.2	24.9
Mean		3468	2441	---	---	---	---	---	104	53	47.9	41.4	24.1
CV		17	9	---	---	---	---	---	2	9	5.0	2.0	3.5
LSD (0.05)		NS	371	---	---	---	---	---	3	NS	NS	1.8	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.

¹Type: H=hybrid. OP=open pollinated.

Vincennes, Indiana

Chuck Mansfield
Vincennes University

Planted: 9/19/2018 in 6-in. rows
Seeding Rate OP: 275,000 seeds/a
Seeding Rate Hybrid: 210,000 seeds/a
Desiccant: 1.5 pt/a Reglone on 6/12/2019
Harvested: 6/21/2019
Herbicides: 12 oz/a Dual, 4 oz/a Command
Insecticides: 1.92 oz/a Warrior
Fungicides: 2.85 oz/a Proline, 6 oz/a Approach
Previous crop: OP: tomato; HYB: wheat
Soil test: P=60 lb/a, K=274 lb/a, ph=6.6, OM=1.29%
Fertilizer: 69-0-11-5.5-11-0.5 lb/a N-P-K-Mg-S-B in fall
69-0-11-5.5-11-0.5 lb/a N-P-K-Mg-S-B in spring
Soil type: Lomax loam
Elevation: 430 ft Latitude: 38° 74'N
Comments: Yields were much improved over 2018. No winterkill was reported.

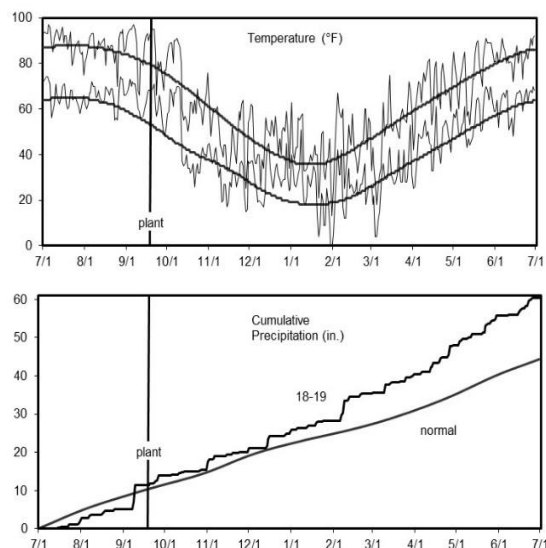


Table 7. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Vincennes, IN

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test weight		Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(lb/bu)	(%)						
CROPLAN by WinField																
CP115WRR	OP	2576	1681	2128	90	---	78	---	55	---	51.1	42.4	20.5			
CP225WRR	OP	2376	1989	2182	83	---	82	---	55	---	51.8	41.6	21.1			
CP320WRR	OP	2687	2164	2426	94	---	90	---	53	---	51.7	40.8	20.9			
Kansas State University																
KS4670	OP	2797	2252	2524	98	---	95	---	57	---	52.0	42.2	20.4			
KS4719	OP	3214	---	---	113	---	---	---	60	---	51.9	42.8	20.5			
KSR4723	OP	3014	1917	2466	106	---	90	---	57	---	51.4	43.1	19.8			
KSR4767	OP	2842	---	---	100	---	---	---	59	---	51.7	41.6	21.4			
Riley	OP	3183	2255	2719	112	---	87	---	57	---	51.7	43.3	20.5			
Sumner	OP	3008	1953	2480	106	---	90	---	56	---	51.7	43.1	20.8			
Surefire	OP	3050	1853	2451	107	---	92	---	57	---	52.1	41.8	21.2			
Wichita	OP	3217	2058	2638	113	---	92	---	56	---	51.6	42.8	20.7			
KWS-MOMONT																
QUARTZ	OP	3380	1179	2279	119	---	80	---	53	---	51.3	43.9	19.1			
Ohlde Seed Farms																
Torrington	OP	3183	2380	2782	112	---	83	---	57	---	51.4	42.8	20.4			
Star Specialty Seeds, Inc.																
Star 915W	OP	3100	2034	2567	109	---	87	---	56	---	51.2	43.4	21.1			
Star 930W	OP	2604	2114	2359	91	---	88	---	55	---	51.7	42.2	20.7			
Mean		2849	1947	---	---	---	88	---	56	---	51.6	42.5	20.6			
CV		7	13	---	---	---	8	---	2	---	0.6	1.9	2.9			
LSD (0.05)		342	432	---	---	---	NS	---	2	---	0.5	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.

¹Type: H=hybrid. OP=open pollinated.

Table 8. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Vincennes, IN

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Test		
		2019	2018	2-yr.	2019	2019	2018	2-yr.	Moisture (%)	weight (lb/bu)		Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	2700	2285	2493	86	---	96	---	52	---	51.6	41.8	20.0	
CWH190D	H	2427	---	---	78	---	---	---	53	---	52.3	42.8	20.3	
CWH249D	H	3043	2285	2664	97	---	95	---	51	---	52.0	42.6	19.8	
CWH317D	H	3184	---	---	102	---	---	---	52	---	51.6	43.5	18.6	
KWS-MOMONT														
HAMOUR	H	2937	1524	2231	94	---	57	---	58	---	52.1	44.0	18.1	
MH 14ES125	H	3415	---	---	109	---	---	---	58	---	51.2	45.0	18.3	
MH 15AY085	H	3028	1205	2116	97	---	33	---	56	---	51.5	45.2	18.1	
MH 15HT227	H	3515	---	---	112	---	---	---	54	---	50.8	46.9	16.8	
MH 15HT229	H	3460	1604	2532	111	---	30	---	58	---	51.0	46.3	17.8	
Limagrain Cereals														
Advocat	H	3042	---	---	97	---	---	---	54	---	50.5	45.3	18.1	
Architect	H	3322	---	---	106	---	---	---	54	---	50.5	45.5	17.9	
Rubisco Seeds LLC														
Phoenix CL	H	3383	2565	2974	108	---	90	---	58	---	51.5	45.1	17.6	
Plurax CL	H	3288	2239	2764	105	---	78	---	53	---	51.9	45.6	17.7	
Popular	H	3048	2332	2690	97	---	72	---	53	---	52.2	46.2	17.2	
Mean		3128	1982	---	---	---	69	---	54	---	51.5	44.6	18.4	
CV		8	10	---	---	---	10	---	2	---	0.9	1.5	2.4	
LSD (0.05)		441	339	---	---	---	11	---	2	---	0.8	1.4	0.9	

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.

¹Type: H=hybrid. OP=open pollinated.

Springfield, Tennessee

Dennis West
University of Tennessee

Planted: 10/1/2018 in 7-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Harvested: 6/4/2019
 Herbicides: None
 Fungicides: 4.3 oz/a Proline
 Irrigation: None
 Previous crop: Soybean
 Soil test: P=High, K=Low, pH=6.2
 Fertilizer: 30-0-0-0 lb N-P-K-S fertilizer in fall
 180-0-30-23-1 lb N-P-K-S-B fertilizer in spring
 Soil type: Dickson silt loam
 Elevation: 706 ft Latitude: 36° 32'N
 Comments: Above normal precipitation and a mild winter resulted in above average yields at this location.

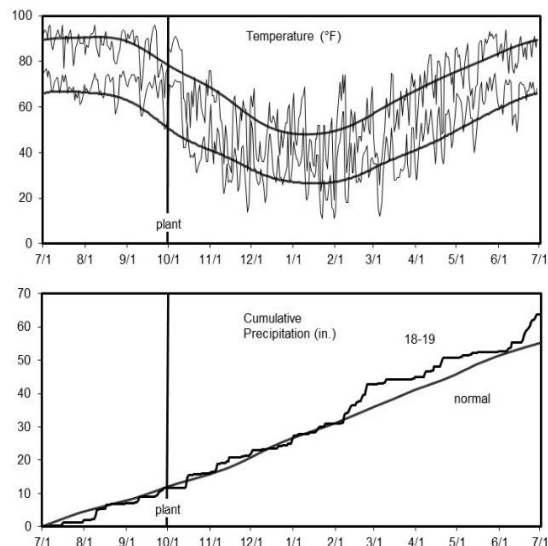


Table 9. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Springfield, TN

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)		Winter survival (%)		Plant height (in.)	Moisture (%)	Test weight		
		2019	2018	2-yr.	2019	2019	2018	2-yr.			(lb/bu)	(%)	(%)
Bayer CropScience													
CWH189D	H	4088	2754	3421	113	---	---	---	---	---	51.2	38.7	23.8
CWH190D	H	3079	2087	2583	85	---	---	---	---	---	50.5	40.4	23.3
CWH249D	H	3819	---	---	106	---	---	---	---	---	50.7	39.0	24.3
CWH317D	H	3951	---	---	109	---	---	---	---	---	51.3	38.7	22.8
Kansas State University													
KS4670	OP	3220	2802	3011	89	---	---	---	---	---	50.4	39.2	25.2
KS4719	OP	3240	---	---	90	---	---	---	---	---	49.9	40.7	24.2
Surefire	OP	3523	2239	2881	98	---	---	---	---	---	50.4	38.9	25.3
KWS-MOMONT													
HAMOUR	H	3974	2884	3429	110	---	---	---	---	---	50.8	39.8	22.6
HIDYLLE	H	4235	3172	3703	117	---	---	---	---	---	51.2	40.6	23.0
MH 14ES125	H	2758	---	---	76	---	---	---	---	---	50.1	41.2	22.2
MH 15AY085	H	3549	2788	3169	98	---	---	---	---	---	49.7	41.0	22.9
MH 15HT227	H	3154	---	---	87	---	---	---	---	---	50.8	42.7	21.5
MH 15HT229	H	3242	2673	2957	90	---	---	---	---	---	49.4	42.0	23.1
QUARTZ	OP	3407	2243	2825	94	---	---	---	---	---	50.2	41.3	22.0
Ohlde Seed Farms													
Torrington	OP	3664	2463	3064	102	---	---	---	---	---	50.8	40.7	24.1
Rubisco Seeds LLC													
Inspiration	H	4052	3343	3697	112	---	---	---	---	---	50.8	40.8	22.2
Phoenix CL	H	4255	3532	3894	118	---	---	---	---	---	50.8	41.8	22.8
Plurax CL	H	3879	3028	3453	107	---	---	---	---	---	51.3	40.9	22.8
Popular	H	3487	2819	3153	97	---	---	---	---	---	50.8	41.6	22.7
Mean		3609	2689	---	---	---	---	---	---	---	50.6	40.5	23.2
CV		11	17	---	---	---	---	---	---	---	1.1	2.4	2.3
LSD (0.05)		655	745	---	---	---	---	---	---	---	0.9	2.1	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.

¹Type: H=hybrid. OP=open pollinated.

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Akron, Colorado

Jerry Johnson, Ed Asfeld, and Sally Jones-Diamond
Colorado State University

Planted: 8/31/2018 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 7/27 and 8/1/2019
Herbicides: None
Insecticides: None
Irrigation: 0.5 in. after planting
Previous crop: NA
Soil test: NA
Fertilizer: 150-50-0-0 lb N-P-K-S fertilizer in fall
Soil type: Weld silt loam
Elevation: 4537 ft Latitude: 40° 9'N
Comments: Despite some winter stand losses, yields were above average for the year.

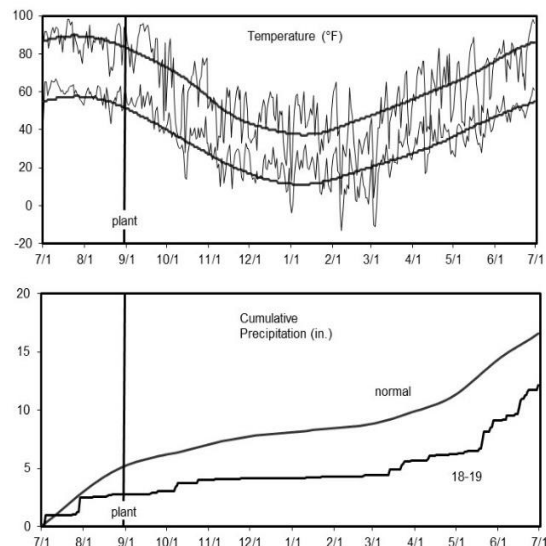


Table 10. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Akron, CO

Name	Type ¹	Yield (lb/a) ^{2,3}			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	50% bloom (DOY)	Maturity (DOY)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	2019	2018					
CROPLAN by WinField															
CP115WRR	OP	1850	1172	1511	90	44	67	56	41	138	200	34.2	24.7		
CP225WRR	OP	1477	1648	1563	72	29	63	46	41	141	202	34.1	23.7		
CP320WRR	OP	2045	1415	1730	99	32	73	52	39	139	200	37.0	23.8		
Kansas State University															
KS4670	OP	1731	1810	1770	84	60	82	71	44	137	200	34.7	24.5		
KS4719	OP	2546	---	---	123	61	---	---	47	142	200	31.9	23.4		
KSR4723	OP	2617	1314	1966	127	59	61	60	46	137	199	35.2	24.3		
KSR4767	OP	2009	---	---	97	60	---	---	47	139	202	32.2	23.6		
Riley	OP	2145	1175	1660	104	57	67	62	42	138	200	35.1	25.1		
Sumner	OP	2282	906	1594	111	64	63	64	46	138	200	34.4	25.3		
Surefire	OP	1802	905	1353	87	35	67	51	47	139	202	34.7	23.8		
Wichita	OP	1614	1550	1582	78	36	73	55	42	139	200	34.4	24.9		
KWS-MOMONT															
QUARTZ	OP	2267	1415	1841	110	42	77	59	40	138	201	32.5	23.4		
Ohlde Seed Farms															
Torrington	OP	1953	1377	1665	95	45	73	59	46	138	200	34.5	23.8		
Star Specialty Seeds, Inc.															
Star 915W	OP	2336	783	1560	113	45	60	52	42	138	203	37.0	24.7		
Star 930W	OP	2135	1384	1759	104	43	70	56	43	139	200	33.9	24.0		
Mean		2062	1297	---	---	47	69	---	43	139	201	34.5	24.2		
CV		23	40	---	---	30	12	---	7	0.9	0.5	5.6	2.9		
LSD (0.05)		511	NS	---	---	20	12	---	5	2	2	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

³Yield of the OP trial is significant at P<0.2.

Table 11. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Akron, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	50% bloom (DOY)	Maturity (DOY)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.							
Bayer CropScience															
CWH189D	H	2904	1333	2118	122	45	57	51	42	138	203	37.1	24.2		
CWH190D	H	2712	2213	2462	114	66	50	58	46	136	201	36.7	24.3		
CWH249D	H	2291	---	---	97	77	---	---	42	137	201	34.2	24.3		
CWH317D	H	3221	---	---	136	62	---	---	40	137	202	34.0	24.2		
KWS-MOMONT															
HAMOUR	H	1785	---	---	75	31	---	---	43	139	203	35.1	24.5		
MH 14ES125	H	1675	---	---	71	16	---	---	44	141	205	36.9	25.2		
MH 15AY085	H	1604	---	---	68	7	---	---	42	146	---	34.6	25.4		
MH 15HT227	H	2945	---	---	124	51	---	---	41	139	206	36.9	25.1		
MH 15HT229	H	2256	---	---	95	62	---	---	39	139	205	37.1	24.8		
Limagrain Cereals															
Advocat	H	1939	---	---	82	40	---	---	41	137	204	36.5	25.1		
Architect	H	2730	---	---	115	66	---	---	42	138	205	35.1	24.9		
Rubisco Seeds LLC															
Phoenix CL	H	3106	---	---	131	44	---	---	39	138	203	36.6	24.8		
Plurax CL	H	1855	---	---	78	58	---	---	42	137	201	34.9	24.4		
Popular	H	2384	1683	2033	100	65	57	61	43	137	201	35.5	24.8		
Mean		2374	1864	---	---	49	41	---	42	139	203	35.8	24.7		
CV		21	37	---	---	31	36	---	5	0.7	0.5	3.9	2.9		
LSD (0.05)		902	NS	---	---	26	21	---	3	2	2	3.0	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

³Yield of the OP trial is significant at P<0.2.

Burlington, Colorado

Jerry Johnson, Ed Asfeld, Sally Jones-Diamond, and Rob Myer
Colorado State University

Planted: 9/11/2018 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 7/11/2019
Herbicides: None
Insecticides: None
Irrigation: None
Previous crop: Fallow
Soil test: NA
Fertilizer: 57-24-0-10 lb N-P-K-S fertilizer in fall
Soil type: Silt loam
Elevation: 3719 ft Latitude: 39° 13'N
Comments: Although yields and test weights were low, oil contents were average or slightly above.

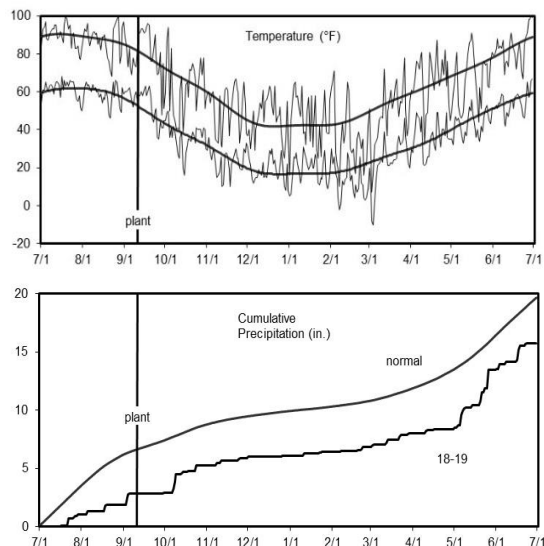


Table 12. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Burlington, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Plant height (in.)	Winter survival (%)	Fall vigor (1-5)	Test weight (lb/bu)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018						
CROPLAN by WinField													
CP115WRR	OP	264	---	---	70	---	---	---	---	4.0	35.9	39.4	23.9
CP225WRR	OP	304	---	---	81	---	---	---	---	4.3	32.9	38.6	23.2
CP320WRR	OP	534	---	---	142	---	---	---	---	4.3	39.1	39.2	23.2
Kansas State University													
KS4670	OP	326	---	---	86	---	---	---	---	3.7	35.9	38.7	22.7
KS4719	OP	447	---	---	119	---	---	---	---	4.3	38.1	40.0	23.5
KSR4723	OP	325	---	---	86	---	---	---	---	4.0	36.6	40.9	22.9
KSR4767	OP	265	---	---	70	---	---	---	---	4.0	30.6	39.0	24.1
Riley	OP	607	---	---	161	---	---	---	---	4.0	43.3	39.2	23.1
Sumner	OP	153	---	---	41	---	---	---	---	3.7	35.1	40.8	23.6
Surefire	OP	376	---	---	100	---	---	---	---	4.0	35.4	39.5	23.6
Wichita	OP	459	---	---	122	---	---	---	---	4.0	39.7	40.4	23.1
KWS-MOMONT													
QUARTZ	OP	157	---	---	42	---	---	---	---	4.0	32.5	39.0	22.3
Ohlde Seed Farms													
Torrington	OP	617	---	---	164	---	---	---	---	4.3	40.4	39.2	23.2
Star Specialty Seeds, Inc.													
Star 915W	OP	341	---	---	91	---	---	---	---	4.0	39.0	40.6	24.8
Star 930W	OP	407	---	---	108	---	---	---	---	4.0	38.9	39.7	24.0
Mean		377	---	---	---	---	---	---	---	4.0	37.2	39.6	23.4
CV		45	---	---	---	---	---	---	---	11.3	14.8	3.4	2.9
LSD (0.05)		240	---	---	---	---	---	---	---	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 13. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Burlington, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)	Plant height (in.)	Fall vigor (1-5)	Test weight (lb/bu)		Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(in.)	(1-5)	(lb/bu)	(%)	(%)	
Bayer CropScience														
CWH189D	H	585	---	---	172	---	---	---	---	4.0	43.6	41.0	22.6	
CWH190D	H	535	---	---	157	---	---	---	---	4.0	41.8	39.7	23.0	
CWH249D	H	580	---	---	170	---	---	---	---	4.0	40.3	37.1	23.5	
CWH317D	H	407	---	---	120	---	---	---	---	3.7	37.5	38.8	22.8	
KWS-MOMONT														
HAMOUR	H	197	---	---	58	---	---	---	---	3.7	38.6	37.6	22.7	
MH 14ES125	H	326	---	---	96	---	---	---	---	4.0	40.9	35.4	23.9	
MH 15AY085	H	147	---	---	43	---	---	---	---	4.3	36.5	38.7	24.0	
MH 15HT227	H	209	---	---	61	---	---	---	---	4.0	39.6	38.9	22.8	
MH 15HT229	H	297	---	---	87	---	---	---	---	3.7	41.9	39.4	22.8	
Limagrain Cereals														
Advocat	H	160	---	---	47	---	---	---	---	4.0	40.6	36.1	22.8	
Architect	H	324	---	---	95	---	---	---	---	3.7	36.5	40.0	21.9	
Rubisco Seeds LLC														
Phoenix CL	H	273	---	---	80	---	---	---	---	3.7	43.8	37.2	22.8	
Plurax CL	H	307	---	---	90	---	---	---	---	4.0	40.1	38.6	23.3	
Popular	H	354	---	---	104	---	---	---	---	3.3	45.6	40.4	22.0	
Mean		340	---	---	---	---	---	---	---	3.9	40.5	38.4	22.9	
CV		46	---	---	---	---	---	---	---	13.0	10.2	6.9	2.2	
LSD (0.05)		267	---	---	---	---	---	---	---	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

Fruita, Colorado

Reza Keshavarz Afshar
Colorado State University

Planted: 8/31/2018 in 6.5-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 7/5/2019
Herbicides: 1 qt/a Treflan, 18 oz/a Assure II
Insecticides: None
Irrigation: Furrow
Previous crop: Wheat
Soil test: NA
Fertilizer: 19-39-45-12 lb N-P-K-S fertilizer in fall
92-0-0 lb N-P-K fertilizer in spring
Soil type: Youngston clay loam
Elevation: 4604 ft Latitude: 39° 11'N
Comments: All varieties showed excellent winter survival and very high oil content. Some bird damage was observed.

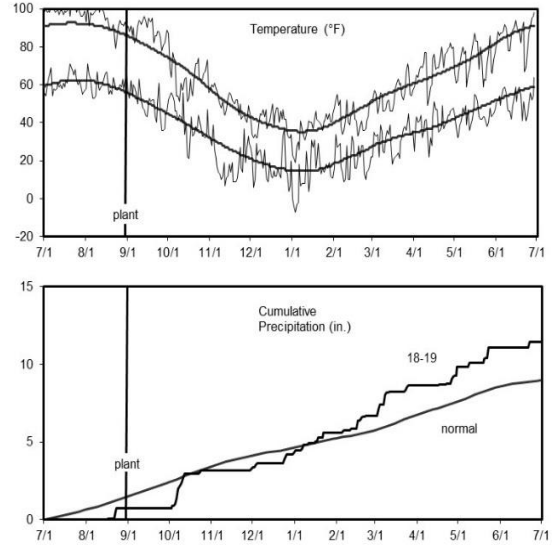


Table 14. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Fruita, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%) ³			Plant height (in.)	Fall stand (0-10)	Fall vigor (1-5)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.							
CROPLAN by WinField															
CP115WRR	OP	1629	---	---	87	100	---	---	53	7.0	2.3	45.9	18.8		
CP225WRR	OP	1805	---	---	97	97	---	---	56	8.0	2.7	45.9	18.8		
CP320WRR	OP	1928	---	---	104	92	---	---	52	7.0	2.7	42.7	21.4		
Kansas State University															
KS4670	OP	1919	---	---	103	88	---	---	54	5.7	2.7	44.4	18.5		
KS4719	OP	2182	---	---	117	97	---	---	51	7.7	3.0	42.4	21.3		
KSR4723	OP	2070	---	---	111	100	---	---	52	7.7	2.7	45.4	19.5		
KSR4767	OP	1647	---	---	88	100	---	---	55	7.3	3.0	42.3	21.8		
Riley	OP	2141	---	---	115	92	---	---	50	8.0	2.3	44.5	20.1		
Sumner	OP	2167	---	---	116	100	---	---	55	7.0	3.0	46.2	18.6		
Surefire	OP	1999	---	---	107	100	---	---	54	8.3	2.3	42.0	21.1		
Wichita	OP	1719	---	---	92	93	---	---	56	7.0	2.7	42.1	19.9		
KWS-MOMONT															
QUARTZ	OP	2129	---	---	114	95	---	---	49	6.7	2.0	46.5	17.3		
Ohlde Seed Farms															
Torrington	OP	1174	---	---	63	93	---	---	57	6.3	2.3	40.5	19.9		
Star Specialty Seeds, Inc.															
Star 915W	OP	1541	---	---	83	93	---	---	51	6.7	1.7	42.6	21.1		
Star 930W	OP	1870	---	---	100	92	---	---	53	7.7	3.0	44.6	19.4		
Mean		1861	---	---	---	95	---	---	53	7.2	2.6	43.9	19.8		
CV		29	---	---	---	5	---	---	5	16.6	21.9	6.3	8.5		
LSD (0.05)		NS	---	---	---	7	---	---	5	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

³Winter survival significant at P<0.1 and P<0.2 in the OP and hybrid trials, respectively.

Table 15. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Fruita, CO

Name	Type ¹	Yield (lb/a) ²		Yield (% of test avg.)			Winter survival (%) ³			Plant height	Fall stand	Fall vigor	Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(in.)	(0-10)	(1-5)	(%)	(%)	
Bayer CropScience														
CWH189D	H	1438	---	---	108	88	---	---	49	3.3	1.3	45.8	18.3	
CWH190D	H	1705	---	---	128	90	---	---	45	4.3	1.3	48.3	17.3	
CWH249D	H	953	---	---	72	95	---	---	49	6.7	2.3	46.6	17.7	
CWH317D	H	1416	---	---	106	87	---	---	46	5.0	2.0	43.9	17.9	
KWS-MOMONT														
HAMOUR	H	1364	---	---	103	93	---	---	50	7.0	3.0	47.2	16.9	
MH 14ES125	H	1229	---	---	92	95	---	---	51	6.3	2.7	46.2	18.9	
MH 15AY085	H	1043	---	---	78	90	---	---	50	6.3	2.7	44.0	18.8	
MH 15HT227	H	1349	---	---	101	97	---	---	46	6.7	2.7	47.5	17.9	
MH 15HT229	H	1277	---	---	95	85	---	---	47	7.0	3.0	46.4	18.7	
Limagrain Cereals														
Advocat	H	1405	---	---	105	98	---	---	53	8.3	4.0	46.4	17.4	
Architect	H	1567	---	---	117	92	---	---	45	6.3	2.3	47.6	17.4	
Rubisco Seeds LLC														
Phoenix CL	H	1316	---	---	99	95	---	---	54	7.0	2.7	46.3	17.6	
Plurax CL	H	1122	---	---	84	95	---	---	47	6.3	1.7	46.3	17.9	
Popular	H	1341	---	---	101	98	---	---	49	6.3	2.7	47.1	17.6	
Mean		1332	---	---	---	93	---	---	49	6.2	2.5	46.4	17.9	
CV		29	---	---	---	6	---	---	6	15.1	26.4	3.0	4.1	
LSD (0.05)		NS	---	---	---	6	---	---	5	1.6	1.1	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

³Winter survival significant at P<0.1 and P<0.2 in the OP and hybrid trials, respectively.

Walsh, Colorado

Kevin Larson
Colorado State University

Planted: 9/12/2018 in 12-in. rows
Harvested: 7/25/2019
Soil type: Baca clay loam
Elevation: 3974 ft Latitude: 37° 26'N
Comments: Winter survival was excellent at this site.

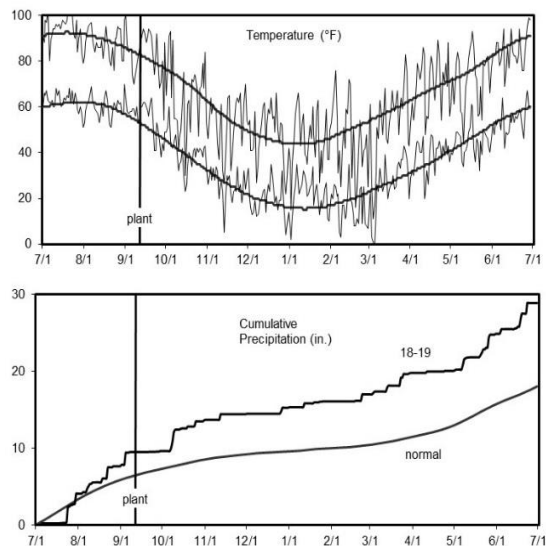


Table 16. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Walsh, CO

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (0-10)			Plant height (in.)	Moisture (%)	Test weight		Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(lb/bu)	(%)						
CROPLAN by WinField																
CP115WRR	OP	1023	---	---	94	9.2	---	---	40	---	---	33.3	26.9			
CP225WRR	OP	693	---	---	64	9.6	---	---	42	---	---	30.7	26.6			
CP320WRR	OP	1502	---	---	138	9.8	---	---	39	---	---	31.6	26.7			
Kansas State University																
KS4670	OP	982	---	---	90	9.8	---	---	39	---	---	34.1	26.7			
KS4719	OP	1271	---	---	117	9.7	---	---	43	---	---	33.1	27.0			
KSR4723	OP	833	---	---	76	9.7	---	---	41	---	---	30.9	26.3			
KSR4767	OP	916	---	---	84	9.5	---	---	40	---	---	30.6	26.2			
Riley	OP	1353	---	---	124	10.0	---	---	39	---	---	33.8	26.7			
Sumner	OP	702	---	---	64	9.6	---	---	38	---	---	31.8	26.7			
Surefire	OP	1345	---	---	123	9.7	---	---	40	---	---	31.7	26.6			
Wichita	OP	1370	---	---	126	9.9	---	---	41	---	---	30.9	26.5			
KWS-MOMONT																
QUARTZ	OP	1469	---	---	135	9.4	---	---	41	---	---	33.2	25.8			
Ohlde Seed Farms																
Torrington	OP	1263	---	---	116	9.9	---	---	45	---	---	31.2	26.3			
Star Specialty Seeds, Inc.																
Star 915W	OP	520	---	---	48	8.3	---	---	36	---	---	31.1	26.7			
Star 930W	OP	1106	---	---	101	9.5	---	---	40	---	---	30.3	25.7			
Mean		1090	---	---	---	9.6	---	---	40	---	---	31.9	26.5			
CV		---	---	---	---	---	---	---	---	---	---	6.1	2.0			
LSD (0.05)		618	---	---	---	0.6	---	---	---	---	---	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.

¹Type: H=hybrid. OP=open pollinated.

Table 17. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Walsh, CO

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (0-10)			Plant height (in.)	Test		
		2019	2018	2-yr.	2019	2019	2018	2-yr.	Moisture (%)	weight (lb/bu)		Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	900	---	---	108	9.1	---	---	40	---	---	24.7	25.6	
CWH190D	H	702	---	---	84	9.5	---	---	34	---	---	24.7	25.3	
CWH249D	H	685	---	---	82	9.4	---	---	36	---	---	28.5	26.4	
CWH317D	H	1254	---	---	150	9.6	---	---	35	---	---	28.2	26.5	
KWS-MOMONT														
HAMOUR	H	553	---	---	66	9.1	---	---	36	---	---	27.7	26.4	
MH 14ES125	H	776	---	---	93	9.4	---	---	41	---	---	28.0	26.4	
MH 15AY085	H	363	---	---	44	8.5	---	---	36	---	---	26.3	26.5	
MH 15HT229	H	916	---	---	110	9.6	---	---	39	---	---	31.0	26.4	
MH15HT227	H	784	---	---	94	9.7	---	---	34	---	---	24.8	25.6	
Limagrain Cereals														
Advocat	H	858	---	---	103	9.8	---	---	34	---	---	27.1	26.5	
Architect	H	1295	---	---	155	9.5	---	---	37	---	---	29.6	26.9	
Rubisco Seeds LLC														
Phoenix CL	H	825	---	---	99	9.0	---	---	37	---	---	28.4	25.5	
Plurax CL	H	716	---	---	86	9.7	---	---	34	---	---	24.6	26.4	
Popular	H	1048	---	---	126	9.9	---	---	36	---	---	30.8	26.5	
Mean		834	---	---	---	9.4	---	---	36	---	---	27.5	26.2	
CV		---	---	---	---	---	---	---	---	---	---	14.1	1.5	
LSD (0.05)		677	---	---	---	0.7	---	---	---	---	---	NS	0.9	

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.

¹Type: H=hybrid. OP=open pollinated.

Yellow Jacket, Colorado

Katie Russell
Colorado State University

Planted: 9/7/2018
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Harvested: 7/29/2019
 Herbicides: 22 oz/a Roundup preplant
 Insecticides: None
 Irrigation: None
 Previous crop: Spring wheat
 Soil test: NA
 Fertilizer: NA
 Soil type: Wetherill silt loam
 Elevation: 6900 ft Latitude: 37° 32'N
 Comments: Winter survival and yields have been challenged at this location for two consecutive years. However, oil contents have been very high.

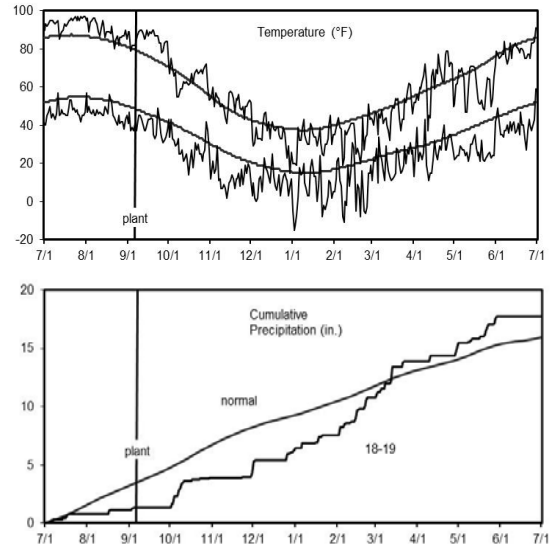


Table 18. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Yellow Jacket, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Plant height (in.)	50% bloom (DOY)	Test weight (lb/bu)	Oil (%)	Protein (%)	
		2019	2018	2-yr.	2019	2019	2018						2-yr.
CROPLAN by WinField													
CP115WRR	OP	1119	383	751	116	73	63	68	43	162	41.7	46.4	20.0
CP225WRR	OP	752	344	548	78	50	65	58	42	164	43.7	46.5	19.1
CP320WRR	OP	789	537	663	82	43	67	55	38	169	43.7	42.7	21.8
Kansas State University													
KS4670	OP	809	417	613	84	50	70	60	44	163	42.0	44.4	20.5
KS4719	OP	806	---	---	84	63	---	---	41	165	45.8	43.5	22.4
KSR4723	OP	1188	322	755	124	60	60	60	41	164	45.1	45.8	20.0
KSR4767	OP	893	---	---	93	37	---	---	43	166	44.5	43.7	22.2
Riley	OP	1102	448	775	115	60	65	63	38	162	44.8	45.7	20.6
Sumner	OP	773	281	527	80	47	63	55	47	162	42.4	46.1	20.9
Surefire	OP	1255	430	842	131	63	77	70	45	164	43.1	44.7	22.8
Wichita	OP	1039	382	711	108	53	67	60	37	165	43.8	45.1	21.7
KWS-MOMONT													
QUARTZ	OP	1455	427	941	151	60	60	60	40	161	44.9	46.2	19.4
Ohlde Seed Farms													
Torrington	OP	828	449	639	86	53	67	60	44	163	40.8	42.2	22.6
Star Specialty Seeds, Inc.													
Star 915W	OP	838	269	553	87	60	57	58	41	168	43.0	46.3	21.2
Star 930W	OP	809	432	620	84	37	67	52	42	166	44.2	44.0	21.7
Mean		961	396	---	---	54	64	---	42	164	43.7	44.9	21.1
CV		28	37	---	---	34	14	---	8	1	5.2	3.0	4.4
LSD (0.05)		NS	NS	---	---	NS	7	---	NS	4	NS	NS	2.0

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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 19. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Yellow Jacket, CO

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	50% bloom (DOY)	Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	weight (lb/bu)	Oil (%)			Protein (%)	
Bayer CropScience														
CWH189D	H	1099	368	733	91	70	57	64	42	166	44.4	46.8	19.1	
CWH190D	H	882	255	568	73	43	55	49	47	165	45.8	49.0	18.9	
CWH249D	H	1366	---	---	114	40	---	---	48	163	43.1	47.7	18.6	
CWH317D	H	1133	---	---	94	63	---	---	42	166	44.5	45.1	19.4	
KWS-MOMONT														
HAMOUR	H	1230	320	775	102	73	60	67	49	165	46.3	47.4	17.5	
MH 14ES125	H	941	---	---	78	60	---	---	44	164	42.6	45.6	21.4	
MH 15AY085	H	1121	308	715	93	73	60	67	49	163	45.9	47.4	18.1	
MH 15HT227	H	1243	---	---	103	57	---	---	45	165	45.4	49.2	17.8	
MH 15HT229	H	1007	371	689	84	73	70	72	48	163	39.4	48.7	18.9	
Limagrain Cereals														
Advocat	H	1191	---	---	99	47	---	---	43	162	44.8	48.3	19.1	
Architect	H	1909	---	---	159	67	---	---	49	160	42.0	48.4	18.1	
Rubisco Seeds LLC														
Phoenix CL	H	1216	206	711	101	60	42	51	47	164	43.5	47.5	18.2	
Plurax CL	H	1442	443	942	120	63	72	68	42	161	45.7	47.9	18.2	
Popular	H	1049	280	665	87	53	53	53	44	162	44.9	47.8	18.3	
Mean		1202	330	---	---	60	51	---	46	163	44.1	47.6	18.7	
CV		33	54	---	---	29	37	---	7	2	4.8	2.2	5.7	
LSD (0.05)		NS	NS	---	---	NS	NS	---	5	NS	3.7	2.2	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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

Andrew Esser
Kansas State University

Planted: 9/14/2018 in 10-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Swathed: 7/2/2019
 Harvested: 7/15/2019
 Herbicides: 10 oz/a Assure II
 Insecticides: None
 Irrigation: None
 Previous crop: Wheat
 Soil test: NA
 Fertilizer: 0-0-0-0 lb N-P-K-S fertilizer in fall
 90-0-0 lb N-P-K fertilizer in spring
 Soil type: Crete silt loam
 Elevation: 1530 ft Latitude: 39° 48'N
 Comments: The location was challenged by a slow spring green up and poor spring vigor. Crown damage was caused by fluctuating winter temperatures.

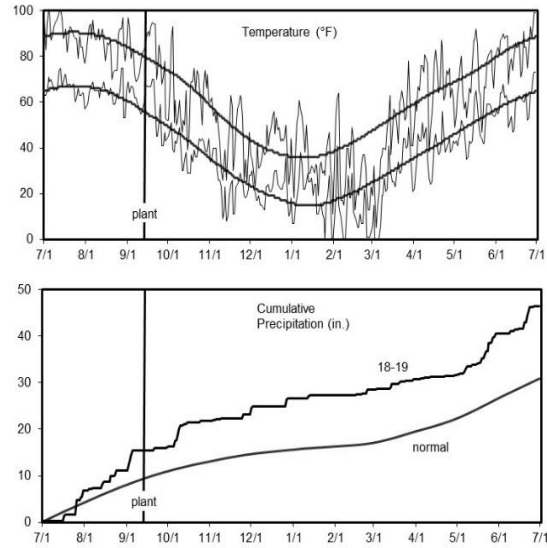


Table 20. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Belleville, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test weight		Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(lb/bu)	(%)						
CROPLAN by WinField																
CP115WRR	OP	488	---	---	50	47	---	---	---	7.0	44.1	38.7	22.7			
CP225WRR	OP	589	---	---	61	27	---	---	---	7.2	45.6	38.6	21.8			
CP320WRR	OP	758	---	---	78	62	---	---	---	7.0	45.3	38.6	22.0			
Kansas State University																
KS4670	OP	794	---	---	82	57	---	---	---	6.7	45.2	39.0	21.9			
KS4719	OP	1597	---	---	165	93	---	---	---	7.1	45.0	39.2	21.6			
KSR4723	OP	1021	---	---	105	53	---	---	---	6.8	46.9	39.5	21.9			
KSR4767	OP	1106	---	---	114	70	---	---	---	7.5	45.5	39.3	22.1			
Riley	OP	1120	---	---	116	80	---	---	---	6.4	45.6	39.5	22.1			
Sumner	OP	802	---	---	83	53	---	---	---	7.1	43.3	38.6	23.0			
Surefire	OP	997	---	---	103	77	---	---	---	7.2	45.6	38.9	23.0			
Wichita	OP	1107	---	---	114	65	---	---	---	6.9	47.1	39.3	22.2			
KWS-MOMONT																
QUARTZ	OP	841	---	---	87	57	---	---	---	5.8	43.5	37.6	20.6			
Ohlde Seed Farms																
Torrington	OP	1412	---	---	146	85	---	---	---	7.3	46.3	39.8	21.3			
Star Specialty Seeds, Inc.																
Star 915W	OP	910	---	---	94	52	---	---	---	6.8	42.9	39.6	22.3			
Star 930W	OP	1155	---	---	119	72	---	---	---	7.0	45.4	38.6	21.9			
Mean		969	---	---	---	63	---	---	---	6.9	45.3	39.0	22.0			
CV		31	---	---	---	27	---	---	---	5.5	6.9	2.1	1.8			
LSD (0.05)		526	---	---	---	28	---	---	---	0.7	NS	NS	0.8			

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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 21. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Belleville, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height		Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(in.)	Moisture (%)	weight (lb/bu)	Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	1491	---	---	148	57	---	---	---	6.7	47.4	37.6	22.9	
CWH190D	H	1769	---	---	175	67	---	---	---	7.2	47.2	39.5	22.2	
CWH249D	H	1857	---	---	184	70	---	---	---	6.6	47.3	38.7	22.4	
CWH317D	H	1642	---	---	163	87	---	---	---	6.4	47.5	38.5	22.1	
KWS-MOMONT														
HAMOUR	H	377	---	---	37	10	---	---	---	7.3	43.9	38.2	21.4	
MH 14ES125	H	728	---	---	72	17	---	---	---	7.5	42.2	37.7	22.6	
MH 15AY085	H	---	---	---	---	---	---	---	---	---	---	---	---	
MH 15HT227	H	527	---	---	52	27	---	---	---	8.5	36.1	40.1	21.1	
MH 15HT229	H	845	---	---	84	43	---	---	---	6.9	45.1	40.0	21.8	
Limagrain Cereals														
Advocat	H	1257	---	---	124	53	---	---	---	7.8	42.5	39.6	20.7	
Architect	H	780	---	---	77	27	---	---	---	7.5	33.4	39.7	20.8	
Rubisco Seeds LLC														
Phoenix CL	H	640	---	---	63	20	---	---	---	6.6	38.1	38.5	21.8	
Plurax CL	H	1351	---	---	134	43	---	---	---	7.6	48.6	40.4	21.4	
Popular	H	1221	---	---	121	67	---	---	---	7.0	47.1	41.5	20.4	
Mean		1009	---	---	---	42	---	---	---	7.2	43.5	39.3	21.7	
CV		32	---	---	---	31	---	---	---	11.3	11.0	2.3	2.4	
LSD (0.05)		565	---	---	---	22	---	---	---	NS	9.0	2.1	1.2	

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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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

Johnathon Holman and Scott Maxwell
Kansas State University

Planted: 8/30/2018 in 8-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested OP: 7/2/2019
Harvested Hybrid: 7/9/2019
Herbicides: 3 pt/a Prowl
Insecticides: None
Irrigation: 1.3 in.
Previous crop: Fallow
Soil test: NA
Fertilizer: 0-0-0-0 lb N-P-K-S fertilizer in fall
100-0-0 lb N-P-K fertilizer in spring
Soil type: Ulysses Richfield silt loam
Elevation: 2869 ft Latitude: 37° 58'N
Comments: Above normal precipitation and excellent plant health resulted in record yields at this location.

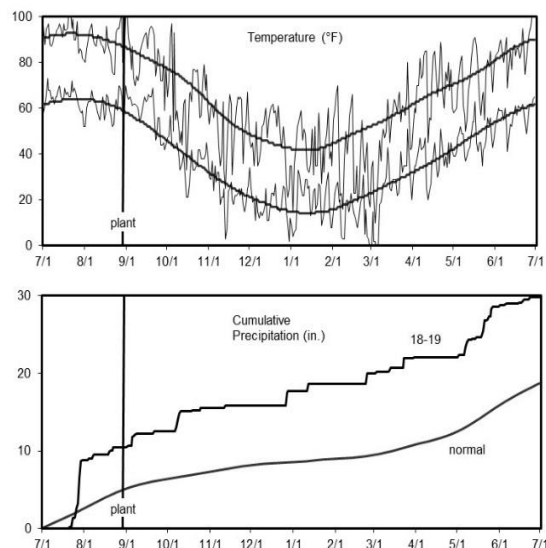


Table 22. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Garden City, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	weight (lb/bu)	Oil (%)			Protein (%)	
CROPLAN by WinField														
CP115WRR	OP	2969	353	1661	87	90	75	83	45	11.8	47.7	39.6	24.3	
CP225WRR	OP	3116	633	1875	92	91	48	70	45	11.4	47.8	39.5	23.8	
CP320WRR	OP	3331	777	2054	98	96	82	89	44	10.4	48.6	40.6	23.7	
Kansas State University														
KS4670	OP	3465	888	2177	102	100	70	85	47	13.7	48.0	39.9	23.7	
KS4719	OP	3317	---	---	98	84	---	---	51	13.8	47.8	40.2	23.8	
KSR4723	OP	3216	729	1973	95	94	66	80	47	11.5	48.1	41.4	22.9	
KSR4767	OP	3049	---	---	90	88	---	---	47	12.5	46.0	39.8	24.5	
Riley	OP	3514	896	2205	103	80	81	80	45	12.5	48.1	41.2	23.8	
Sumner	OP	3201	954	2077	94	85	73	79	44	10.9	49.0	40.9	23.8	
Surefire	OP	3587	888	2237	106	92	60	76	49	11.2	48.4	41.2	23.6	
Wichita	OP	3454	750	2102	102	92	90	91	47	11.4	48.3	39.4	24.9	
KWS-MOMONT														
QUARTZ	OP	4002	1436	2719	118	88	67	77	41	10.3	49.5	44.4	20.0	
Ohlde Seed Farms														
Torrington	OP	3492	776	2134	103	89	85	87	48	13.0	48.1	41.1	23.4	
Star Specialty Seeds, Inc.														
Star 915W	OP	3786	932	2359	112	87	60	74	45	12.7	47.4	40.6	23.6	
Star 930W	OP	3430	877	2154	101	88	70	79	48	10.6	48.7	40.4	23.2	
Mean		3395	801	---	---	90	71	---	46	11.8	48.1	40.7	23.5	
CV		13	42	---	---	9	19	---	4	6.7	1.6	2.1	2.7	
LSD (0.05)		NS	NS	---	---	NS	24	---	3	1.3	1.3	1.8	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 23. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Garden City, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	weight (lb/bu)	Oil (%)			Protein (%)	
Bayer CropScience														
CWH189D	H	4244	2206	3225	104	96	72	84	45	7.8	50.7	40.0	24.2	
CWH190D	H	4248	1908	3078	104	100	90	95	46	7.9	50.4	41.6	23.1	
CWH249D	H	4127	---	---	101	100	---	---	43	8.1	50.0	39.2	24.3	
CWH317D	H	4438	---	---	109	100	---	---	44	9.3	50.2	39.3	23.3	
KWS-MOMONT														
HAMOUR	H	3702	1181	2442	91	92	65	79	43	9.1	48.6	41.6	22.3	
MH 14ES125	H	4362	---	---	107	95	---	---	46	8.7	49.7	40.3	23.6	
MH 15AY085	H	3600	1672	2636	88	87	47	67	44	8.7	48.7	41.3	22.5	
MH 15HT227	H	3889	---	---	95	100	---	---	42	10.7	48.2	43.7	21.2	
MH 15HT229	H	4442	1867	3154	109	82	55	68	42	10.1	48.3	42.2	22.9	
Limagrain Cereals														
Advocat	H	3986	---	---	98	96	---	---	44	8.4	49.5	42.0	21.8	
Architect	H	4462	---	---	109	100	---	---	44	9.6	48.8	42.2	20.7	
Rubisco Seeds LLC														
Phoenix CL	H	4184	2093	3139	102	100	57	78	46	8.0	49.9	41.8	22.7	
Plurax CL	H	3651	910	2281	89	90	68	79	41	9.1	49.8	42.3	21.6	
Popular	H	3819	956	2388	94	100	79	89	42	8.6	49.5	43.3	20.5	
Mean		4082	1505	---	---	96	65	---	44	8.9	49.5	41.5	22.5	
CV		6	13	---	---	7	21	---	3	6.1	1.4	2.4	2.7	
LSD (0.05)		445	314	---	---	10	22	---	2	0.9	1.2	2.1	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.

¹Type: H=hybrid. OP=open pollinated.

Hutchinson, Kansas

Jane Lingenfelter
Kansas State University

Planted: 9/28/2018 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Swathed: 6/13/2019
Harvested: 6/20/2019
Herbicides: 1 qt/a Treflan, 10 oz/a Assure II
Insecticides: None
Irrigation: None
Previous crop: Wheat
Soil test: NA
Fertilizer: 30-0-0-0 lb N-P-K-S fertilizer in fall
90-0-0 lb N-P-K fertilizer in spring
Soil type: Ost loam
Elevation: 1540 ft Latitude: 37° 55'N
Comments: Excellent overwintering and above normal moisture resulted in record yields at this location. No lodging from saturated soils was observed.

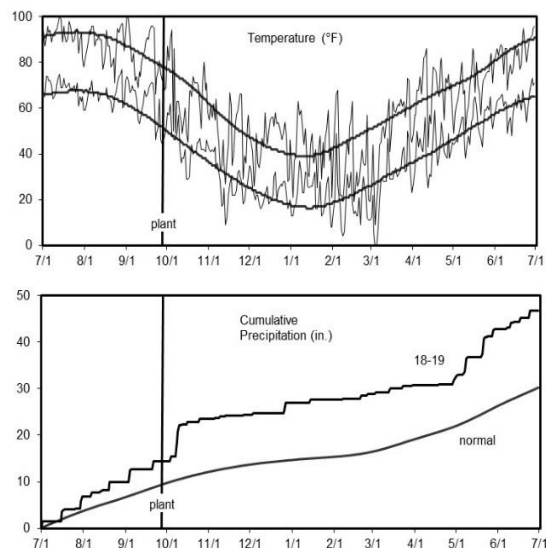


Table 24. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Hutchinson, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)		Spring vigor	Spring stand ³	Plant height	Oil	Protein
		2019	2017	2-yr.	2019	2019	2017	2-yr.	(1-5)	(%)	(in.)	(%)	(%)	
CROPLAN by WinField														
CP115WRR	OP	3156	2474	2815	95	---	97	---	4.0	90	40	39.9	23.6	
CP225WRR	OP	3129	2241	2685	94	---	96	---	3.3	94	40	40.3	22.6	
CP320WRR	OP	3423	2647	3035	103	---	99	---	4.0	95	39	40.5	22.7	
Kansas State University														
KS4670	OP	3325	---	---	100	---	---	---	3.5	88	40	40.4	22.5	
KS4719	OP	3547	---	---	106	---	---	---	4.0	100	44	40.1	22.4	
KSR4723	OP	3308	---	---	99	---	---	---	3.3	88	41	40.4	22.2	
KSR4767	OP	3061	---	---	92	---	---	---	3.5	94	42	40.1	23.2	
Riley	OP	3321	2723	3022	100	---	98	---	3.3	89	40	41.9	22.0	
Sumner	OP	3540	2538	3039	106	---	99	---	3.8	94	42	40.8	22.8	
Surefire	OP	3608	2743	3175	108	---	100	---	3.8	95	43	40.4	23.0	
Wichita	OP	3394	2374	2884	102	---	99	---	3.8	89	40	39.9	23.1	
KWS-MOMONT														
QUARTZ	OP	3870	3423	3646	116	---	99	---	3.5	90	39	42.8	21.2	
Ohlde Seed Farms														
Torrington	OP	3542	2935	3238	106	---	100	---	4.0	90	44	40.6	23.0	
Star Specialty Seeds, Inc.														
Star 915W	OP	2648	2421	2534	79	---	99	---	2.8	79	40	39.8	23.5	
Star 930W	OP	3170	2316	2743	95	---	99	---	4.0	100	41	40.3	21.9	
Mean		3336	2500	---	---	---	97	---	3.6	92	41	40.5	22.7	
CV		5	10	---	---	---	3	---	6.6	7	3	1.2	1.9	
LSD (0.05)		335	421	---	---	---	4	---	0.5	NS	3	1.1	0.9	

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.

¹Type: H=hybrid. OP=open pollinated.

²Only two replications were analyzed in each trial because of standing water in the third replication.

³Spring stand is reported as percent of stand remaining from overwintering and losses following heavy rainfall.

Table 25. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Hutchinson, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of	Winter survival			Spring	Spring	Plant	Oil	Protein	
		2019	2017	2-yr.	test avg.)	(%)	2019	2017	2-yr.	vigor	stand ³			height
													(%)	(%)
Bayer CropScience														
CWH189D	H	3834	3502	3668	99	---	99	---	3.8	76	44	40.7	22.7	
CWH190D	H	3714	3261	3487	96	---	100	---	3.3	75	44	41.2	23.0	
CWH249D	H	4380	---	---	113	---	---	---	4.3	88	43	40.9	22.5	
CWH317D	H	4260	---	---	110	---	---	---	4.0	89	43	40.6	21.8	
KWS-MOMONT														
HAMOUR	H	3371	2906	3138	87	---	89	---	3.3	67	42	40.0	22.2	
MH 14ES125	H	3449	---	---	89	---	---	---	4.0	84	46	40.4	23.6	
MH 15AY085	H	3104	---	---	80	---	---	---	2.8	63	44	39.6	22.8	
MH 15HT227	H	3779	---	---	98	---	---	---	4.5	78	43	44.1	20.5	
MH 15HT229	H	4134	---	---	107	---	---	---	4.3	84	42	42.0	22.0	
Limagrain Cereals														
Advocat	H	4131	---	---	107	---	---	---	5.0	90	43	42.2	20.8	
Architect	H	3932	---	---	102	---	---	---	4.8	94	44	43.0	20.5	
Rubisco Seeds LLC														
Phoenix CL	H	3813	---	---	99	---	---	---	3.8	78	43	41.7	21.7	
Plurax CL	H	4287	2996	3642	111	---	2996	---	4.5	88	44	42.2	21.2	
Popular	H	3993	3204	3599	103	---	3204	---	4.0	94	43	43.0	21.2	
Mean		3870	3102	---	---	---	95	---	4.0	82	43	41.5	22.0	
CV		4	6	---	---	---	6	---	8.4	10	3	1.0	1.4	
LSD (0.05)		362	319	---	---	---	319	---	0.7	18	NS	0.9	0.7	

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.

¹Type: H=hybrid. OP=open pollinated.

²Only two replications were analyzed in each trial because of standing water in the third replication.

³Spring stand is reported as percent of stand remaining from overwintering and losses following heavy rainfall.

Kiowa, Kansas

Bob Shrock

Planted: 9/24/2018 in 10-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Swathed: 6/5/2019
 Harvested: 6/12/2019
 Herbicides: 10 oz/a Assure II
 Insecticides: None
 Irrigation: None
 Previous crop: Wheat
 Soil test: 45-0-0-0 lb N-P-K-S
 Fertilizer: 60-15-0-15 lb N-P-K-S fertilizer in spring
 Soil type: Pond Creek silt loam
 Elevation: 1280 ft Latitude: 36° 58'N
 Comments: Establishment and survival were excellent. Yields were above average despite severe lodging from crown rot and overly saturated soils in the OPs.

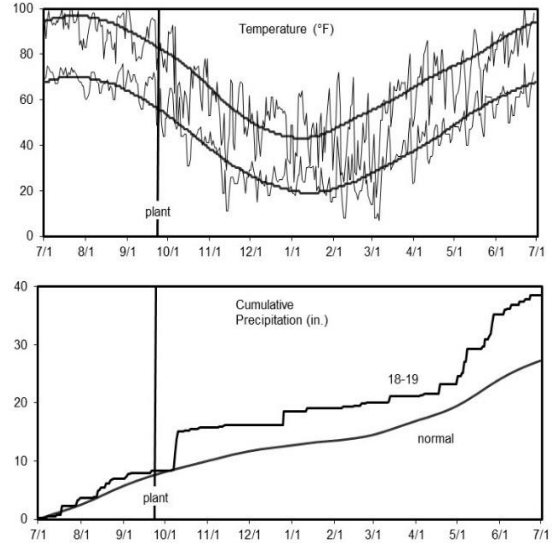


Table 26. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Kiowa, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)		50% bloom	Test		
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	Lodging (%)	weight (lb/bu)	Oil (%)	Protein (%)
CROPLAN by WinField													
CP115WRR	OP	3008	---	---	105	---	---	---	101	45	51.4	41.2	22.1
CP225WRR	OP	2347	---	---	82	---	---	---	102	37	50.8	41.1	21.7
CP320WRR	OP	2831	---	---	99	---	---	---	102	38	50.6	39.2	22.5
Kansas State University													
KS4670	OP	2978	---	---	104	---	---	---	101	13	51.8	40.2	21.3
KS4719	OP	2563	---	---	89	---	---	---	104	0	47.5	40.7	21.7
KSR4723	OP	2843	---	---	99	---	---	---	102	0	45.5	40.4	21.8
KSR4767	OP	2625	---	---	92	---	---	---	103	2	53.0	39.5	22.4
Riley	OP	3123	---	---	109	---	---	---	100	0	52.0	41.7	21.5
Sumner	OP	2917	---	---	102	---	---	---	101	7	51.7	39.7	22.2
Surefire	OP	2849	---	---	99	---	---	---	103	2	52.1	39.9	22.0
Wichita	OP	3164	---	---	110	---	---	---	102	30	52.4	40.1	21.6
KWS-MOMONT													
QUARTZ	OP	3610	---	---	126	---	---	---	102	0	47.2	43.1	20.4
Ohlde Seed Farms													
Torrington	OP	2817	---	---	98	---	---	---	101	3	52.2	40.7	21.3
Star Specialty Seeds, Inc.													
Star 915W	OP	2528	---	---	88	---	---	---	103	10	48.5	40.3	22.2
Star 930W	OP	2728	---	---	95	---	---	---	102	23	51.6	39.6	21.7
Mean		2869	---	---	---	---	---	---	102	14	50.5	40.5	21.8
CV		11	---	---	---	---	---	---	1	101	7.8	2.7	3.2
LSD (0.05)		538	---	---	---	---	---	---	1	24	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.

¹Type: H=hybrid. OP=open pollinated.

Table 27. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Kiowa, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			50% bloom		Test	
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(%)	(lb/bu)	Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	3536	---	---	98	---	---	---	103	7	53.1	39.9	21.8	
CWH190D	H	3241	---	---	90	---	---	---	103	0	53.1	40.2	21.8	
CWH249D	H	3835	---	---	106	---	---	---	103	7	52.4	39.8	22.0	
CWH317D	H	3901	---	---	108	---	---	---	101	0	50.6	40.5	20.7	
KWS-MOMONT														
HAMOUR	H	3475	---	---	96	---	---	---	103	0	51.8	40.6	21.0	
MH 14ES125	H	3553	---	---	98	---	---	---	105	0	49.3	40.5	21.7	
MH 15AY085	H	3169	---	---	88	---	---	---	103	0	50.6	41.5	21.0	
MH 15HT227	H	3733	---	---	103	---	---	---	102	0	48.6	42.9	19.9	
MH 15HT229	H	3723	---	---	103	---	---	---	102	0	48.2	42.0	20.8	
Limagrain Cereals														
Advocat	H	3615	---	---	100	---	---	---	102	3	49.8	43.4	20.2	
Architect	H	3618	---	---	100	---	---	---	102	0	49.5	43.0	19.6	
Rubisco Seeds LLC														
Phoenix CL	H	4007	---	---	111	---	---	---	102	0	51.4	41.1	19.9	
Plurax CL	H	3780	---	---	104	---	---	---	100	0	53.1	42.9	20.1	
Popular	H	3568	---	---	99	---	---	---	101	0	53.1	41.8	20.4	
Mean		3618	---	---	---	---	---	---	102	1	51.0	41.3	20.9	
CV		5	---	---	---	---	---	---	1	361	1.5	2.1	4.2	
LSD (0.05)		336	---	---	---	---	---	---	1	NS	1.3	1.9	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.

¹Type: H=hybrid. OP=open pollinated.

Manhattan, Kansas

Michael Stamm and Scott Dooley
Kansas State University

Planted: 9/18/2018 in 10-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Swathed: 6/17/2019
Harvested: 6/27/2019
Herbicides: 1 qt/a Treflan
Insecticides: None
Irrigation: None
Previous crop: Fallow
Soil test: 26-32-7 ppm N-P-S
Fertilizer: 14-0-0-30 lb N-P-K-S fertilizer in fall
75-0-0 lb N-P-K fertilizer in spring
Soil type: Smolan silt loam
Elevation: 1064 ft Latitude: 39° 12'N
Comments: A wetter than normal spring resulted in overly saturated soils. This in combination with crown rot led to severe lodging, especially in the OPs.

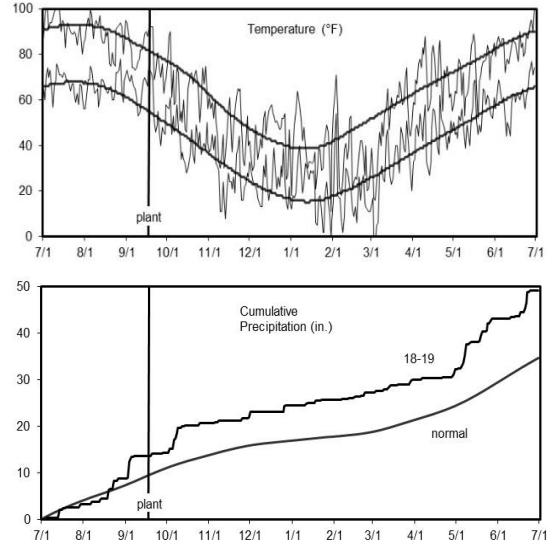


Table 28. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Manhattan, KS

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)		50% bloom (DOY)	Plant height (in.)	Lodging ³ (1-5)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.						
CROPLAN by WinField														
CP115WRR	OP	2333	1640	1986	80	---	95	---	109	55	3.7	39.5	23.1	
CP225WRR	OP	2741	1764	2252	94	---	90	---	110	55	4.0	39.6	23.3	
CP320WRR	OP	2931	1411	2171	101	---	88	---	109	53	3.2	39.4	23.1	
Kansas State University														
KS4670	OP	3054	2108	2581	105	---	98	---	109	59	3.3	39.5	22.4	
KS4719	OP	2895	---	---	99	---	---	---	112	59	3.8	39.7	22.9	
KSR4723	OP	2807	1847	2327	96	---	93	---	110	53	2.5	40.0	22.6	
KSR4767	OP	3112	---	---	107	---	---	---	110	61	3.7	39.7	23.5	
Riley	OP	3367	1943	2655	116	---	95	---	108	55	2.8	41.6	21.9	
Sumner	OP	2992	1760	2376	103	---	98	---	109	56	3.8	40.6	22.5	
Surefire	OP	2936	2320	2628	101	---	93	---	110	53	3.0	40.1	22.9	
Wichita	OP	3256	1790	2523	112	---	92	---	110	53	3.0	39.5	24.0	
KWS-MOMONT														
QUARTZ	OP	3142	1109	2125	108	---	84	---	111	57	4.0	41.8	20.2	
Ohlde Seed Farms														
Torrington	OP	3127	1721	2424	107	---	89	---	110	59	3.0	40.5	22.4	
Star Specialty Seeds, Inc.														
Star 915W	OP	2319	1359	1839	80	---	83	---	112	53	3.2	40.0	22.8	
Star 930W	OP	3015	1997	2506	104	---	95	---	109	59	4.0	39.4	22.7	
Mean		2912	1797	---	---	---	92	---	110	56	3.4	40.0	22.7	
CV		12	18	---	---	---	8	---	0.4	6	20.1	1.3	2.3	
LSD (0.05)		502	576	---	---	---	NS	---	1	6	0.7	1.1	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.

¹Type: H=hybrid. OP=open pollinated.

²Yield in the OP trial is significant at P<0.1.

³Lodging rated on a 1=completely flat to 5=completely upright scale and significant at P<0.2.

Table 29. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Manhattan, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)		50% bloom	Plant height	Lodging ³	Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(in.)	(1-5)	(%)	(%)	
Bayer CropScience														
CWH189D	H	3789	2301	3045	109	---	97	---	111	59	4.3	39.5	22.8	
CWH190D	H	3210	2291	2751	92	---	91	---	110	59	3.8	41.8	21.9	
CWH249D	H	3874	---	---	111	---	---	---	111	58	4.0	40.1	22.9	
CWH317D	H	3904	---	---	112	---	---	---	110	59	4.2	41.1	21.0	
KWS-MOMONT														
HAMOUR	H	3033	2303	2668	87	---	80	---	111	59	4.2	41.3	20.6	
MH 14ES125	H	4001	---	---	115	---	---	---	112	61	4.2	41.0	22.0	
MH 15AY085	H	2748	1316	2032	79	---	60	---	110	60	4.2	41.7	21.2	
MH 15HT227	H	3182	---	---	91	---	---	---	111	59	4.2	44.0	19.4	
MH 15HT229	H	4033	2055	3044	116	---	88	---	111	63	4.2	42.4	21.5	
Limagrain Cereals														
Advocat	H	3254	---	---	93	---	---	---	110	61	3.8	42.9	20.5	
Architect	H	3570	---	---	102	---	---	---	110	59	4.3	42.3	20.0	
Rubisco Seeds LLC														
Phoenix CL	H	3646	1751	2699	105	---	83	---	110	58	4.3	42.2	21.2	
Plurax CL	H	3309	2188	2749	95	---	90	---	109	56	4.2	43.9	20.0	
Popular	H	3270	2104	2687	94	---	87	---	109	59	4.3	45.3	19.2	
Mean		3487	1874	---	---	---	82	---	110	59	4.2	42.1	21.0	
CV		9	15	---	---	---	13	---	0.4	4	7.3	1.5	2.3	
LSD (0.05)		518	462	---	---	---	18	---	1	NS	NS	1.3	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.

¹Type: H=hybrid. OP=open pollinated.

²Yield in the OP trial is significant at P<0.1.

³Lodging rated on a 1=completely flat to 5=completely upright scale and significant at P<0.2.

Norwich, Kansas

Cody and David Swinehart

Planted: 9/24/2018 in 10-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Swathed: 6/4/2019, hybrid trial only
 Harvested: Hybrid 6/11/2019, OP 6/12/2019
 Herbicides: 1 qt/a Treflan, 10 oz/a Assure II
 Insecticides: None
 Irrigation: None
 Previous crop: Wheat
 Soil test: NA
 Fertilizer: 14-14-0-4 lb N-P-K-S fertilizer in fall
 90-0-0-9 lb N-P-K-S fertilizer in spring
 Soil type: Renfrow clay loam
 Elevation: 1420 ft Latitude: 37° 24'N
 Comments: Despite a wet fall, establishment and survival were excellent. Overly saturated soils in the spring and crown rot led to severe lodging in the OPs.

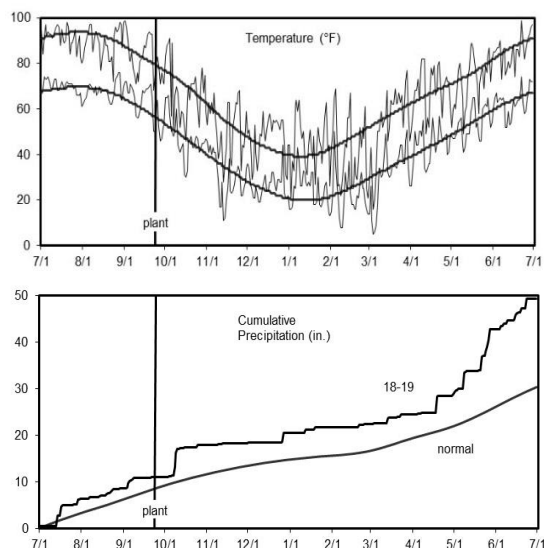


Table 30. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Norwich, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)		Test				
		2019	2018	2-yr.	2019	2019	2018	2-yr.	Lodging (%)	Moisture (%)	weight (lb/bu)	Oil (%)	Protein (%)	
CROPLAN by WinField														
CP115WRR	OP	825	814	820	72	---	60	---	50	9.7	54.6	35.4	23.6	
CP225WRR	OP	790	1516	1153	69	---	80	---	60	9.9	46.2	35.7	22.6	
CP320WRR	OP	774	1635	1205	68	---	70	---	75	10.4	51.0	35.6	22.9	
Kansas State University														
KS4670	OP	1462	1615	1538	128	---	70	---	23	11.8	53.5	35.9	22.5	
KS4719	OP	1150	---	---	100	---	---	---	10	11.2	56.5	34.6	22.8	
KSR4723	OP	966	1435	1201	84	---	70	---	45	10.0	55.9	34.9	23.2	
KSR4767	OP	1186	---	---	104	---	---	---	40	9.4	52.6	34.4	23.4	
Riley	OP	1311	1685	1498	115	---	80	---	20	10.5	54.9	36.9	22.5	
Sumner	OP	1155	1527	1341	101	---	75	---	42	14.2	56.1	36.2	22.4	
Surefire	OP	1129	1639	1384	99	---	75	---	35	12.2	54.8	35.0	23.0	
Wichita	OP	1078	1708	1393	94	---	80	---	57	10.8	52.3	35.7	22.8	
KWS-MOMONT														
QUARTZ	OP	2574	1520	2047	225	---	70	---	2	14.9	48.0	41.4	18.7	
Ohlde Seed Farms														
Torrington	OP	1248	1612	1430	109	---	75	---	18	11.7	52.8	35.9	22.4	
Star Specialty Seeds, Inc.														
Star 915W	OP	552	892	722	48	---	70	---	88	9.6	36.4	32.8	24.9	
Star 930W	OP	967	1485	1226	85	---	75	---	67	10.4	53.0	34.4	22.6	
Mean		1144	1443	---	---	---	71	---	42	11.1	51.9	35.7	22.7	
CV		16	11	---	---	---	13	---	44	17.0	7.7	2.4	3.0	
LSD (0.05)		304	321	---	---	---	NS	---	31	3.2	6.7	1.8	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.

¹Type: H=hybrid. OP=open pollinated.

Table 31. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Norwich, KS

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Test			
		2019	2018	2-yr.	2019	2019	2018	2-yr.	Lodging (%)	Moisture (%)	weight (lb/bu)	Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	3088	1687	2388	112	---	73	---	---	6.9	53.2	40.4	20.1	
CWH190D	H	2475	1482	1979	90	---	73	---	---	6.7	56.1	38.9	20.6	
CWH249D	H	3448	---	---	125	---	---	---	---	6.5	53.1	42.4	19.6	
CWH317D	H	3495	---	---	127	---	---	---	---	7.5	52.8	42.0	19.2	
KWS-MOMONT														
HAMOUR	H	2076	1788	1932	75	---	73	---	---	6.5	56.2	38.1	21.0	
MH 14ES125	H	2137	---	---	78	---	---	---	---	7.0	55.1	36.8	21.8	
MH 15AY085	H	2261	1236	1749	82	---	60	---	---	6.3	54.2	39.4	20.1	
MH 15HT227	H	3506	---	---	127	---	---	---	---	8.1	50.7	43.0	18.8	
MH 15HT229	H	3357	1758	2557	122	---	73	---	---	7.3	50.5	43.6	19.2	
Limagrain Cereals														
Advocat	H	2937	---	---	107	---	---	---	---	7.5	51.3	41.0	19.0	
Architect	H	2968	---	---	108	---	---	---	---	8.0	51.5	40.6	19.8	
Rubisco Seeds LLC														
Phoenix CL	H	2979	1198	2088	108	---	67	---	---	7.1	52.7	41.7	19.6	
Plurax CL	H	2291	1902	2097	83	---	80	---	---	7.5	55.1	41.7	18.8	
Popular	H	2288	1850	2069	83	---	80	---	---	6.7	56.1	41.5	18.7	
Mean		2813	1572	---	---	---	71	---	---	7.1	53.5	40.7	19.8	
CV		10	14	---	---	---	12	---	---	7.5	2.2	2.9	3.3	
LSD (0.05)		528	367	---	---	---	12	---	---	1.0	2.1	2.6	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.

¹Type: H=hybrid. OP=open pollinated.

Scottsbluff, Nebraska

Dipak Santra
University of Nebraska-Lincoln

Planted: 9/2/2018
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 8/2/2019
Herbicides: None
Insecticides: None
Irrigation: 5 in.
Previous crop: NA
Soil test: NA
Fertilizer: NA
Soil type: Tripp fine sandy loam
Elevation: 3940 ft Latitude: 41° 51'N
Comments: Above normal precipitation set the stage for high yields; however, severe hailstorms on 5/27/2019 and 6/7/2019 limited yield potential.

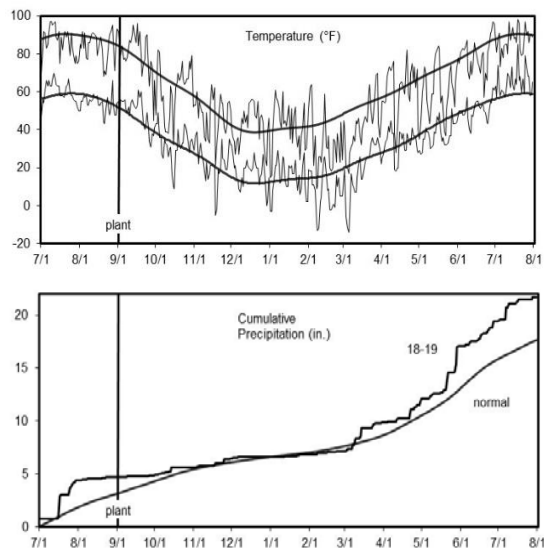


Table 32. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Scottsbluff, NE

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			50% bloom	Plant height	Shatter	Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(in.)	(%)	(%)	(%)	(%)	
CROPLAN by WinField															
CP115WRR	OP	511	3447	1979	61	89	67	78	148	39	8.3	---	---		
CP225WRR	OP	493	2672	1582	59	79	43	61	150	41	10.0	---	---		
CP320WRR	OP	971	3025	1998	116	93	67	80	144	42	6.7	---	---		
Kansas State University															
KS4670	OP	761	---	---	91	94	---	---	141	43	11.7	---	---		
KS4719	OP	1217	---	---	146	93	---	---	144	42	6.7	---	---		
KSR4723	OP	648	---	---	78	89	---	---	146	39	15.0	---	---		
KSR4767	OP	790	---	---	95	90	---	---	144	44	5.0	---	---		
Riley	OP	918	3506	2212	110	93	53	73	141	42	10.0	---	---		
Sumner	OP	570	2603	1586	68	87	33	60	146	38	8.3	---	---		
Surefire	OP	1078	3339	2209	129	87	50	68	148	43	8.3	---	---		
Wichita	OP	871	2989	1930	104	79	27	53	150	40	11.7	---	---		
KWS-MOMONT															
QUARTZ	OP	717	3563	2140	86	87	57	72	146	36	5.0	---	---		
Ohlde Seed Farms															
Torrington	OP	1124	3089	2106	134	90	60	75	141	45	6.7	---	---		
Star Specialty Seeds, Inc.															
Star 915W	OP	879	2313	1596	105	93	12	53	150	40	8.3	---	---		
Star 930W	OP	985	3470	2227	118	90	70	80	144	41	8.3	---	---		
Mean		835	2925	---	---	90	46	---	146	41	8.7	---	---		
CV		26	18	---	---	5	30	---	3	7	44.9	---	---		
LSD (0.05)		358	892	---	---	8	23	---	NS	4	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 33. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Scottsbluff, NE

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			50% bloom	Plant height	Shatter	Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(in.)	(%)	(%)	(%)		
Bayer CropScience															
CWH189D	H	1044	3383	2214	95	57	57	57	146	45	3.3	---	---		
CWH190D	H	1066	3248	2157	97	100	50	75	143	45	3.3	---	---		
CWH249D	H	1260	---	---	114	90	---	---	146	45	3.3	---	---		
CWH317D	H	927	---	---	84	83	---	---	145	41	1.7	---	---		
KWS-MOMONT															
HAMOUR	H	1181	1914	1548	107	60	7	34	150	46	6.7	---	---		
MH 14ES125	H	1276	---	---	116	70	---	---	150	46	8.3	---	---		
MH 15AY085	H	701	---	---	64	23	---	---	153	46	3.3	---	---		
MH 15HT227	H	1262	---	---	115	83	---	---	148	45	1.7	---	---		
MH 15HT229	H	1229	---	---	112	83	---	---	139	46	5.0	---	---		
Limagrain Cereals															
Advocat	H	1206	---	---	109	80	---	---	146	44	5.0	---	---		
Architect	H	847	---	---	77	50	---	---	148	44	1.7	---	---		
Rubisco Seeds LLC															
Phoenix CL	H	1281	---	---	116	87	---	---	141	43	3.3	---	---		
Plurax CL	H	1113	2945	2029	101	77	33	55	141	44	1.7	---	---		
Popular	H	1035	2503	1769	94	90	4	47	139	43	6.7	---	---		
Mean		1102	2581	---	---	74	24	---	145	44	3.9	---	---		
CV		27	18	---	---	22	40	---	4	6	79.5	---	---		
LSD (0.05)		NS	837	---	---	28	16	---	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

Clovis, New Mexico

Sangu Angadi and Sultan Begna
New Mexico State University

Planted: 9/11/2018 in 6-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Desiccant: 2 pt/a Diquat on 6/12/2019
Harvested: 6/19/2019
Herbicides: 1.5 pt/a Treflan, 5.33 oz/a Section 3
Insecticides: 20 oz/a Prevathon, 6.4 oz/a Leverage
Irrigation: 8.3 in.
Previous crop: Wheat
Soil test: P=19.0 ppm, K=531 ppm, pH=7.9, OM=2.10%
Fertilizer: 150-40-0-30 lb N-P-K-S fertilizer in fall
Soil type: Olton clay loam
Elevation: 4437 ft Latitude: 34° 36'N
Comments: Above normal precipitation and cooler temperatures during flowering and grain filling contributed to excellent yields at this location.

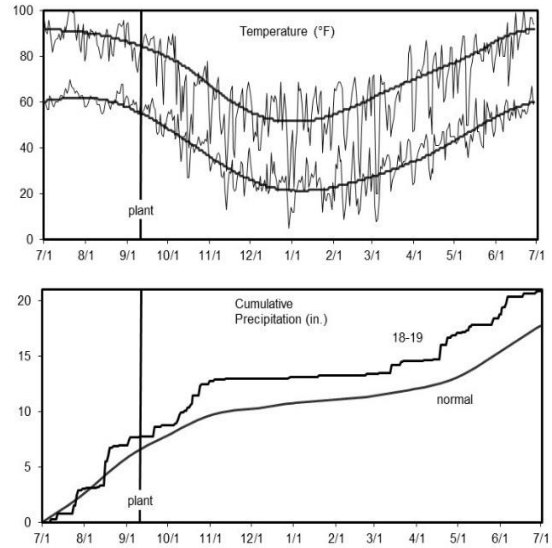


Table 34. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Clovis, NM

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)	50% bloom (DOY)	Plant height (in.)	Test weight (lb/bu)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2018	2-yr.						
CROPLAN by WinField													
CP115WRR	OP	1894	2821	2358	59	97	---	---	91	36	49.5	38.8	27.5
CP225WRR	OP	2840	2844	2842	89	93	---	---	93	39	50.2	41.6	22.3
CP320WRR	OP	2855	2947	2901	90	97	---	---	91	39	50.2	41.6	22.7
Kansas State University													
KS4670	OP	2815	2977	2896	88	92	---	---	92	39	50.0	40.4	25.2
KS4719	OP	3431	---	---	108	97	---	---	99	43	50.4	42.7	22.5
KSR4723	OP	3547	2561	3054	111	92	---	---	92	41	49.9	42.3	22.2
KSR4767	OP	3513	---	---	110	97	---	---	94	43	50.3	42.2	22.8
Riley	OP	3500	3208	3354	110	97	---	---	91	39	50.5	41.7	23.9
Sumner	OP	3111	3136	3123	98	85	---	---	92	37	50.9	39.5	26.2
Surefire	OP	3219	3100	3159	101	97	---	---	95	43	50.1	42.1	22.6
Wichita	OP	3322	2679	3001	104	97	---	---	93	40	50.4	41.0	24.3
KWS-MOMONT													
QUARTZ	OP	3872	2373	3122	121	98	---	---	99	37	50.4	41.0	24.0
Ohlde Seed Farms													
Torrington	OP	3326	3016	3171	104	97	---	---	91	41	50.4	41.0	24.3
Star Specialty Seeds, Inc.													
Star 915W	OP	3407	1995	2701	107	90	---	---	92	39	50.2	40.4	25.7
Star 930W	OP	3171	2904	3037	99	95	---	---	92	39	50.1	40.6	24.4
Mean		3188	2830	---	---	95	---	---	93	40	50.2	41.1	24.0
CV		16	19	---	---	5	---	---	1	8	1.4	3.7	7.1
LSD (0.05)		870	869	---	---	8	---	---	2	5	1.1	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.

¹Type: H=hybrid. OP=open pollinated.

Table 35. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Clovis, NM

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)		50% bloom	Plant height	Test weight		Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(in.)	(lb/bu)	(%)	(%)		
Bayer CropScience															
CWH189D	H	3734	3013	3374	108	95	---	---	95	39	50.0	38.3	24.9		
CWH190D	H	3896	3292	3594	113	95	---	---	95	41	51.1	40.8	23.6		
CWH249D	H	3684	---	---	107	95	---	---	93	39	50.4	41.5	23.8		
CWH317D	H	3119	---	---	90	95	---	---	91	37	49.7	38.0	24.9		
KWS-MOMONT															
HAMOUR	H	3919	3364	3641	113	95	---	---	98	42	51.2	41.4	23.3		
MH 14ES125	H	3839	---	---	111	95	---	---	94	44	49.6	41.8	22.9		
MH 15AY085	H	3439	3302	3371	99	95	---	---	96	39	50.0	39.5	23.7		
MH 15HT227	H	4046	---	---	117	95	---	---	92	43	49.7	42.7	23.2		
MH 15HT229	H	3974	3363	3669	115	95	---	---	92	39	49.5	42.3	23.7		
Limagrain Cereals															
Advocat	H	2568	---	---	74	95	---	---	91	41	49.7	41.1	23.3		
Architect	H	2989	---	---	86	95	---	---	94	45	49.0	43.1	22.5		
Rubisco Seeds LLC															
Phoenix CL	H	2861	3295	3078	83	95	---	---	91	41	50.4	40.8	23.9		
Plurax CL	H	3045	3428	3237	88	95	---	---	89	39	50.8	43.3	21.3		
Popular	H	3298	3605	3451	95	95	---	---	90	38	50.9	42.4	22.5		
Mean		3458	3367	---	---	95	---	---	93	41	50.1	41.2	23.4		
CV		21	8	---	---	0	---	---	1	7	1.5	2.4	4.8		
LSD (0.05)		1230	450	---	---	0	---	---	2	5	1.2	2.2	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

Chickasha, Oklahoma

Josh Lofton
Oklahoma State University

Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Previous crop: Wheat
Soil test: 58-188 ppm P-K, pH=6.9
Soil type: McClain silty clay loam
Elevation: 1085 ft Latitude: 35° 02'N
Comments: Average yields and oil contents were reported at this location.

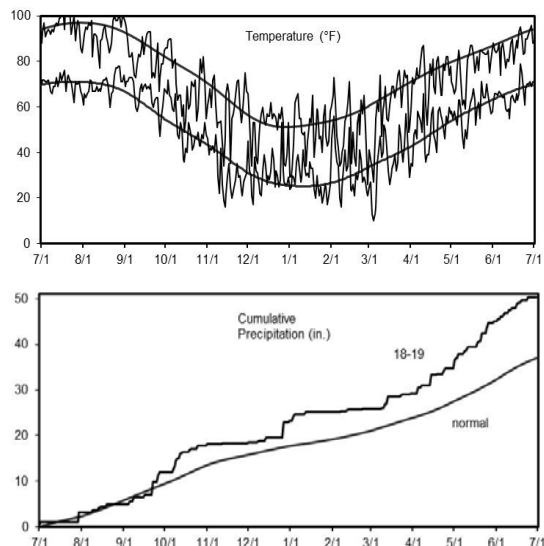


Table 36. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Chickasha, OK

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test weight		Oil (%)	Protein (%)
		2019	2017	2-yr.	2019	2019	2017	2-yr.	(lb/bu)	(%)						
CROPLAN by WinField																
CP115WRR	OP	1427	3747	2587	91	---	---	---	---	8.0	47.0	41.3	24.2			
CP225WRR	OP	2173	3381	2777	139	---	---	---	---	8.1	49.5	38.5	25.3			
CP320WRR	OP	2238	3659	2949	143	---	---	---	---	8.3	48.8	38.4	25.3			
Kansas State University																
KS4670	OP	1505	---	---	96	---	---	---	---	8.0	49.7	40.1	24.1			
KS4719	OP	2129	---	---	136	---	---	---	---	8.7	49.3	38.5	25.3			
KSR4723	OP	842	---	---	54	---	---	---	---	8.9	50.0	40.5	24.1			
KSR4767	OP	1152	---	---	74	---	---	---	---	9.4	48.7	40.3	24.1			
Riley	OP	2112	3106	2609	135	---	---	---	---	8.0	48.3	40.5	24.5			
Sumner	OP	1104	3247	2176	70	---	---	---	---	8.2	49.9	41.2	24.1			
Surefire	OP	1584	3717	2650	101	---	---	---	---	8.9	50.3	40.1	24.7			
Wichita	OP	1658	3182	2420	106	---	---	---	---	8.8	49.5	40.6	24.4			
KWS-MOMONT																
QUARTZ	OP	1558	3947	2752	99	---	---	---	---	8.3	50.5	41.2	23.3			
Ohlde Seed Farms																
Torrington	OP	1361	4167	2764	87	---	---	---	---	8.9	49.5	41.0	23.5			
Star Specialty Seeds, Inc.																
Star 915W	OP	1588	3664	2626	101	---	---	---	---	7.8	50.3	40.2	25.0			
Star 930W	OP	1065	3598	2332	68	---	---	---	---	10.1	50.2	41.2	23.4			
Mean		1566	3400	---	---	---	---	---	---	8.6	49.4	40.2	24.4			
CV		---	17	---	---	---	---	---	---	---	---	2.3	3.3			
LSD (0.05)		---	NS	---	---	---	---	---	---	---	---	2.0	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.

¹Type: H=hybrid. OP=open pollinated.

Table 37. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Chickasha, OK

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Test		
		2019	2017	2-yr.	2019	2019	2017	2-yr.	Moisture (%)	weight (lb/bu)		Oil (%)	Protein (%)	
Bayer CropScience														
CWH189D	H	1627	5836	3732	67	---	---	---	---	9.4	49.4	38.6	25.1	
CWH190D	H	2051	4909	3480	85	---	---	---	---	10.1	51.0	39.8	25.1	
CWH249D	H	2325	---	---	96	---	---	---	---	8.7	49.9	41.2	23.6	
CWH317D	H	2513	---	---	104	---	---	---	---	9.1	49.5	40.4	22.8	
KWS-MOMONT														
HAMOUR	H	1514	---	---	63	---	---	---	---	5.6	33.9	41.6	23.8	
MH 14ES125	H	2600	---	---	108	---	---	---	---	8.7	48.5	39.3	24.6	
MH 15AY085	H	2365	---	---	98	---	---	---	---	8.9	50.7	41.2	24.3	
MH 15HT227	H	2971	---	---	123	---	---	---	---	8.6	47.2	42.8	23.1	
MH 15HT229	H	2810	---	---	116	---	---	---	---	8.7	48.9	41.8	24.6	
Limagrain Cereals														
Advocat	H	2740	---	---	113	---	---	---	---	9.5	48.8	41.4	23.0	
Architect	H	3285	---	---	136	---	---	---	---	9.0	48.8	41.7	23.1	
Rubisco Seeds LLC														
Phoenix CL	H	2897	---	---	120	---	---	---	---	8.3	49.6	42.8	22.6	
Plurax CL	H	2491	4571	3531	103	---	---	---	---	8.9	50.4	42.6	21.9	
Popular	H	1662	4343	3003	69	---	---	---	---	8.8	50.3	42.5	22.5	
Mean		2418	4574	---	---	---	---	---	---	8.7	48.4	41.4	23.5	
CV		---	13	---	---	---	---	---	---	---	---	2.5	3.8	
LSD (0.05)		---	1004	---	---	---	---	---	---	---	---	2.3	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.

¹Type: H=hybrid. OP=open pollinated.

Bushland, Texas

Jourdan Bell
Texas A&M University

Planted: 9/17/2018 in 30-in. rows
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 7/11/2019
Herbicides: 1 pt/a Treflan
Insecticides: None
Irrigation: None
Previous crop: Fallow
Soil test: NA
Fertilizer: 120-0-0 lb N-P-K fertilizer in spring
Soil type: Pullman clay loam
Elevation: 3825 ft Latitude: 35° 11'N
Comments: Some winterkill was reported but yields were still very good as the crop was able to compensate for thinner stands. Yields for 2018 are an average of two planting dates.

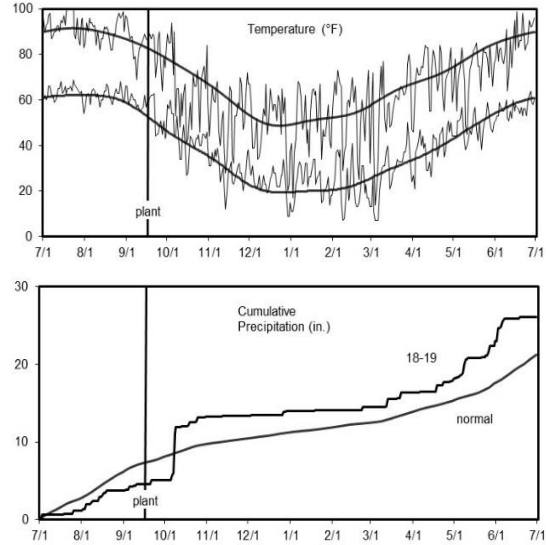


Table 38. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Bushland, TX

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)		Fall stand	Fall vigor	50% bloom	Oil	Protein
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(0-10)	(1-5)	(DOY)	(%)	(%)	
CROPLAN by WinField														
CP115WRR	OP	1459	466	962	94	78	---	---	8.3	4.1	98	34.6	26.9	
CP225WRR	OP	1287	557	922	83	70	---	---	7.5	3.8	102	35.3	28.0	
CP320WRR	OP	1784	---	---	115	73	---	---	7.3	3.6	98	33.5	26.7	
Kansas State University														
Riley	OP	1212	512	862	78	83	---	---	8.5	4.3	100	32.6	26.4	
Surefire	OP	1339	---	---	86	90	---	---	8.8	4.4	100	35.0	28.1	
KWS-MOMONT														
QUARTZ	OP	1935	726	1331	124	73	---	---	8.8	4.4	98	35.0	25.8	
Limagrain Cereals														
Advocat	H	1498	---	---	96	80	---	---	8.3	4.1	99	33.0	27.1	
Architect	H	1766	---	---	113	80	---	---	8.5	4.3	98	34.1	27.2	
Ohlde Seed Farms														
Torrington	OP	1526	---	---	98	80	---	---	8.3	4.1	99	33.3	27.1	
Rubisco Seeds LLC														
Phoenix CL	H	1547	733	1140	99	60	---	---	6.3	3.1	99	33.1	26.7	
Plurax CL	H	1898	618	1258	122	73	---	---	7.3	3.6	98	36.7	26.2	
Popular	H	1752	497	1124	112	85	---	---	8.5	4.3	98	35.6	26.1	
Star Specialty Seeds, Inc.														
Star 915W	OP	1108	723	915	71	70	---	---	8.5	4.3	100	30.8	27.1	
Star 930W	OP	1705	718	1211	109	73	---	---	8.3	4.1	101	33.9	26.3	
Mean		1558	---	---	---	75	---	---	8.0	4.0	99	34.0	26.8	
CV		14	---	---	---	17	---	---	13.4	13.4	2	3.2	2.8	
LSD (0.05)		378	---	---	---	18	---	---	15.1	0.8	3	2.4	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.

¹Type: H=hybrid. OP=open pollinated.

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Chillicothe, Texas

Emi Kimura
Texas A&M University

Planted: 10/1/2018
Seeding Rate OP: 500,000 seeds/a
Seeding Rate Hybrid: 300,000 seeds/a
Harvested: 6/11/2019
Herbicides: None
Insecticides: None
Irrigation: None
Previous crop: Fallow
Soil test: NA
Fertilizer: None
Soil type: Abilene clay loam
Elevation: 1401 ft Latitude: 34° 11'N
Comments: Stands were thinned by winterkill but the plants compensated well. Hybrids yielded more than the OPs.

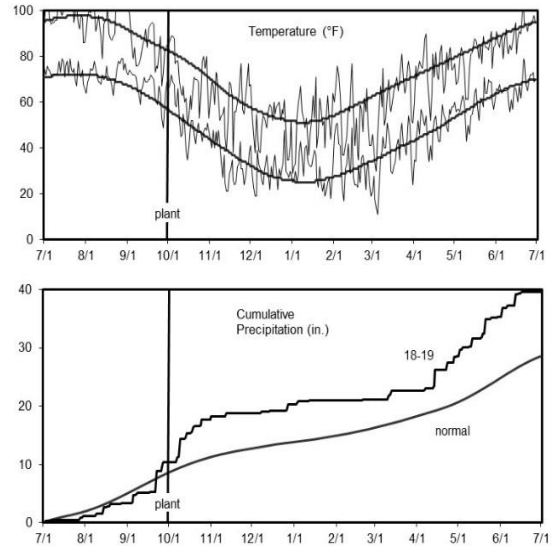


Table 39. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Chillicothe, TX

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Plant height (in.)	Moisture (%)	Test weight		
		2019	2018	2-yr.	2019	2019	2018			2-yr.	(lb/bu)	(%)
CROPLAN by WinField												
CP115WRR	OP	702	---	---	79	60	---	---	6.9	47.3	42.2	24.3
CP225WRR	OP	859	---	---	97	50	---	---	8.7	48.1	41.9	23.1
CP320WRR	OP	872	---	---	98	53	---	---	6.8	50.7	40.9	23.6
Kansas State University												
KS4670	OP	698	---	---	79	63	---	---	6.8	49.2	41.6	23.4
KS4719	OP	917	---	---	103	70	---	---	7.6	47.5	40.0	24.3
KSR4723	OP	933	---	---	105	67	---	---	7.0	48.8	40.1	24.5
KSR4767	OP	637	---	---	72	57	---	---	7.0	48.3	40.7	24.1
Riley	OP	792	---	---	89	50	---	---	7.5	47.2	42.6	22.9
Sumner	OP	739	---	---	83	53	---	---	7.0	48.9	41.9	23.7
Surefire	OP	915	---	---	103	67	---	---	7.2	49.4	41.8	23.8
Wichita	OP	1104	---	---	124	67	---	---	7.6	48.6	40.8	25.0
KWS-MOMONT												
QUARTZ	OP	1527	---	---	172	67	---	---	7.1	47.5	41.4	23.5
Ohlde Seed Farms												
Torrington	OP	978	---	---	110	80	---	---	7.3	47.1	41.1	23.9
Star Specialty Seeds, Inc.												
Star 915W	OP	743	---	---	84	73	---	---	7.2	50.1	41.3	24.7
Star 930W	OP	915	---	---	103	67	---	---	7.2	49.6	39.5	24.7
Mean		889	---	---	---	63	---	---	7.3	48.5	41.2	24.0
CV		24	---	---	---	24	---	---	12.7	3.2	2.3	3.0
LSD (0.05)		353	---	---	---	NS	---	---	NS	1.6	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 40. Results for the 2019 National Winter Canola Variety Trial, hybrid cultivars, at Chillicothe, TX

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test	
		2019	2018	2-yr.	2019	2018	2-yr.	2019	2018	2-yr.			weight (lb/bu)	Oil (%)
Bayer CropScience														
CWH189D	H	1796	---	---	128	67	---	---	---	7.0	49.5	39.6	24.6	
CWH190D	H	1393	---	---	99	40	---	---	---	6.9	50.1	42.6	23.8	
CWH249D	H	937	---	---	67	47	---	---	---	6.7	47.7	40.2	25.3	
CWH317D	H	1686	---	---	120	60	---	---	---	7.3	47.1	40.1	24.1	
KWS-MOMONT														
HAMOUR	H	1122	---	---	80	53	---	---	---	7.5	48.0	42.6	22.6	
MH 14ES125	H	1472	---	---	105	68	---	---	---	7.7	47.9	39.8	24.7	
MH 15AY085	H	1307	---	---	93	60	---	---	---	7.5	45.7	41.6	23.2	
MH 15HT227	H	1526	---	---	109	47	---	---	---	8.4	44.9	42.5	24.5	
MH 15HT229	H	1728	---	---	123	60	---	---	---	7.6	43.0	42.7	23.8	
Limagrain Cereals														
Advocat	H	1045	---	---	75	60	---	---	---	7.4	45.1	41.7	23.5	
Architect	H	1867	---	---	133	73	---	---	---	7.8	48.1	42.3	22.8	
Rubisco Seeds LLC														
Phoenix CL	H	1151	---	---	82	53	---	---	---	7.8	46.0	41.0	24.2	
Plurax CL	H	1065	---	---	76	50	---	---	---	6.8	49.4	44.0	21.9	
Popular	H	1508	---	---	108	65	---	---	---	7.1	49.1	42.7	22.8	
Mean		1400	---	---	---	57	---	---	---	7.4	47.3	41.7	23.7	
CV		28	---	---	---	22	---	---	---	7.1	4.3	2.5	5.1	
LSD (0.05)		540	---	---	---	14	---	---	---	0.9	3.4	2.2	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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.

Havre, Montana

Maryse Bourgault
Montana State University

Planted: 9/13/2018 in 12-in. rows
 Seeding Rate OP: 500,000 seeds/a
 Seeding Rate Hybrid: 300,000 seeds/a
 Harvested: 8/13/2019
 Herbicides: 1 qt/a Treflan, 10 oz/a Assure II
 Insecticides: None
 Irrigation: None
 Previous crop: Fallow
 Soil test: 10.5-20-254 ppm N-P-K, pH=7.7
 Fertilizer: NA
 Soil type: Scobey clay loam
 Elevation: 2563 ft Latitude: 48° 33'N
 Comments: The trial overcame some challenging spring conditions and performed relatively well.

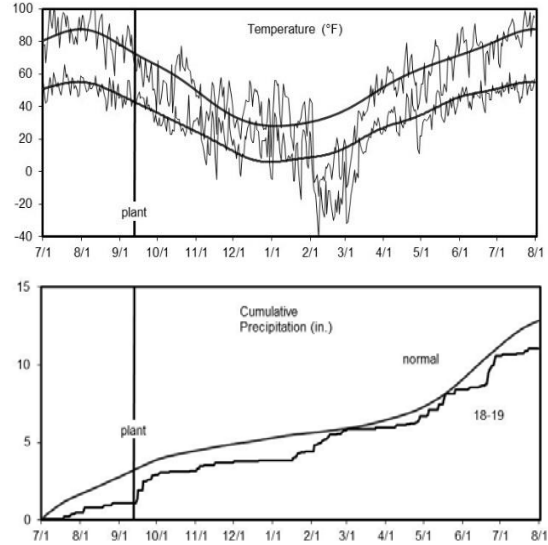


Table 41. Results for the 2019 National Winter Canola Variety Trial at Havre, MT

Name	Type ¹	Yield (lb/a)			Yield (% of test avg.)			Winter survival (%)			Plant height (in.)	Moisture (%)	Test weight		
		2019	2018	2-yr.	2019	2018	2-yr.	2019	2018	2-yr.			(lb/bu)	(%)	(%)
CROPLAN by WinField															
CP115WRR	OP	995	---	---	82	29	---	---	---	5.0	51.8	37.1	25.4		
CP225WRR	OP	1007	---	---	83	42	---	---	---	5.1	52.3	37.8	24.1		
CP320WRR	OP	1274	---	---	105	38	---	---	---	4.9	52.6	37.7	24.7		
Kansas State University															
Riley	OP	1394	---	---	115	65	---	---	---	4.9	51.8	38.6	24.1		
Surefire	OP	1479	---	---	122	57	---	---	---	4.8	53.1	37.2	25.1		
KWS-MOMONT															
QUARTZ	OP	1240	---	---	102	39	---	---	---	5.1	51.5	36.3	22.5		
Ohlde Seed Farms															
Torrington	OP	1322	---	---	109	35	---	---	---	5.0	52.4	38.4	23.7		
Rubisco Seeds LLC															
Plurax CL	H	1303	---	---	108	53	---	---	---	4.8	52.6	38.4	23.6		
Star Specialty Seeds, Inc.															
Star 915W	OP	1568	---	---	130	45	---	---	---	5.2	51.3	36.5	25.9		
Star 930W	OP	1076	---	---	89	60	---	---	---	4.9	52.3	37.9	24.2		
Mean		1266	---	---	---	46	---	---	---	5.0	52.2	37.6	24.3		
CV		13	---	---	---	50	---	---	---	3.8	0.8	1.8	2.4		
LSD (0.05)		286	---	---	---	NS	---	---	---	NS	0.7	NS	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.

¹Type: H=hybrid. OP=open pollinated.

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Alburgh, Vermont

Heather Darby and Rory Malone
University of Vermont

Planted: 8/31/2018
Harvested: 7/30/2019
Herbicides: None
Insecticides: None
Irrigation: None
Previous crop: Spring barley
Soil test: NA
Fertilizer: 66-0-0 lb N-P-K fertilizer in spring
Soil type: Benson rocky silt loam
Elevation: 124 ft Latitude: 45° 0'N
Comments: A cold spring resulted in a slow green up, but the plots overwintered well and yields were excellent.

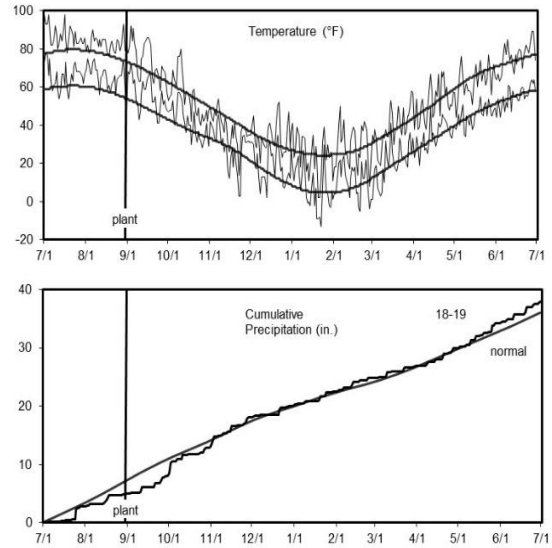


Table 42. Results for the 2019 National Winter Canola Variety Trial, open-pollinated cultivars, at Alburgh, VT

Name	Type ¹	Yield (lb/a) ²			Yield (% of test avg.)			Winter survival 50% bloom			Lodging (%)	Shatter (%)	Oil (%)	Protein (%)
		2019	2018	2-yr.	2019	2019	2018	2-yr.	(DOY)	(%)				
Bayer CropScience														
CWH189D	H	2559	1792	2176	111	68	77	73	141	41	3.3	39.2	23.3	
CWH190D	H	2005	1634	1819	87	91	68	80	140	11	2.7	41.1	24.6	
CWH249D	H	2494	---	---	109	82	---	---	141	4	2.0	42.0	23.1	
CWH317D	H	2003	---	---	87	70	---	---	143	16	0.6	40.2	23.1	
Kansas State University														
Riley	OP	2230	1581	1906	97	95	52	73	143	18	3.0	41.5	23.4	
Surefire	OP	1899	1580	1740	83	89	60	75	142	26	9.0	41.1	22.9	
KWS-MOMONT														
HAMOUR	H	2038	1140	1589	89	89	53	71	141	18	4.7	43.8	21.7	
QUARTZ	OP	2589	1905	2247	113	88	82	85	141	7	4.0	41.4	21.5	
Limagrain Cereals														
Advocat	H	1982	---	---	86	93	---	---	142	15	3.0	39.3	24.4	
Architect	H	2581	---	---	112	78	---	---	141	22	2.7	39.6	24.7	
Ohlde Seed Farms														
Torrington	OP	1959	---	---	85	78	---	---	141	26	2.0	41.1	24.3	
Rubisco Seeds LLC														
Phoenix CL	H	2360	556	1458	103	68	23	46	140	23	10.2	40.9	23.7	
Plurax CL	H	1603	880	1242	70	87	48	68	144	19	5.7	39.1	24.6	
Popular	H	2748	1111	1930	120	91	52	71	140	5	3.2	40.4	24.1	
Mean		2207	1191	---	---	84	51	---	141	18	3.9	40.8	23.5	
CV		34	33	---	---	16	31	---	1	128	83.7	3.4	4.0	
LSD (0.05)		NS	660	---	---	NS	26	---	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.

¹Type: H=hybrid. OP=open pollinated.

²Use 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 43. Results for the 2019 Blackleg (*Leptosphaeria maculans*) Trial, at Stillwater, OK

National Winter Canola Variety Trial

J.P. Damicone, D.L. Teeter, C. Harris, and J.J. Lofton, Oklahoma State University

M.J. Stamm, Kansas State University

Entry	Yield¹ (lb/a)	Incidence² (%)	Incidence (≥3)³ (%)	Severity⁴ (1-5)
Checks				
Bristol	1012 a	98.1 ab	75.6 abc	3.66 abc
Eurol	2124 a	98.1 ab	95.6 a	3.81 ab
Bayer CropScience				
CWH189D	1454 a	70.0 b-f	20.0 fgh	2.03 h-l
CWH190D	1548 a	93.1 abc	50.6 b-e	2.81 d-h
CWH249D	1960 a	50.0 ef	20.0 fgh	1.93 i-l
CWH317D	1389 a	48.1 efg	15.6 gh	1.81 jkl
CROPLAN by WinField				
CP115WRR	1162 a	93.3 ab	76.7 ab	3.37 a-d
CP225WRR	2513 a	98.1 ab	75.6 abc	3.31 a-e
CP320WRR	1357 a	98.1 ab	80.6 ab	3.31 a-e
Kansas State University				
KS4670	1470 a	90.0 abc	66.6 a-d	3.17 b-e
KS4719	1885 a	98.1 ab	85.6 a	3.56 a-d
KSR4723	1253 a	100.0 aw	86.7 a	4.00 a
KSR4767	1789 a	100.0 a	76.7 ab	2.97 c-g
Riley	2877 a	83.1 a-d	40.6 d-g	2.56 e-j
Sumner	2034 a	100.0 a	75.6 abc	3.06 b-f
Surefire	1350 a	96.7 ab	80.0 ab	3.50 a-d
Wichita	1287 a	93.3 ab	76.7 ab	3.27 b-e
Limagrain Cereals				
Advocat	1963 a	43.1 fg	5.6 h	1.61 kl
Architect	1638 a	98.1 ab	85.6 a	3.41 a-d
KWS-MOMONT				
HAMOUR	1834 a	78.1 a-e	10.6 gh	2.01 h-l
MH 14ES125	1016 a	90.0 abc	26.7 e-h	2.37 f-k
MH 15AY085	2641 a	63.1 c-f	10.6 gh	1.86 i-l
MH 15HT227	1676 a	23.3 g	3.3 h	1.37 l
MH 15HT229	2286 a	46.7 fg	16.7 gh	1.83 jkl
QUARTZ	2188 a	60.0 def	6.7 h	1.67 kl
Ohlde Seed Farms				
Torrington	1107 a	98.1 ab	95.6 a	3.46 a-d
Rubisco Seeds LLC				
Phoenix CL	1404 a	83.3 a-d	36.7 efg	2.30 f-k
Plurax CL	2530 a	83.3 a-d	46.7 c-f	2.60 e-i
Popular	1906 a	96.7 ab	46.7 c-f	2.57 e-i
Star Specialty Seeds, Inc.				
Star 915W	1310 a	98.1 ab	85.6 a	3.51 a-d
Star 930W	1881 a	100.0 a	73.3 abc	3.53 a-d
P>F	0.56	<0.01	<0.01	<0.01
CV	43	18.7	33.9	15.4

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

²Percentage of plants with blackleg after swathing on 11 June 2019.

³Percentage of plants with severe blackleg (severity rating of ≥3) after swathing on 11 June 2019.

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

Table 44. Seed sources for entries in the 2018-2019 National Winter Canola Variety Trial

Source	Type ¹	Trait ²	Release		Source	Type ¹	Trait ²	Release	
			Date	Maturity ³				Date	Maturity ³
Bayer CropScience Matthew Clarke (matthew.clarke@bayer.com)					Limagrain Cereals Brent Conrady (brent.conrady@limagrain.com)				
CWH189D	H	SD, CL	---	M	Advocat	H	---	---	E
CWH190D	H	SD, CL	---	M	Architect	H	---	---	E
CWH249D	H	SD, CL	---	M	<hr/>				
CWH317D	H	SD	---	M	Ohlde Seed Farms Shane Ohlde (shane@ohldeseed.com)				
<hr/>					Torrington	OP	---	2016	M
<hr/>					Rubisco Seeds LLC Claire Caldbeck (info@rubiscoseeds.com)				
CROPLAN by WinField Mark Torno (Mtorno@landolakes.com)					Phoenix CL	H	CL	2018	M
CP115WRR	OP	RR/SURT	2008	E	Plurax CL	H	CL	2018	E
CP225WRR	OP	RR/SURT	2010	M	Popular	H	---	2016	E
CP320WRR	OP	RR	2017	E	<hr/>				
<hr/>					Star Specialty Seeds, Inc. Jim Johnson (jimj_star@hotmail.com)				
Kansas State University Canola Breeding Program Michael J. Stamm (mjstamm@ksu.edu)					Star 915W	OP	RR/SURT	2014	M
KS4670	OP	---	---	M	Star 930W	OP	RR	2013	ME
KS4719	OP	---	---	F	<hr/>				
KSR4723	OP	RR	---	M					
KSR4767	OP	RR	---	M					
Riley	OP	---	2010	M					
Sumner	OP	SU	2003	E					
Surefire	OP	SU	2017	MF					
Wichita	OP	---	1999	M	<hr/>				
<hr/>									
KWS-MOMONT Thierry Momont (thierry.momont@kws.com)									
Photosyntech Bob Amstrup (bob.amstrup@photosyntech.com)									
HAMOUR	H	---	---	M					
MH 14ES125	H	---	---	M					
MH 15AY085	H	---	---	M					
MH 15HT227	H	---	---	M					
MH 15HT229	H	---	---	M					
QUARTZ	OP	---	2015	M	<hr/>				

¹OP=open pollinated. H=hybrid.

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

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

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