

2017

Montana Statewide Spring Canola Variety Trial



Disclaimer: The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by the Montana Agricultural Experiment Station is implied. The results of data and studies are considered to be of a **PRELIMINARY** nature and should **NOT** be considered as a product endorsement or recommendation for commercial use.

Montana Statewide Spring Canola Variety Trial 2017

Project Leaders

Simon Fordyce

Research Associate, CARC, Moccasin

Pat Carr

Superintendent & Cropping Systems Agronomist, CARC, Moccasin

Sally Dahlhausen

Research Assistant III, CARC, Moccasin

Lorrie Linhart

Administrative Associate III, CARC, Moccasin

Project Personnel

Chengci Chen

Superintendent & Cropping Systems Agronomist, EARC, Sidney

Yesuf Mohammed

Research Scientist, EARC, Sidney

Peggy Lamb

Research Scientist, NARC, Havre

Ken Kephart

Superintendent & Agronomist, SARC, Huntley

Zach Miller

Superintendent & Horticulturist/Agronomist, WARC, Corvallis

Marty Knox

Research Assistant III, WARC, Corvallis

John Miller

Research Scientist, WTARC, Conrad

TABLE OF CONTENTS

REPORT SUMMARY.....	1
TRIAL LOCATIONS	4
VARIETIES AND SPONSORS	5
MULTI- LOCATION SUMMARIES	6
Management Information.....	6
Meteorological and Soils Information	7
Yield Summary	8
Oil Content Summary	9
INDIVIDUAL LOCATIONS AND MULTI-YEAR SUMMARIES	10
Central Ag Research Center, Moccasin, MT	10
Eastern Ag Research Center, Sidney, MT	13
Northern Ag Research Center, Havre, MT	16
Southern Ag Research Center, Huntley, MT	19
Western Ag Research Center, Corvallis, MT	22
Western Triangle Ag Research Center, Conrad, MT	23

LIST OF TABLES

Table 1. Spring canola variety trial entries, with sponsors and contact information.	5
Table 2. Spring canola variety trial management information by location, 2017.	6
Table 3. Soil type and meteorological data by location.	7
Table 4. Yield summary by location with ranked multi-location averages.	8
Table 5. Oil content summary by location with ranked multi-location averages.	9
Table 6. 2017 Spring canola variety trial, CARC, Moccasin, MT.	10
Table 7. Yield summary 2013-2017 with ranked multi-year averages, CARC, Moccasin, MT.	11
Table 8. Oil summary 2013-2017 with ranked multi-year averages, CARC, Moccasin, MT.	12
Table 9. 2017 Spring canola variety trial, EARC, Sidney, MT.	13
Table 10. Yield summary 2013-2017 with ranked two-year averages, EARC, Sidney, MT.	14
Table 11. Oil summary 2013-2017 with ranked two-year averages, EARC, Sidney, MT.	15
Table 12. 2017 Spring canola variety trial, NARC, Havre, MT.	16
Table 13. Yield summary 2013-2017 with ranked multi-year averages, NARC, Havre, MT.	17
Table 14. Oil summary 2013-2017 with ranked multi-year averages, NARC, Havre, MT.	18
Table 15. 2017 Spring canola variety trial, SARC, Huntley, MT.	19
Table 16. Yield summary 2013-2017 with ranked two-year averages, SARC, Huntley, MT.	20
Table 17. Oil summary 2013-2017 with ranked two-year averages, SARC, Huntley, MT.	21
Table 18. 2017 Spring canola variety trial, WARC, Corvallis, MT.	22
Table 19. 2017 Spring canola variety trial, WTARC, Conrad, MT.	23
Table 20. Yield summary 2013-2017 with ranked multi-year averages, WTARC, Conrad, MT.	24
Table 21. Oil summary 2013-2017 with ranked multi-year averages, WTARC, Conrad, MT.	25

INTRODUCTION

Spring canola production in Montana is increasing, with record-breaking acreage¹ predicted in 2017. In 2016, Montana ranked third in total production (2 million bu), behind North Dakota (53 million bu) and Oklahoma (2.3 million bu), but seventh place when comparing production on a per acre basis (i.e., yield). Selection of canola varieties well suited to Montana's many unique production environments can improve the state's yield standing at the national level. Here, we summarize five years of varietal performance data at six locations across Montana.

OBJECTIVES

The objective of the Montana Statewide Spring Canola Variety Trial is to evaluate the agronomic performance of available canola varieties and breeding lines submitted by commercial entities at six research locations across the state. The information obtained from these trials is intended to provide canola growers in Montana with reliable, unbiased information regarding which canola varieties are best suited to their specific production environment.

METHODS

In spring 2017, twenty canola varieties (*Brassica napus*) of four herbicide tolerant types were submitted by six sponsors ([Table 1](#)). The seed was distributed to six agricultural research centers ([Figure 1](#)): Central Ag near Moccasin (CARC), Eastern Ag near Sidney (EARC), Northern Ag near Havre (NARC), Southern Ag near Huntley (SARC), Western Ag near Corvallis

(WARC), and Western Triangle Ag near Conrad (WTARC). Unlike past years in which all combinations of varieties and locations were represented, a subset of 15 varieties was tested at the two irrigated sites, EARC and WARC, while the full set of 20 varieties was tested at CARC, NARC, SARC, and WTARC.

Plots were seeded at 14 PLS/ft², with a goal of 12 established plants/ft². Seed was treated prior to seeding with Lumiderm[®] or Helix XTra[®] for control of flea beetle. Select varieties were also treated with Prosper[®] Evergol[®]. Varieties were grown in small plots ranging from 70 to 100 ft² and were replicated four times in a randomized complete block design, with the exception of the trial located at SARC. This location employed an alpha-lattice design. Varieties were compared for establishment, height, days to flowering, grain yield, test weight, and percent oil. Grain yield and oil content were adjusted to 8% moisture. Days to maturity was assessed at both NARC and SARC, while frost damage and nuisance bird damage were assessed at CARC and WARC, respectively. Irrigation water was tracked at EARC and WARC. Seeding and harvest dates, fertilizer and pesticide applications, row spacing, tillage systems, and field crop histories were recorded for each location. ([Table 2](#)). Meteorological and soils data were also recorded ([Table 3](#)).

INTERPRETING RESULTS

Results are presented in tabular form ([Tables 4-21](#)). Note that varieties are sorted by herbicide tolerance system, despite weeds having been managed uniformly across

¹ Based on intended plantings as indicated by reports from farmers in 'Prospective Plantings', USDA National Agricultural Statistics Service, 2017

herbicide tolerance types. In other words, imidazolinone herbicides were not used for in-crop weed control on plots containing Clearfield® varieties; or glufosinates for in-crop weed control on Liberty Link® varieties; or sulfonyleurea herbicides on sulfonyleurea-tolerant varieties; or glyphosate on Roundup Ready® varieties. Rather, glyphosate was applied for weed control either pre-plant or pre-emergence, depending on the location ([Table 2](#)). Weeds were controlled during the growing season by means of hand-weeding and alternative chemicals, not by means of herbicides paired to tolerance systems represented in the trial.

Performance data are presented by location in [Table 4](#) and [Table 5](#). Individual locations are summarized in [Tables 6-21](#). The Least Significant Difference (LSD) values are presented for making pairwise comparisons between treatment means (varieties). If the difference between two treatment values within a column exceeds the LSD value, the entries are considered statistically different from one another for that particular response variable. If the difference does not exceed the LSD value, the entries are considered statistically equivalent. The LSD value is replaced with 'NS' for 'non-significant' when the coefficient of variation (CV) value exceeds 15% and/or the probability value (*P*-Value) exceeds 0.05. A *P*-Value of 0.05 indicates that 19 times out of 20, a difference would be detected among treatment means if the study was repeated. A *P*-Value of 0.001 probability indicates that 999 times out of 1000, a difference would be detected among treatment means if the study was repeated.

RESULTS & DISCUSSION

The following results are for informational purposes only. The presentation of data for

the varieties evaluated does not imply approval or endorsement by Montana State University.

Central Ag Research Center, Moccasin

Plant density in this dryland trial averaged 12.8 plants/ft² ([Table 6](#)). Yields averaged 8.4 bu/ac and ranged from 6.2 to 11.1 bu/ac. Varietal differences in yield were not detected at this location. Abnormally high temperatures and dry conditions developing in June caused remarkable yield reductions. Light frosts observed 11 June and 23 June also affected yields. Frost damage averaged 2.6 on a 5 point scale, and ranged from 1.5 to 3.9, where a rating of 1 indicates zero plants damaged and a rating of 5 indicates all plants damaged. Test weights averaged 50.8 lb/bu and oil contents averaged 44.5%. Statistics for test weight and oil content were omitted, as it was not possible to measure these variables without bulking seed from all replicates. Multi-year averages at this location suggest the varieties 'HyCLASS 930', 'HyCLASS 955', and 'InVigor L252' are top performers in terms of yield ([Table 7](#)) as well as oil content ([Table 8](#)), though multi-year data were unavailable for many varieties.

Eastern Ag Research Center, Sidney

Average plant density in this irrigated trial was 12.3 plants/ft² ([Table 9](#)). Yields averaged 37.3 bu/ac and ranged from 27.5 to 44.8 bu/ac. 'InVigor L252' and '6074 RR' were the highest yielding varieties at 44.5 and 44.8 bu/ac, respectively. Test weights averaged 52.9 lb/bu, while oil contents averaged 50.6%, the highest of any location. Two-year averages at this location suggest the varieties 'HyCLASS 955', 'HyCLASS 970', and 'DKL 70-10' are top performers in terms of yield ([Table 10](#)), while 'HyCLASS 955',

‘HyCLASS 970’, ‘HyCLASS 930’, ‘DKL 35-23’, ‘6074 RR’, and ‘C5507’ are top performers in terms of oil content ([Table 11](#)), though two-year data were not available for all varieties.

Northern Ag Research Center, Havre

Plant density averaged 5.2 plants/ft² in this dryland trial ([Table 12](#)), up from 3.7 plants/ft² last year, indicating that higher seeding rates should be used for environments similar to that of Havre. Yields averaged 14.1 bu/ac and ranged from 9.2 to 18.6 bu/ac, with three varieties yielding statistically equivalent to the highest yielding variety ‘HyCLASS 955’. Test weight averaged 51.3 lb/bu and oil content averaged 41.2%. Statistics for oil content were omitted, as it was not possible to measure this variable from all replicates. Multi-year averages at this location suggest ‘HyCLASS 955’ and ‘HyClass 930’ are top performers in terms of yield ([Table 13](#)) and oil content ([Table 14](#)), though multi-year data were not available for all varieties.

Southern Ag Research Center, Huntley

Plant density in this dryland trial exceeded the target population, averaging 13.9 plants/ft² ([Table 15](#)). Yields averaged 24.8 bu/ac and ranged from 16.0 to 35.0 bu/ac. Varietal differences in yield were not detected when analyzed as a randomized complete block design. However, this location’s experimental design (alpha-lattice) allowed for a separate analysis which identified ‘HyCLASS 955’ as the top yielding variety, a finding corroborated by two-year averages ([Table 16](#)). Test weight averaged 50.0 lb/bu and oil content averaged 35.1 %. Four varieties performed statistically equivalent to the top performing variety ‘HyCLASS 930’ in terms of oil content. This variety is also a top-performer based on two-

year averages ([Table 17](#)), though two-year averages were not available for all varieties.

Western Ag Research Center, Corvallis

Plant densities in this irrigated trial exceeded the target population, averaging 13.6 plants/ft² ([Table 18](#)). Yields averaged just 4.6 bu/ac due to late season damage by nuisance birds. Varietal differences in yield were not detected. Bird damage averaged 9.7% and ranged from 0 to 35%. Test weight averaged 51.6 lb/bu and oil content averaged 44.9 %. Statistics for test weight and oil content were omitted, as it was not possible to measure these variables without bulking seed from all replicates. Multi-year data were unavailable for this location.

Western Triangle Ag Research Center, Conrad

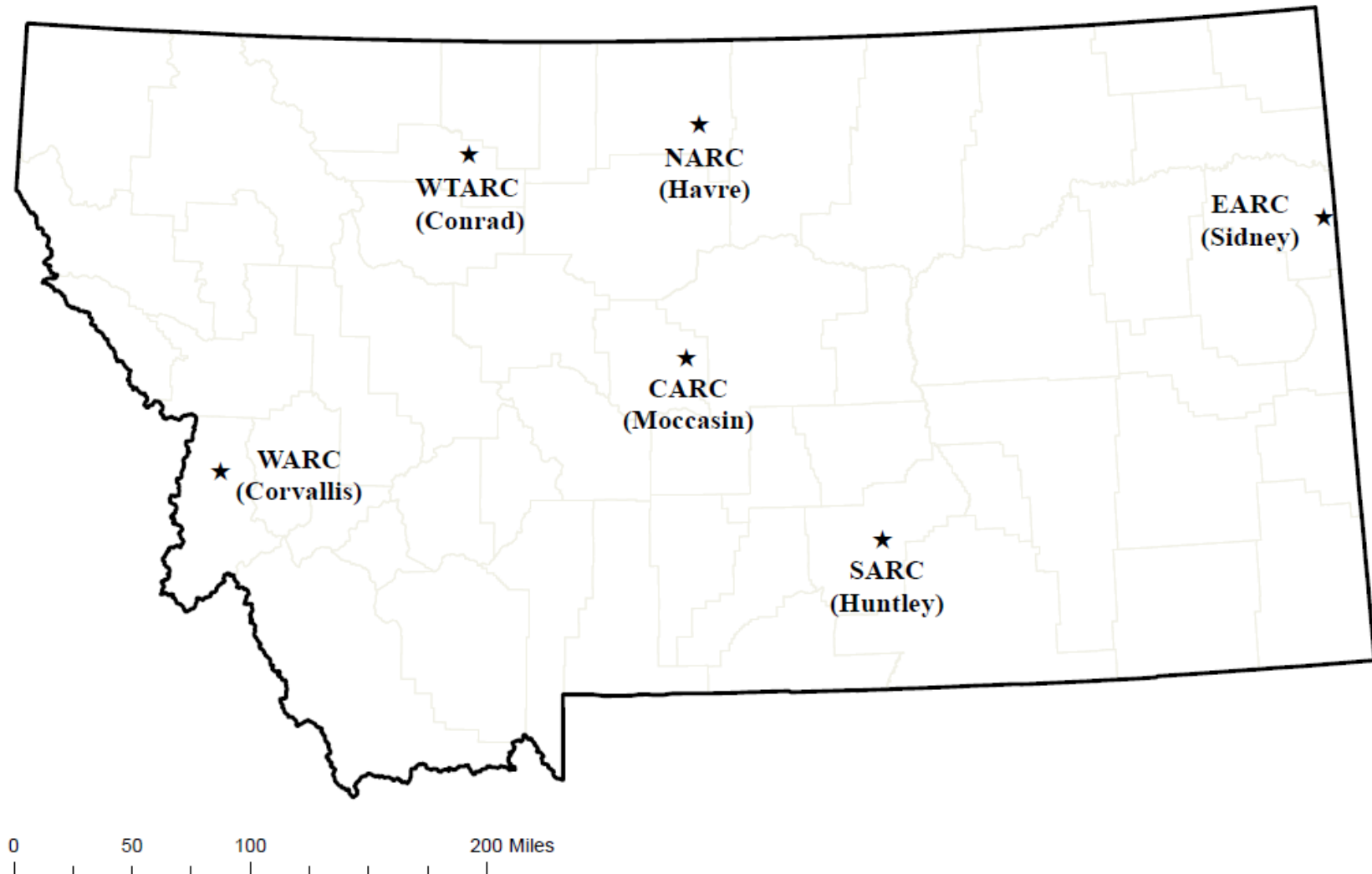
Plant density was not measured in this dryland trial. Yields averaged 24.5 bu/ac and ranged from 15.4 to 31.4 bu/ac ([Table 19](#)). Four varieties yielded statistically equivalent to the highest yielding variety, ‘HyCLASS 955’. Test weight averaged 51.6 lb/bu and oil content averaged 44.4%. Multi-year averages at this location suggest ‘HyCLASS 955’, ‘HyCLASS 930’, ‘DKL 70-10’, ‘DKL 35-23’ and ‘InVigor L140P’ are the top yielding varieties ([Table 20](#)), while ‘HyCLASS 930’, ‘HyCLASS 955’, ‘6080 RR’, and ‘C5522’ are the top performers in terms of oil content ([Table 21](#)), though multi-year data were not available for all varieties.

FUTURE PLANS

With continued support from the canola industry and research center personnel, multi-location canola evaluations will continue in 2018.

TRIAL LOCATIONS

Figure 1. Spring canola variety testing locations, 2017. [\[TOC\]](#)



VARIETIES AND SPONSORS

Table 1. Spring canola variety trial entries, with sponsors and contact information. [\[TOC\]](#)

Sponsor	Variety	Herbicide Tolerance	Disease Resistance/ Tolerance	Contact
Bayer CropScience	InVigor L233P	LL	BL	Jordan Varberg
	InVigor L140P	LL	BL	1524 Walnut St.
	InVigor L230	LL	BL	Grand Forks, ND 58201
	InVigor L252	LL	BL	jordan.varberg@bayer.com (701) 755-2700
BrettYoung™	6074 RR	RR	BL, SC	Rene Mabon
	6080 RR	RR	BL	Box 99 ST Norbert Postal Station
	5545 CL	CL	BL	Winnipeg, MB Canada R3V1L5 rene.mabon@brettyoung.ca (204) 261-7932
Cargill® Global Edible Oil Solutions	11H4054	RR	BL, FS	Keith Horton
	11H4030	RR	BL, FS	300 Smelter Ave NE #304
	09H7763	RR	BL, FS	Great Falls, MT 59404
	11H4009	RR	BL, FS	keith_horton@cargill.com
	15MH6006	CL	BL	(406) 750-2917
Cibus™	C5507	SU	BL	Jameson Hall
	C5522	SU	BL	6455 Nancy Ridge Dr.
	C5513	SU	BL	San Diego, CA 92121 jhall@cibus.com (858) 450-0008
CROPLAN® by WinField®	HyCLASS 930	RR	BL	Paul S. Gregor
	HyCLASS 955	RR	BL, CR	10515 115th St NW
	HyCLASS 970	RR	BL	Thief River Falls, MN 56701 psgregor@landolakes.com (218) 964-5168
Dekalb®	DKL 35-23 ¹	RR	BL	Courtney Meduna
	DKL 70-10	RR	BL	516 19th Ave SW Minot, ND 58701 courtney.a.meduna@monsanto.com (701) 339-0238

¹G35153 in the 2016 trial

Herbicide Tolerance: CL = Clearfield; LL = Liberty Link; RR = Roundup Ready; SU = Sulfonylurea

Disease Resistance: BL = Blackleg; SC = Sclerotinia; FS = Fusarium; CR = Clubroot

MULTI- LOCATION SUMMARIES

Management Information

Table 2. Spring canola variety trial management information by location, 2017. [\[TOC\]](#)

	CARC Moccasin	EARC Sidney	NARC Havre	SARC Huntley	WARC Corvallis	WTARC Conrad
Irrigation (inches)	None	5.8	None	None	6.0	None
Tillage	No-till	Conventional	No-till	No-till	No-till	No-till
Row Spacing (inches)	12	12	12	7	7	12
Seeding Date	20-Apr	18-Apr	17-Apr	11-Apr	26-Apr	1-May
Harvest Date	28-Jul	27-Jul	25-Jul	25-Jul	4-Aug	15-Aug
Previous Crop	Willow Creek Winter Wheat	Sugarbeet	Spring Wheat	Chem-fallow	Lentil	Barley
Fertilizer	None	46-0-0	50-15-0-20	None	None	120-20-20
Pesticide	Glyphosate pre- plant; Stinger in-crop	Glyphosate & Sonalan pre-plant; Sevin XLR in-crop	Glyphosate & Sonolan pre- plant; Mustang Max in-crop	Glyphosate pre-emergence	Sonalan HFP pre- emergence; Assure II in-crop	Glyphosate pre-plant
Pests	Late season flea beetle	Early season flea beetle (controlled)	Flea beetle (controlled)	None	Late season nuisance birds	Early season flea beetle (minimal damage)

Meteorological and Soils Information

Table 3. Soil type and meteorological data by location. [\[TOC\]](#)

	CARC Moccasin	EARC Sidney	NARC Havre	SARC Huntley	WARC Corvallis	WTARC Conrad
2017 Seasonal Precip (Apr - Aug) in Inches	7.65	4.12	2.27	4.86	6.28	6.52
Avg. Seasonal Precip (Apr - Aug) in Inches	10.7	5.8	8.0	8.0	2.6	8.5
Last Killing Frost in Spring ($< 32^{\circ}\text{F}$)	19-May	19-May	19-May	20-May	13-May	3-May
First Killing Frost in Fall ($< 32^{\circ}\text{F}$)	22-Sep	6-Oct	25-Sep	17-Sep	12-Aug	24-Sep
Frost-free Period (days)	126	140	129	126	91	144
Max Summer Temperature ($^{\circ}\text{F}$)	97	99	101	101	98	94
Date of Max Summer Temperature	14-Jul	16-Jul	15-Jul	16-Jul	11-Aug	9-Jul
Soil Type	Danvers and Judith clay loams	Savage silty clay	Telstad loam	Fort Collins and Thurlow clay loams	Burnt Fork loam	Scobey and Kevin clay loams
Elevation (feet)	4250	2200	2718	3013	3596	3700

Yield Summary

Table 4. Yield summary by location with ranked multi-location averages. [\[TOC\]](#)

Variety	Distributor	CARC	EARC	NARC	SARC	WARC	WTARC	Avg		Rank	
		Moccasin	Sidney	Havre	Huntley	Corvallis	Conrad	4 loc	6 loc	4 loc	6 loc
----- bu/ac -----											
Clearfield											
5545 CL	BrettYoung	8.5	36.9	15.6	21.7	4.9	25.7	17.9	18.9	9	9
15MH6006	Cargill Global Edible Oil Solutions	7.7	-	13.1	23.9	-	23.7	17.1	-	12	-
Liberty Link											
InVigor L140P	Bayer CropScience	6.2	36.8	12.2	26.7	4.2	26.6	17.9	18.8	9	10
InVigor L230	Bayer CropScience	10.5	38.5	16.7	25.2	3.9	27.9	20.1	20.5	6	5
InVigor L233P	Bayer CropScience	8.2	37.2	14.9	28.8	6.3	25.5	19.4	20.2	8	6
InVigor L252	Bayer CropScience	10.1	44.5	17.7	26.3	5.5	29.5	20.9	22.3	3	2
Roundup Ready											
6074 RR	BrettYoung	9.5	44.8	14.8	18.9	5.4	24.2	16.9	19.6	13	8
6080 RR	BrettYoung	9.9	31.8	12	21.5	4.4	23.2	16.7	17.1	14	13
09H7763	Cargill Global Edible Oil Solutions	8.8	-	13.1	23.5	-	26.3	17.9	-	9	-
11H4009	Cargill Global Edible Oil Solutions	8	-	9.2	26.8	-	16.3	15.1	-	18	-
11H4030	Cargill Global Edible Oil Solutions	8.7	-	14.9	29.9	-	27.8	20.3	-	4	-
11H4054	Cargill Global Edible Oil Solutions	6.9	-	13.7	24.3	-	20.6	16.4	-	15	-
HyCLASS 930	CROPLAN by WinField	9.9	37.5	15.7	28.9	3.9	25.3	20.0	20.2	7	6
HyCLASS 955	CROPLAN by WinField	11.1	36.7	18.6	35	4.7	31.4	24.0	22.9	1	1
HyCLASS 970	CROPLAN by WinField	7.1	37.9	12.9	22.5	3.8	22.6	16.3	17.8	16	11
DKL 35-23	Dekalb	10.4	33.3	18.3	30.5	5.8	28.1	21.8	21.1	2	3
DKL 70-10	Dekalb	8.2	37.8	18	28.4	7.3	26.1	20.2	21.0	5	4
Sulfonylurea											
C5507	Cibus	5.6	38.2	10.4	16	2.5	20.4	13.1	15.5	19	14
C5513	Cibus	4.8	27.5	10.2	16.8	2.5	15.4	11.8	12.9	20	15
C5522	Cibus	7.3	40.1	10.9	19.7	4.3	22.9	15.2	17.5	17	12
Mean		8.4	37.3	14.1	24.8	4.6	24.5	17.9	19.1	-	-
CV%		23.9	7.6	7.6	4.8	39.7	13.5	-	-	-	-
LSD		NS	4.0	1.5	4.1	NS	4.7	-	-	-	-
P-Value		<0.001	<0.0001	<0.0001	<0.0001	0.0383	<0.0001	-	-	-	-

Oil Content Summary

Table 5. Oil content summary by location with ranked multi-location averages. [\[TOC\]](#)

Variety	Distributor	CARC	EARC	NARC	SARC	WARC	WTARC	Avg		Rank	
		Moccasin	Sidney	Havre	Huntley	Corvallis	Conrad	4 loc	6 loc	4 loc	6 loc
----- % -----											
Clearfield											
5545 CL	BrettYoung	44	51	43	36	44	46	42.3	44.0	5	5
15MH6006	Cargill Global Edible Oil Solutions	44	-	41	31	-	44	40.0	-	17	-
Liberty Link											
InVigor L140P	Bayer CropScience	42	49	40	35	44	44	40.3	42.3	14	12
InVigor L230	Bayer CropScience	44	51	40	33	46	44	40.3	43.0	14	11
InVigor L233P	Bayer CropScience	42	50	39	34	44	45	40.0	42.3	17	12
InVigor L252	Bayer CropScience	45	50	41	35	45	45	41.5	43.5	10	8
Roundup Ready											
6074 RR	BrettYoung	46	51	42	35	44	43	41.5	43.5	10	8
6080 RR	BrettYoung	47	50	41	36	46	46	42.5	44.3	3	4
09H7763	Cargill Global Edible Oil Solutions	43	-	41	37	-	47	42.0	-	6	-
11H4009	Cargill Global Edible Oil Solutions	43	-	38	33	-	41	38.8	-	20	-
11H4030	Cargill Global Edible Oil Solutions	45	-	40	32	-	44	40.3	-	14	-
11H4054	Cargill Global Edible Oil Solutions	45	-	42	35	-	43	41.3	-	12	-
HyCLASS 930	CROPLAN by WinField	48	51	42	38	45	48	44.0	45.3	1	1
HyCLASS 955	CROPLAN by WinField	46	53	44	37	45	46	43.3	45.2	2	2
HyCLASS 970	CROPLAN by WinField	46	52	43	37	47	44	42.5	44.8	3	3
DKL 35-23	Dekalb	44	51	40	35	45	44	40.8	43.2	13	10
DKL 70-10	Dekalb	45	50	42	37	44	44	42.0	43.7	6	7
Sulfonylurea											
C5507	Cibus	45	50	42	36	-	44	41.8	-	9	-
C5513	Cibus	43	50	41	34	-	40	39.5	-	19	-
C5522	Cibus	45	51	41	36	44	46	42.0	43.8	6	6
Mean		44.6	50.6	41.2	35.1	44.8	44.4	41.3	43.8	-	-
CV%		-	3.0	-	2.2	-	3.7	-	-	-	-
LSD		-	NS	-	1.1	-	2.3	-	-	-	-
P-Value		-	0.0547	-	<0.0001	-	<0.0001	-	-	-	-

INDIVIDUAL LOCATIONS AND MULTI-YEAR SUMMARIES

Central Ag Research Center, Moccasin, MT

Table 6. 2017 Spring canola variety trial, CARC, Moccasin, MT. [\[TOC\]](#)

Variety	Distributor	Plant Count ft²	Flower Date		Frost Damage¹	Plant Height in	Grain Yield²	Test Weight³	Oil Content²,³
			cal	jul					
Clearfield									
5545 CL	Brett Young	9.6	19-Jun	170.5	3.3	33.0	8.5	51.5	44
15MH6006	Cargill Global Edible Oil Solutions	14.3	12-Jun	163.0	2.7	26.7	7.7	51.6	44
Liberty Link									
In Vigor L140P	Bayer CropScience	17.3	19-Jun	170.8	2.3	28.9	6.2	51.4	43
In Vigor L230	Bayer CropScience	14.3	14-Jun	165.3	1.5	33.0	10.5	51.0	44
In Vigor L233P	Bayer CropScience	11.6	18-Jun	169.0	2.1	33.4	8.2	51.9	43
In Vigor L252	Bayer CropScience	15.7	18-Jun	169.0	2.3	30.1	10.1	50.8	45
Roundup Ready									
6074 RR	Brett Young	14.0	18-Jun	169.0	2.3	30.6	9.5	50.0	46
6080 RR	Brett Young	12.0	15-Jun	166.0	1.9	33.2	9.9	51.2	47
09H7763	Cargill Global Edible Oil Solutions	13.9	21-Jun	172.0	3.8	35.5	8.8	50.6	43
11H4009	Cargill Global Edible Oil Solutions	12.7	15-Jun	166.3	3.2	30.6	8.0	52.3	43
11H4030	Cargill Global Edible Oil Solutions	13.7	13-Jun	164.0	2.6	24.9	8.7	50.3	45
11H4054	Cargill Global Edible Oil Solutions	13.4	17-Jun	168.3	3.5	26.8	6.9	50.5	45
HyCLASS 930	CROPLAN by WinField	10.0	15-Jun	166.0	2.9	29.6	9.9	50.3	48
HyCLASS 955	CROPLAN by WinField	9.0	13-Jun	164.0	2.2	30.1	11.1	51.4	46
HyCLASS 970	CROPLAN by WinField	12.2	16-Jun	167.8	2.2	30.9	7.1	50.3	46
DKL 35-23	Dekalb	14.1	15-Jun	166.0	1.8	31.6	10.4	50.4	44
DKL 70-10	Dekalb	10.0	16-Jun	167.3	2.1	31.7	8.2	51.5	45
Sulfonylurea									
C5507	Cibus	12.2	21-Jun	172.0	3.9	30.4	5.6	49.2	45
C5513	Cibus	13.1	21-Jun	172.0	2.9	31.1	4.8	51.0	43
C5522	Cibus	12.6	18-Jun	169.5	3.3	30.9	7.3	50.0	45
Mean		12.8	16-Jun	167.9	2.6	30.6	8.4	50.8	44.5
CV%		16.5	-	0.4	17.5	6.7	23.9	-	-
LSD		3.0	-	1.0	0.7	2.9	NS⁴	-	-
P-Value		<0.0001	-	<0.0001	<0.0001	<0.0001	<0.001	-	-

¹ Frost Damage: 1 = No plants damaged; 5 = All plants damaged

² Adjusted to 8% moisture

³ Only one replicate summarized

⁴ LSD considered non-significant when grain yield CV% > 15

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 4/20/17

Harvest Date: 7/28/17

Table 7. Yield summary 2013-2017 with ranked multi-year averages, CARC, Moccasin, MT. [\[TOC\]](#)

Variety	Distributor	Grain Yield					Avg			Rank		
		2013	2014	2015	2016	2017	2yr	3yr	4yr	2yr	3yr	4yr
		----- bu/ac -----										
Clearfield												
5545 CL	BrettYoung	-	-	-	-	8.5	-	-	-	-	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	7.7	-	-	-	-	-	-
Liberty Link												
In Vigor L140P	Bayer CropScience	-	19.6	7.5	-	6.2	6.9	11.1	-	7	4	-
In Vigor L230	Bayer CropScience	-	-	-	-	10.5	-	-	-	-	-	-
In Vigor L233P	Bayer CropScience	-	-	-	-	8.2	-	-	-	-	-	-
In Vigor L252	Bayer CropScience	-	23.8	9.8	-	10.1	10.0	14.6	-	1	1	-
Roundup Ready												
6074 RR	BrettYoung	-	-	7.3	-	9.5	8.4	-	-	5	-	-
6080 RR	BrettYoung	-	-	-	-	9.9	-	-	-	-	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	8.8	-	-	-	-	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	8.0	-	-	-	-	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	8.7	-	-	-	-	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	6.9	-	-	-	-	-	-
HyCLASS 930	CROPLAN by WinField	23.5	24.1	9.2	-	9.9	9.6	14.4	16.7	2	2	2
HyCLASS 955	CROPLAN by WinField	29.2	22.6	6.5	-	11.1	8.8	13.4	17.4	3	3	1
HyCLASS 970	CROPLAN by WinField	-	-	7.4	-	7.1	7.3	-	-	6	-	-
DKL 35-23	Dekalb	-	-	-	-	10.4	-	-	-	-	-	-
DKL 70-10	Dekalb	-	-	9.1	-	8.2	8.7	-	-	4	-	-
Sulfonylurea												
C5507	Cibus	-	-	-	-	5.6	-	-	-	-	-	-
C5513	Cibus	-	-	-	-	4.8	-	-	-	-	-	-
C5522	Cibus	-	-	-	-	7.3	-	-	-	-	-	-
LSD		4.3	4.3	1.8	-	NS	-	-	-	-	-	-

Table 8. Oil summary 2013-2017 with ranked multi-year averages, CARC, Moccasin, MT. [\[TOC\]](#)

Variety	Distributor	Oil Content					Avg			Rank		
		2013	2014	2015	2016	2017	2yr	3yr	4yr	2yr	3yr	4yr
		----- % -----										
Clearfield												
5545 CL	BrettYoung	-	-	-	-	44	-	-	-	-	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	44	-	-	-	-	-	-
Liberty Link												
In Vigor L140P	Bayer CropScience	-	43	44	-	42	43.0	43.0	-	7	4	-
In Vigor L230	Bayer CropScience	-	-	-	-	44	-	-	-	-	-	-
In Vigor L233P	Bayer CropScience	-	-	-	-	42	-	-	-	-	-	-
In Vigor L252	Bayer CropScience	-	46	45	-	45	45.0	45.3	-	3	2	-
Roundup Ready												
6074 RR	BrettYoung	-	-	44	-	46	45.0	-	-	3	-	-
6080 RR	BrettYoung	-	-	-	-	47	-	-	-	-	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	43	-	-	-	-	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	43	-	-	-	-	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	45	-	-	-	-	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	45	-	-	-	-	-	-
HyCLASS 930	CROPLAN by WinField	42	46	45	-	48	46.5	46.3	45.3	1	1	1
HyCLASS 955	CROPLAN by WinField	41	45	45	-	46	45.5	45.3	44.3	2	2	2
HyCLASS 970	CROPLAN by WinField	-	-	44	-	46	45.0	-	-	3	-	-
DKL 35-23	Dekalb	-	-	-	-	44	-	-	-	-	-	-
DKL 70-10	Dekalb	-	-	44	-	45	44.5	-	-	6	-	-
Sulfonylurea												
C5507	Cibus	-	-	-	-	45	-	-	-	-	-	-
C5513	Cibus	-	-	-	-	43	-	-	-	-	-	-
C5522	Cibus	-	-	-	-	45	-	-	-	-	-	-
LSD		1.3	1.8	0.8	-	-	-	-	-	-	-	-

Eastern Ag Research Center, Sidney, MT

Table 9. 2017 Spring canola variety trial, EARC, Sidney, MT. [\[TOC\]](#)

Variety	Distributor	Plant Count ft²	Flower Date		Plant Height in	Grain Yield¹ bu/ac	Test Weight lb/bu	Oil Content¹ %
			cal	jul				
Clearfield								
5545 CL	BrettYoung	13.1	12-Jun	163.0	43.2	36.9	53.1	51
Liberty Link								
In Vigor L140P	Bayer CropScience	12.5	11-Jun	162.3	42.5	36.8	53.0	49
In Vigor L230	Bayer CropScience	10.7	5-Jun	156.5	40.3	38.5	54.3	51
In Vigor L233P	Bayer CropScience	10.8	7-Jun	158.0	43.6	37.2	52.6	49
In Vigor L252	Bayer CropScience	13.8	12-Jun	163.8	43.7	44.5	53.1	50
Roundup Ready								
6074 RR	BrettYoung	10.8	10-Jun	161.3	46.8	44.8	51.6	51
6080 RR	BrettYoung	11.2	10-Jun	161.3	44.7	31.8	53.2	50
HyCLASS 930	CROPLAN by WinField	15.0	5-Jun	156.8	39.8	37.5	53.6	51
HyCLASS 955	CROPLAN by WinField	9.7	6-Jun	157.0	38.1	36.7	53.5	53
HyCLASS 970	CROPLAN by WinField	13.4	10-Jun	161.5	44.0	37.9	53.5	52
DKL 35-23	Dekalb	14.6	6-Jun	157.0	39.5	33.3	54.0	51
DKL 70-10	Dekalb	10.7	11-Jun	162.0	41.8	37.8	53.9	50
Sulfonylurea								
C5507	Cibus	12.8	10-Jun	161.0	49.9	38.2	50.6	50
C5513	Cibus	11.5	18-Jun	169.0	46.4	27.5	52.5	49
C5522	Cibus	13.6	11-Jun	162.8	42.9	40.1	51.6	51
Mean		12.3	9-Jun	160.9	43.1	37.3	52.9	50.6
CV%		28.8	-	0.3	9.8	7.6	2.4	3.0
LSD		NS	-	0.8	6.1	4.0	1.8	NS
P-Value		0.6189	-	<0.0001	0.0306	<0.0001	0.0079	0.0547

¹ Adjusted to 8% moisture

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 4/18/17

Harvest Date: 7/27/17

Table 10. Yield summary 2013-2017 with ranked two-year averages, EARC, Sidney, MT. [\[TOC\]](#)

Variety	Distributor	Grain Yield					Avg	Rank
		2013	2014	2015	2016	2017	2yr	2yr
		----- bu/ac -----						
Clearfield								
5545 CL	Brett Young	-	-	-	-	36.9	-	-
Liberty Link								
InVigor L140P	Bayer CropScience	-	-	-	30.7	36.8	33.8	9
InVigor L230	Bayer CropScience	-	-	-	-	38.5	-	-
InVigor L233P	Bayer CropScience	-	-	-	-	37.2	-	-
InVigor L252	Bayer CropScience	-	-	-	-	44.5	-	-
Roundup Ready								
6074 RR	Brett Young	-	-	-	28.8	44.8	36.8	4
6080 RR	Brett Young	-	-	-	32.3	31.8	32.1	10
HyCLASS 930	CROPLAN by WinField	-	-	-	31.4	37.5	34.5	5
HyCLASS 955	CROPLAN by WinField	-	-	-	38.4	36.7	37.6	1
HyCLASS 970	CROPLAN by WinField	-	-	-	35.8	37.9	36.9	3
DKL 35-23	Dekalb	-	-	-	35.5	33.3	34.4	6
DKL 70-10	Dekalb	-	-	-	37	37.8	37.4	2
Sulfonylurea								
C5507	Cibus	-	-	-	30.5	38.2	34.4	6
C5513	Cibus	-	-	-	28	27.5	27.8	11
C5522	Cibus	-	-	-	27.7	40.1	33.9	8
LSD		-	-	-	6.9	4.0	-	-

Table 11. Oil summary 2013-2017 with ranked two-year averages, EARC, Sidney, MT. [\[TOC\]](#)

Variety	Distributor	Oil Content					Avg	Rank
		2013	2014	2015	2016	2017	2yr	2yr
		----- % -----						
Clearfield								
5545 CL	Brett Young	-	-	-	-	51	-	-
Liberty Link								
InVigor L140P	Bayer CropScience	-	-	-	44	49	46.5	11
InVigor L230	Bayer CropScience	-	-	-	-	51	-	-
InVigor L233P	Bayer CropScience	-	-	-	-	50	-	-
InVigor L252	Bayer CropScience	-	-	-	-	50	-	-
Roundup Ready								
6074 RR	Brett Young	-	-	-	46	51	48.5	4
6080 RR	Brett Young	-	-	-	46	50	48.0	7
HyCLASS 930	CROPLAN by WinField	-	-	-	48	51	49.5	2
HyCLASS 955	CROPLAN by WinField	-	-	-	47	53	50.0	1
HyCLASS 970	CROPLAN by WinField	-	-	-	47	52	49.5	2
DKL 35-23	Dekalb	-	-	-	46	51	48.5	4
DKL 70-10	Dekalb	-	-	-	46	50	48.0	7
Sulfonylurea								
C5507	Cibus	-	-	-	47	50	48.5	4
C5513	Cibus	-	-	-	46	50	48.0	7
C5522	Cibus	-	-	-	45	51	48.0	7
LSD		-	-	-	2.5	1.8	-	-

Northern Ag Research Center, Havre, MT

Table 12. 2017 Spring canola variety trial, NARC, Havre, MT. [\[TOC\]](#)

Variety	Distributor	Plant Count ft ²	Flower Date		Plant Height in	Maturity Date		Grain Yield ¹ bu/ac	Test Weight lb/bu	Oil Content ^{1,2} %
			cal	jul		cal	jul			
Clearfield										
5545 CL	BrettYoung	6.5	8-Jun	159.5	34.6	17-Jul	198.0	15.6	50.9	43
15MH6006	Cargill Global Edible Oil Solutions	4.9	5-Jun	156.0	29.2	13-Jul	193.5	13.1	51.4	41
Liberty Link										
InVigor L140P	Bayer CropScience	6.1	9-Jun	160.0	34.3	17-Jul	197.5	12.2	52.6	41
InVigor L230	Bayer CropScience	4.1	8-Jun	159.3	33.8	14-Jul	194.5	16.7	52.3	40
InVigor L233P	Bayer CropScience	7.2	8-Jun	159.0	35.3	14-Jul	195.0	14.9	51.8	39
InVigor L252	Bayer CropScience	7.6	9-Jun	160.0	32.8	15-Jul	196.3	17.7	50.9	41
Roundup Ready										
6074 RR	BrettYoung	4.5	9-Jun	160.8	34.4	19-Jul	199.8	14.8	51.1	42
6080 RR	BrettYoung	4.6	8-Jun	159.3	34.8	16-Jul	197.3	12.0	51.1	41
09H7763	Cargill Global Edible Oil Solutions	6.0	9-Jun	160.8	34.3	18-Jul	198.5	13.1	51.3	41
11H4009	Cargill Global Edible Oil Solutions	3.7	6-Jun	157.5	30.2	17-Jul	197.5	9.2	53.3	38
11H4030	Cargill Global Edible Oil Solutions	5.0	4-Jun	155.8	31.3	12-Jul	192.8	14.9	51.1	41
11H4054	Cargill Global Edible Oil Solutions	4.0	6-Jun	157.0	34.1	13-Jul	193.8	13.7	51.6	42
HyCLASS 930	CROPLAN by WinField	4.2	5-Jun	156.0	32.9	13-Jul	194.0	15.7	50.2	42
HyCLASS 955	CROPLAN by WinField	3.7	5-Jun	156.0	34.1	12-Jul	192.8	18.6	51.0	44
HyCLASS 970	CROPLAN by WinField	4.4	8-Jun	159.3	36.8	16-Jul	197.3	12.9	50.7	43
DKL 35-23	Dekalb	5.3	5-Jun	156.0	32.8	12-Jul	192.5	18.3	50.4	40
DKL 70-10	Dekalb	5.5	5-Jun	156.5	33.8	13-Jul	194.0	18.0	51.0	42
Sulfonylurea										
C5507	Cibus	6.0	10-Jun	161.3	37.0	19-Jul	200.0	10.4	50.9	42
C5513	Cibus	5.4	10-Jun	161.5	35.7	19-Jul	199.5	10.2	51.7	41
C5522	Cibus	5.6	9-Jun	160.8	35.4	19-Jul	200.3	10.9	50.9	41
Mean		5.2	7-Jun	158.6	33.9	15-Jul	196.2	14.1	51.3	41.2
CV%		34.5	-	0.4	6.6	-	0.5	7.6	1.1	-
LSD		NS	-	1.0	3.2	-	1.5	1.5	0.8	-
P-Value		0.0978	-	<0.0001	0.0005	-	<0.0001	<0.0001	<0.0001	-

¹ Adjusted to 8% moisture

² Only one replicate summarized

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 4/17/17

Harvest Date: 7/25/17

Table 13. Yield summary 2013-2017 with ranked multi-year averages, NARC, Havre, MT. [\[TOC\]](#)

Variety	Distributor	Grain Yield					Avg				Rank				
		2013	2014	2015	2016	2017	2yr	3yr	4yr	5yr	2yr	3yr	4yr	5yr	
		----- bu/ac -----													
Clearfield															
5545 CL	Brett Young	-	-	-	-	15.6	-	-	-	-	-	-	-	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	13.1	-	-	-	-	-	-	-	-	-
Liberty Link															
In Vigor L140P	Bayer CropScience	-	33.1	24.3	39.9	12.2	26.1	25.5	27.4		6	4	3	-	
In Vigor L230	Bayer CropScience	-	-	-	-	16.7	-	-	-	-	-	-	-	-	-
In Vigor L233P	Bayer CropScience	-	-	-	-	14.9	-	-	-	-	-	-	-	-	-
In Vigor L252	Bayer CropScience	-	35.4	22.1	-	17.7	-	-	-	-	-	-	-	-	-
Roundup Ready															
6074 RR	Brett Young	-	-	19.7	37.2	14.8	26.0	23.9	-	-	7	6	-	-	
6080 RR	Brett Young	-	-	-	37.5	12.0	24.8	-	-	-	8	-	-	-	
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	13.1	-	-	-	-	-	-	-	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	9.2	-	-	-	-	-	-	-	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	14.9	-	-	-	-	-	-	-	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	13.7	-	-	-	-	-	-	-	-	-
HyCLASS 930	CROPLAN by WinField	31.1	34.6	27.7	42.1	15.7	28.9	28.5	30.0	30.2	2	2	2	2	
HyCLASS 955	CROPLAN by WinField	30.2	30.7	31.5	44.0	18.6	31.3	31.4	31.2	31.0	1	1	1	1	
HyCLASS 970	CROPLAN by WinField	-	-	22.4	40.0	12.9	26.5	25.1	-	-	5	5	-	-	
DKL 35-23	Dekalb	-	-	-	38.7	18.3	28.5	-	-	-	3	-	-	-	
DKL 70-10	Dekalb	-	-	27.0	38.3	18.0	28.2	27.8	-	-	4	3	-	-	
Sulfonylurea															
C5507	Cibus	-	-	-	31.2	10.4	20.8	-	-	-	9	-	-	-	
C5513	Cibus	-	-	-	30.6	10.2	20.4	-	-	-	10	-	-	-	
C5522	Cibus	-	-	-	28.1	10.9	19.5	-	-	-	11	-	-	-	
LSD		3.9	4.3	3.4	5.8	1.5	-	-	-	-	-	-	-	-	-

Table 14. Oil summary 2013-2017 with ranked multi-year averages, NARC, Havre, MT. [\[TOC\]](#)

Variety	Distributor	Oil Content					Avg				Rank				
		2013	2014	2015	2016	2017	2yr	3yr	4yr	5yr	2yr	3yr	4yr	5yr	
		----- % -----													
Clearfield															
5545 CL	Brett Young	-	-	-	-	43	-	-	-	-	-	-	-	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	41	-	-	-	-	-	-	-	-	-
Liberty Link															
In Vigor L140P	Bayer CropScience	-	46	41	48	40	44.0	43.0	43.8	-	11	5	3	-	-
In Vigor L230	Bayer CropScience	-	-	-	-	40	-	-	-	-	-	-	-	-	-
In Vigor L233P	Bayer CropScience	-	-	-	-	39	-	-	-	-	-	-	-	-	-
In Vigor L252	Bayer CropScience	-	46	41	-	41	-	-	-	-	-	-	-	-	-
Roundup Ready															
6074 RR	Brett Young	-	-	39	49	42	45.5	43.3	-	-	3	4	-	-	-
6080 RR	Brett Young	-	-	-	49	41	45.0	-	-	-	5	-	-	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	41	-	-	-	-	-	-	-	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	38	-	-	-	-	-	-	-	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	40	-	-	-	-	-	-	-	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	42	-	-	-	-	-	-	-	-	-
HyCLASS 930	CROPLAN by WinField	48	50	42	51	42	46.5	45.0	46.3	46.6	2	2	1	1	1
HyCLASS 955	CROPLAN by WinField	47	48	42	50	44	47.0	45.3	46.0	46.2	1	1	2	2	2
HyCLASS 970	CROPLAN by WinField	-	-	40	48	43	45.5	43.7	-	-	3	3	-	-	-
DKL 35-23	Dekalb	-	-	-	50	40	45.0	-	-	-	5	-	-	-	-
DKL 70-10	Dekalb	-	-	39	48	42	45.0	43.0	-	-	5	5	-	-	-
Sulfonylurea															
C5507	Cibus	-	-	-	48	42	45.0	-	-	-	5	-	-	-	-
C5513	Cibus	-	-	-	48	41	44.5	-	-	-	9	-	-	-	-
C5522	Cibus	-	-	-	48	41	44.5	-	-	-	9	-	-	-	-
LSD		1.1	1.8	0.9	1.2	-	-	-	-	-	-	-	-	-	-

Southern Ag Research Center, Huntley, MT

Table 15. 2017 Spring canola variety trial, SARC, Huntley, MT. [\[TOC\]](#)

Variety	Distributor	Plant Count ft ²	Flower Date		Maturity Date		Grain Yield ^{1,2} bu/ac	Test Weight lb/bu	Oil Content ¹ %
			cal	jul	cal	jul			
Clearfield									
5545 CL	BrettYoung	14.6	12-Jun	163.3	20-Jul	200.5	21.7	50.1	36
15MH6006	Cargill Global Edible Oil Solutions	14.9	5-Jun	156.0	14-Jul	194.5	23.9	47.9	31
Liberty Link									
InVigor L140P	Bayer CropScience	12.1	11-Jun	162.0	18-Jul	199.0	26.7	51.4	35
InVigor L230	Bayer CropScience	12.6	9-Jun	160.3	17-Jul	198.3	25.2	48.9	33
InVigor L233P	Bayer CropScience	15.8	10-Jun	161.0	17-Jul	198.0	28.8	50.9	34
InVigor L252	Bayer CropScience	15.3	13-Jun	164.3	19-Jul	200.0	26.3	48.6	35
Roundup Ready									
6074 RR	BrettYoung	11.2	13-Jun	163.8	20-Jul	200.5	18.9	47.8	35
6080 RR	BrettYoung	10.4	10-Jun	160.5	16-Jul	196.8	21.5	51.1	36
09H7763	Cargill Global Edible Oil Solutions	18.0	14-Jun	164.5	20-Jul	200.5	23.5	51.0	37
11H4009	Cargill Global Edible Oil Solutions	16.3	8-Jun	158.8	15-Jul	196.0	26.8	51.8	33
11H4030	Cargill Global Edible Oil Solutions	16.1	5-Jun	156.0	13-Jul	194.0	29.9	49.3	32
11H4054	Cargill Global Edible Oil Solutions	13.2	7-Jun	158.3	16-Jul	197.3	24.3	51.0	35
HyCLASS 930	CROPLAN by WinField	13.7	6-Jun	157.3	13-Jul	194.0	28.9	51.0	38
HyCLASS 955	CROPLAN by WinField	13.8	7-Jun	157.5	14-Jul	194.5	35.0	50.4	37
HyCLASS 970	CROPLAN by WinField	11.6	9-Jun	160.3	17-Jul	197.8	22.5	48.6	37
DKL 35-23	Dekalb	18.0	7-Jun	158.0	14-Jul	194.5	30.5	50.1	35
DKL 70-10	Dekalb	16.9	8-Jun	159.3	16-Jul	196.8	28.4	50.9	37
Sulfonylurea									
C5507	Cibus	12.6	13-Jun	164.3	20-Jul	201.3	16.0	49.0	36
C5513	Cibus	10.9	14-Jun	164.8	20-Jul	201.0	16.8	50.3	34
C5522	Cibus	9.6	12-Jun	162.5	19-Jul	200.0	19.7	49.6	36
Mean		13.9	10-Jun	160.6	17-Jul	197.8	24.8	50.0	35.1
CV%		56.5	-	0.4	-	0.5	4.8	2.2	2.2
LSD		NS	-	0.9	-	1.3	4.1	1.6	1.1
P-Value		0.9829	-	<0.0001	-	<0.0001	<0.01	<0.0001	<0.0001

¹ Adjusted to 8% moisture

² Analyzed as rectangular alpha-lattice design

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 4/11/17

Harvest Date: 7/25/17

Table 16. Yield summary 2013-2017 with ranked two-year averages, SARC, Huntley, MT. [\[TOC\]](#)

Variety	Distributor	Grain Yield					Avg	Rank
		2013	2014	2015	2016	2017	2yr	2yr
		----- bu/ac -----						
Clearfield								
5545 CL	Brett Young	-	-	-	-	21.7	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	23.9	-	-
Liberty Link								
InVigor L140P	Bayer CropScience	-	34.9	-	-	26.7	30.8	3
InVigor L230	Bayer CropScience	-	-	-	-	25.2	-	-
InVigor L233P	Bayer CropScience	-	-	-	-	28.8	-	-
InVigor L252	Bayer CropScience	-	29.8	-	-	26.3	28.0	4
Roundup Ready								
6074 RR	Brett Young	-	-	-	-	18.9	-	-
6080 RR	Brett Young	-	-	-	-	21.5	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	23.5	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	26.8	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	29.9	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	24.3	-	-
HyCLASS 930	CROPLAN by WinField	-	35.9	-	-	28.9	32.4	2
HyCLASS 955	CROPLAN by WinField	-	32.9	-	-	35.0	34.0	1
HyCLASS 970	CROPLAN by WinField	-	-	-	-	22.5	-	-
DKL 35-23	Dekalb	-	-	-	-	30.5	-	-
DKL 70-10	Dekalb	-	-	-	-	28.4	-	-
Sulfonylurea								
C5507	Cibus	-	-	-	-	16.0	-	-
C5513	Cibus	-	-	-	-	16.8	-	-
C5522	Cibus	-	-	-	-	19.7	-	-
LSD		-	NS	-	-	4.1	-	-

Table 17. Oil summary 2013-2017 with ranked two-year averages, SARC, Huntley, MT. [\[TOC\]](#)

Variety	Distributor	Oil Content					Avg	Rank
		2013	2014	2015	2016	2017	2yr	2yr
		----- % -----						
Clearfield								
5545 CL	BrettYoung	-	-	-	-	36	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	31	-	-
Liberty Link								
InVigor L140P	Bayer CropScience	-	39	-	-	35	37.0	3
InVigor L230	Bayer CropScience	-	-	-	-	33	-	-
InVigor L233P	Bayer CropScience	-	-	-	-	34	-	-
InVigor L252	Bayer CropScience	-	39	-	-	35	37.0	3
Roundup Ready								
6074 RR	BrettYoung	-	-	-	-	35	-	-
6080 RR	BrettYoung	-	-	-	-	36	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	37	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	33	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	32	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	35	-	-
HyCLASS 930	CROPLAN by WinField	-	42	-	-	38	40.0	1
HyCLASS 955	CROPLAN by WinField	-	40	-	-	37	38.5	2
HyCLASS 970	CROPLAN by WinField	-	-	-	-	37	-	-
DKL 35-23	Dekalb	-	-	-	-	35	-	-
DKL 70-10	Dekalb	-	-	-	-	37	-	-
Sulfonylurea								
C5507	Cibus	-	-	-	-	36	-	-
C5513	Cibus	-	-	-	-	34	-	-
C5522	Cibus	-	-	-	-	36	-	-
LSD		-	1.7	-	-	1.1	-	-

Western Ag Research Center, Corvallis, MT

Table 18. 2017 Spring canola variety trial, WARC, Corvallis, MT. [\[TOC\]](#)

Variety	Distributor	Plant Count ft ²	Plant Height in	Bird Damage %	Grain Yield ¹ bu/ac	Test Weight ² lb/bu	Oil Content ^{1,2} %
Clearfield							
5545 CL	Brett Young	13.0	41.3	0.5	4.9	52.5	44
Liberty Link							
InVigor L140P	Bayer CropScience	20.5	41.8	1.7	4.2	52.3	44
InVigor L230	Bayer CropScience	17.8	42.3	35.0	3.9	51.1	46
InVigor L233P	Bayer CropScience	12.3	40.9	20.0	6.3	52.6	44
InVigor L252	Bayer CropScience	19.5	42.1	21.3	5.5	51.5	45
Roundup Ready							
6074 RR	Brett Young	15.3	42.5	0.0	5.4	50.8	44
6080 RR	Brett Young	13.0	40.7	3.0	4.4	51.3	46
HyCLASS 930	CROPLAN by WinField	10.0	36.4	1.8	3.9	51.4	45
HyCLASS 955	CROPLAN by WinField	9.5	34.1	10.5	4.7	51.6	45
HyCLASS 970	CROPLAN by WinField	12.8	39.7	10.0	3.8	51.3	47
DKL 35-23	Dekalb	15.5	37.0	25.0	5.8	50.9	45
DKL 70-10	Dekalb	16.3	39.8	14.0	7.3	52.4	44
Sulfonylurea							
C5507 ³	Cibus	8.5	45.2	0.5	2.5	-	-
C5513 ³	Cibus	7.0	39.6	0.5	2.5	-	-
C5522	Cibus	13.0	43.0	1.5	4.3	50.9	44
Mean		13.6	40.4	9.7	4.6	51.6	44.9
CV%		33.9	6.4	161.0	39.7	-	-
LSD		6.6	3.7	22.2	NS ⁴	-	-
P-Value		0.0038	<0.0001	0.0393	0.0383	-	-

¹ Adjusted to 8% moisture

² Only one replicate summarized

³ Not enough grain sample to measure test weight or oil content

⁴ LSD considered non-significant when grain yield CV% > 15

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 4/26/17

Harvest Date: 8/4/17

Western Triangle Ag Research Center, Conrad, MT

Table 19. 2017 Spring canola variety trial, WTARC, Conrad, MT. [\[TOC\]](#)

Variety	Distributor	Flower Date		Plant Height in	Grain Yield ¹ bu/ac	Test Weight lb/bu	Oil Content ¹ %
		cal	jul				
Clearfield							
5545 CL	Brett Young	24-Jun	174.8	40.8	25.7	52.6	46
15MH6006	Cargill Global Edible Oil Solutions	20-Jun	171.3	32.3	23.7	51.7	44
Liberty Link							
In Vigor L140P	Bayer CropScience	26-Jun	177.0	41.0	26.6	51.8	44
In Vigor L230	Bayer CropScience	25-Jun	175.5	38.3	27.9	51.8	44
In Vigor L233P	Bayer CropScience	25-Jun	175.5	39.0	25.5	52.1	45
In Vigor L252	Bayer CropScience	25-Jun	176.3	38.8	29.5	52.4	45
Roundup Ready							
6074 RR	Brett Young	27-Jun	177.5	42.0	24.2	51.8	43
6080 RR	Brett Young	26-Jun	177.0	38.0	23.2	50.7	46
09H7763	Cargill Global Edible Oil Solutions	29-Jun	180.0	40.5	26.3	51.5	47
11H4009	Cargill Global Edible Oil Solutions	25-Jun	176.0	35.8	16.3	51.8	41
11H4030	Cargill Global Edible Oil Solutions	20-Jun	170.5	35.5	27.8	50.9	44
11H4054	Cargill Global Edible Oil Solutions	24-Jun	174.5	35.8	20.6	52.1	43
HyCLASS 930	CROPLAN by WinField	20-Jun	170.8	34.8	25.3	50.5	47
HyCLASS 955	CROPLAN by WinField	19-Jun	170.3	37.3	31.4	51.2	46
HyCLASS 970	CROPLAN by WinField	21-Jun	171.8	38.8	22.6	51.4	44
DKL 35-23	Dekalb	19-Jun	170.3	36.8	28.1	51.0	44
DKL 70-10	Dekalb	21-Jun	172.0	36.5	26.1	52.2	44
Sulfonylurea							
C5507	Cibus	27-Jun	177.8	41.8	20.4	50.6	44
C5513	Cibus	27-Jun	177.5	38.8	15.4	52.5	41
C5522	Cibus	25-Jun	176.3	41.8	22.9	50.9	46
Mean		24-Jun	174.6	38.2	24.5	51.6	44.4
CV%		-	1.3	4.9	13.5	0.9	3.7
LSD		-	3.1	2.6	4.7	0.7	2.3
P-Value		-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

¹ Adjusted to 8% moisture

Bold indicates top-performing cultivar(s) in a column

Bold indicates cultivar performing statistically equivalent to top-performing cultivar(s)

Seeding Date: 5/1/17

Harvest Date: 8/15/17

Table 20. Yield summary 2013-2017 with ranked multi-year averages, WTARC, Conrad, MT. [\[TOC\]](#)

Variety	Distributor	Grain Yield					Avg				Rank				
		2013	2014	2015	2016	2017	2yr	3yr	4yr	5yr	2yr	3yr	4yr	5yr	
		----- bu/ac -----													
Clearfield															
5545 CL	BrettYoung	-	-	-	-	25.7	-	-	-	-	-	-	-	-	
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	23.7	-	-	-	-	-	-	-	-	
Liberty Link															
In Vigor L140P	Bayer CropScience	-	16.9	11.8	22.4	26.6	24.5	20.3	19.4	-	4	4	3	-	
In Vigor L230	Bayer CropScience	-	-	-	-	27.9	-	-	-	-	-	-	-	-	
In Vigor L233P	Bayer CropScience	-	-	-	-	25.5	-	-	-	-	-	-	-	-	
In Vigor L252	Bayer CropScience	-	17.3	11.9	-	29.5	-	-	-	-	-	-	-	-	
Roundup Ready															
6074 RR	BrettYoung	-	-	9.9	21.7	24.2	23	18.6	-	-	7	6	-	-	
6080 RR	BrettYoung	-	-	-	21.2	23.2	22.2	-	-	-	8	-	-	-	
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	26.3	-	-	-	-	-	-	-	-	
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	16.3	-	-	-	-	-	-	-	-	
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	27.8	-	-	-	-	-	-	-	-	
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	20.6	-	-	-	-	-	-	-	-	
HyCLASS 930	CROPLAN by WinField	45.7	21.2	15.7	25.0	25.3	25.2	22	21.8	26.6	3	3	2	2	
HyCLASS 955	CROPLAN by WinField	45.6	41.2	18.9	22.5	31.4	27	24.3	28.5	31.9	1	1	1	1	
HyCLASS 970	CROPLAN by WinField	-	-	13.6	24.0	22.6	23.3	20.1	-	-	6	5	-	-	
DKL 35-23	Dekalb	-	-	-	23.2	28.1	25.7	-	-	-	2	-	-	-	
DKL 70-10	Dekalb	-	-	19.1	22.3	26.1	24.2	22.5	-	-	5	2	-	-	
Sulfonylurea															
C5507	Cibus	-	-	-	18.0	20.4	19.2	-	-	-	10	-	-	-	
C5513	Cibus	-	-	-	17.9	15.4	16.7	-	-	-	11	-	-	-	
C5522	Cibus	-	-	-	20.2	22.9	21.6	-	-	-	9	-	-	-	
LSD		8.1	15.9	NS	5.3	4.7	-	-	-	-	-	-	-	-	

Table 21. Oil summary 2013-2017 with ranked multi-year averages, WTARC, Conrad, MT. [\[TOC\]](#)

Variety	Distributor	Oil Content					Avg			Rank		
		2013	2014	2015	2016	2017	2yr	3yr	4yr	2yr	3yr	4yr
		----- % -----										
Clearfield												
5545 CL	BrettYoung	-	-	-	-	46	-	-	-	-	-	-
15MH6006	Cargill Global Edible Oil Solutions	-	-	-	-	44	-	-	-	-	-	-
Liberty Link												
In Vigor L140P	Bayer CropScience	-	-	42	45	44	44.5	43.7	-	8	3	-
In Vigor L230	Bayer CropScience	-	-	-	-	44	-	-	-	-	-	-
In Vigor L233P	Bayer CropScience	-	-	-	-	45	-	-	-	-	-	-
In Vigor L252	Bayer CropScience	-	-	42	-	45	-	-	-	-	-	-
Roundup Ready												
6074 RR	BrettYoung	-	-	39	46	43	44.5	42.7	-	8	6	-
6080 RR	BrettYoung	-	-	-	46	46	46.0	-	-	3	-	-
09H7763	Cargill Global Edible Oil Solutions	-	-	-	-	47	-	-	-	-	-	-
11H4009	Cargill Global Edible Oil Solutions	-	-	-	-	41	-	-	-	-	-	-
11H4030	Cargill Global Edible Oil Solutions	-	-	-	-	44	-	-	-	-	-	-
11H4054	Cargill Global Edible Oil Solutions	-	-	-	-	43	-	-	-	-	-	-
HyCLASS 930	CROPLAN by WinField	45	-	42	48	48	48.0	46.0	45.8	1	1	1
HyCLASS 955	CROPLAN by WinField	45	-	42	47	46	46.5	45.0	45.0	2	2	2
HyCLASS 970	CROPLAN by WinField	-	-	40	46	44	45.0	43.3	-	5	4	-
DKL 35-23	Dekalb	-	-	-	46	44	45.0	-	-	5	-	-
DKL 70-10	Dekalb	-	-	40	46	44	45.0	43.3	-	5	4	-
Sulfonylurea												
C5507	Cibus	-	-	-	45	44	44.5	-	-	8	-	-
C5513	Cibus	-	-	-	46	40	43.0	-	-	11	-	-
C5522	Cibus	-	-	-	46	46	46.0	-	-	3	-	-
LSD		0.8	-	1.4	1.3	2.3	-	-	-	-	-	-