2013
Montana Statewide
Spring Canola Variety Trial

MONTANA
STATE UNIVERSITY
College of
AGRICULTURE
&
MONTANA AGRICULTURAL
EXPERIMENT STATION

Table of Contents:

Montana Statewide Spring Canola Variety Trial, 2013

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Table 1. Sponsor contact information for the varieties tested in the 2013 Montana Statewide Spring Canola Variety Evaluation.

SPONSOR	VARIETY	TYPE	HERBICIDE RESISTANCE	CONTACT
Bayer CropScience	InVigor L120	H	LL	Jordan Varberg
	InVigor L130	H	LL	1524 Walnut Street, Grand Forks, ND 58201
	Invigor L156H	H	LL	PH: 701-755-2700
	Invigor 5440	H	LL	EM: jordan.varberg@bayer.com
Brett Young	6070 RR	H	RR	Rene Mabon
				Box 99 ST Norbert Postal Station
				Winnipeg, MB Canada R3V1L5
				PH: 204-261-7932
				EM: rene.mabon@brettyoung.ca
Croplan by Winfield	HyClass 930	H	RR	Paul S. Gregor
	HyClass 955	H	RR	10515 115th St NW
	HyClass 969	H	RR	Thief River Falls, MN 56701
	VT X121 CL[1]	H	CL	PH: 218-964-5168
	VT Oasis CL[1]	OP	CL	EM: psgregor@landolakes.com
Monsanto	DKL 30-03	H	RR	Barbara Kutzner
	DKL 30-42	H	RR	1428 N. Locan Avenue
	DKL 38-48	H	RR	Fresno, CA 93727
	DKL 55-55	H	RR	PH: 559-453-0740
	DKL 70-70	H	RR	EM: barbara.u.kutzner@monsanto.com
Montana Specialty Mills, Inc.	Gem	OP	Imidazolinone	Mike Waring
				PO Box 2208, Great Falls, MT 59403
				PH: 406-761-2338
				EM: mike.waring@mtspecialtymills.com
University of Idaho	Cara (IL.5.6.1)[2]	OP		Jim Davis
	Arriba (.3.8.DE)[2]	OP		875 Perimeter Drive MS 2339, Moscow, ID 83844
	Idaho Zephyr (UI.SC.28)[2]	OP		PH: 208-885-7760
				EM: jdavis@uidaho.edu

[1] Submitted by Viterra available from Croplan by Winfield, [2] variety previously refered to as

Type: Hy - Hybrid, OP - Open-pollinated

Herbicide Resistance: RR - Roundup, LL - LibertyLink, CL - CLEARFIELD

Montana State University, College of Agriculture, Montana Agricultural Experiment Station, Department of Research Centers Locations

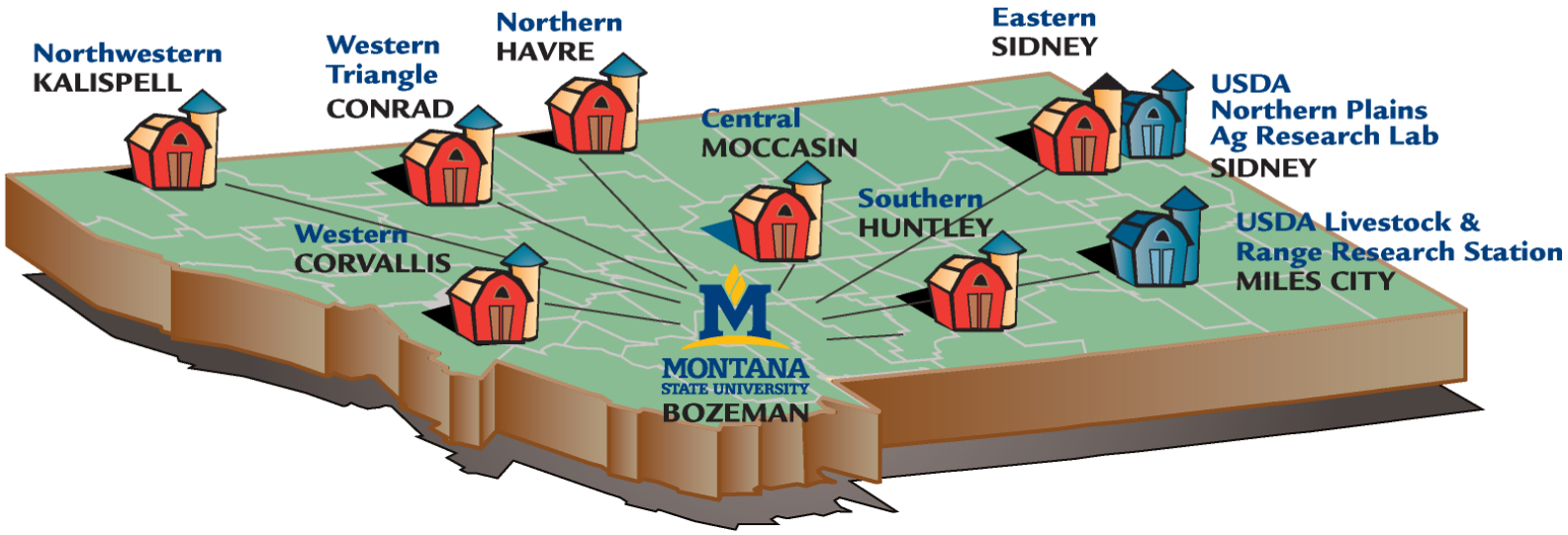

Table 2. Summary of climatic data by location for the 2012-2013 crop year (September thru August).

	NARC Havre	NWARC Kalispell	CARC Moccasin	WTARC Conrad
Precipitation (inches)	18.46	17.37	12.90	11.63
Mean Temperature (^{o}F)	43.4	44.8	31.4	44.0
Last killng frost in spring 2013	5/5	5/23	5/5	5/2
First killing frost fall 2013	10/2	9/27	9/27	9/26
Frost free period 2013	150	127	145	148
Maximum summer temperature	94^{o}F Aug 20, 2013	91^{o}F July 2, 2013	100^{o}F Aug 17, 2013	92^{o}F Aug 16, 2013
Minimum winter temperature	-25^{o}F Dec 25, 2012	6^{o}F Jan 3 & 4, 2013	-20^{o}F Jan 31, 2013	-17^{o}F Dec 25, 2012

In this summary 32^{o} is considered a killing frost.

Introduction

Canola acreage in Montana is on the rise and in 2013 68,000 acres were harvested, an increase of nearly 20,000 acres from 2012. Currently, Montana is ranked third nationally, behind North Dakota and Oklahoma, for the number of acres harvested. This report summarizes canola performance from six Montana Agricultural Research Centers and is presented in table form. It is advised to pay special attention to the results of those trials grown with similar practices and environments to your own. In addition to location, it is important to review variety performance over time. Results are also located at www.ag.montana.edu/nwarc/research/.

Objective

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 and university entities, at six research locations throughout 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.

Procedures

In 2013, one industrial rapeseed 'Gem', two canola quality mustards, 'VT X121 CL' and 'VT Oasis CL', along with sixteen spring canola varieties were submitted by seven sponsors (Table 1). The seed was distributed to six agricultural research centers: Northern (Havre), Eastern (Sidney), Northwestern (Kalispell), Central (Moccasin), Southern (Huntley) and Western Triangle (Conrad), for testing during the 2013 growing season (Figure 1).

Test protocol and management guidelines were provided to personnel at each location. Seeding rates were calculated using the following formula: (10 plants per sqft * TKW * 9.6) / 70 % survival. The entries were replicated four times using a randomized complete block design.

Seeding date, field crop history, tillage and fertility programs, pesticide applications, and harvest date are noted in each location's table.

Data was collected on: number of plants per square foot, date of 50 percent flower, physiological maturity, plant height, percent shatter and percent lodging (visually estimated on a score from 0 to 100 with 0 equal to none and 100 equal to completely shattered or lodged), yield, percent oil and test weight.

The data are presented by location in tables 7 through 14. The Least Significant Difference (LSD) values are presented for making pairwise comparisons between treatment means (entries). If the difference between two treatment values within a column does not exceed the LSD value, it means that the entries are statistically equal for that particular response variable. If the difference exceeds the LSD value, then the entries are statistically different for that particular response variable. When using the LSD values to make pairwise comparison of treatment means, it is recommended to do so only if the probability values for treatment is less than 5% (Pr>F=0.05). This is referred to as "Fisher's" protected LSD. Using a probability level of 5 percent means that there is a 5 percent probability that the treatment differences are not statistically significant. Or stated another way, there is a 95 percent probability that the treatment differences are statistically significant. A large coefficient of variation (CV) indicates a large amount of variation that could not be attributed to differences in the varieties.

Results and Summary

Two research centers, Eastern and Southern, experienced unfavorable weather conditions, resulting in the abandonment of these two trial locations.

The following results and summaries are for informational purposes only. The presentation of

data for the entries evaluated does not imply approval or endorsement by MSU-MAES.

Statewide summaries of yield and oil content are presented in Tables 3 through 6. Yield and oil content are adjusted to a uniform 8% moisture.

Northern Agricultural Research Center (NARC), Havre

Extremely dry soil conditions at the time of seeding and for the following three weeks resulted in sporadic and later than normal emergence. Rain on May 19 and 20 resulted in full crop emergence. Yields ranged from 776 lb/A to 1,553 lb/A (Table 7) and averaged 1,180 lb/A. Four varieties yielded statistically equivalent to the highest yielding variety, 'HyClass 930'. Yields were lower than past years (Table 8) due to the late emergence. The average canola test weight and oil content at NARC were 51.7 lb/bu and 46.4 % respectively.

Northwestern Agricultural Research Center (NWARC), Kalispell

NWARC had an average yield of 2,109 lb/A. Yields ranged from 1,016 lb/A to 3,166 lb/A (Table 9) with one variety yielding statistically equivalent to the highest yielding variety 'InVigor 5440'. Test weight averaged 48.3 lb/bu and oil content averaged 46.0 percent.

Central Agricultural Research Center (CARC), Moccasin

With 12.9 inches of annual precipitation, this no till re-crop system afforded an average yield of 1,302 lb/A (Table 11). Yields ranged from 988 lb/A to 1,657 lb/A and two varieties yielded statistically equivalent to the highest yielding variety, 'DKL 30-42'. Average test weight and oil content were 51.9 lb/bu and 41.0 % respectively.

Western Triangle Agricultural Research Center (WTARC), Conrad

In this dryland, no till, re-crop system, canola seed yields ranged from 1,000 lb/A to 2,385 lb/A (Table 13). Seed yield averaged 1,928 lb/A with eight of the varieties yielding statistically equivalent to the highest yielding variety, 'DKL 55-55'. Test weights and oil content averaged 50.1 lb/bu and 44 % respectively.

Future Plans

With global canola demand increasing and Montana acreage increasing, coupled with continued support from the canola industry and research center personnel, multi-location canola evaluations will continue in 2014.

Table 3. Yield summary from the Montana statewide spring canola variety trial - 2013

Variety	NARC Havre	NWARC Kalispell	CARC Moccasin	WTARC Conrad
	lb/A			
6070 RR	1246	2048	1398	1828
Arriba	785	1016	1117	1723
Cara	910	1462	1252	1491
DKL 30-03	1253	2115	1353	1970
DKL 30-42	1283	2296	**1657**	**2325**
DKL 38-48	1269	2025	1294	1903
DKL 55-55	**1438**	2388	**1444**	**2385**
DKL 70-07	**1378**	2432	1418	**2207**
Gem	776	1340	1111	1576
HyClass 930	**1553**	2642	1174	**2285**
HyClass 955	**1512**	2470	**1462**	**2279**
HyClass 969	**1392**	2100	1388	**2175**
Idaho Zephyr	960	1394	1338	**2122**
Invigor 5440	1282	**3166**	1354	**2273**
InVigor L120	1315	2335	1410	1905
Invigor L130	1230	**2803**	1178	**2083**
Invigor L156H	1066	2415	1211	1712
VT Oasis CL	962	1501	1191	1382
VT X121 CL	807	1826	988	1000
Trial Mean	1180	2109	1302	1928
CV	11.8	15.0	11.6	14.9
LSD	196.1	446.7	212.6	405.4
Pr>F	0.0001	0.0001	0.0001	0.0001

Bold Indicates highest yielding variety.

Bold indicates varieties yielding statistically equivalent to hightest ranking variety within a column based on Fisher's protected LSD (p=0.05).

Table 4. Oil content summary from the Montana statewide spring canola variety trial - 2013

Variety	NARC Havre	NWARC Kalispell	CARC Moccasin	WTARC Conrad
	%			
6070 RR	46.8	47.3	42.6	43.2
Arriba	43.1	43.0	38.2	42.5
Cara	43.4	44.9	39.5	43.3
DKL 30-03	47.3	47.2	40.4	45.2
DKL 30-42	46.3	46.1	39.2	44.4
DKL 38-48	46.4	44.9	39.6	43.5
DKL 55-55	47.6	47.5	41.3	44.1
DKL 70-07	47.7	45.8	41.2	44.0
Gem	48.5	47.9	45.3	47.2
HyClass 930	47.7	47.1	42.1	45.4
HyClass 955	47.2	46.7	41.0	45.3
HyClass 969	48.0	46.4	41.9	45.0
Idaho Zephyr	41.8	43.3	37.2	42.6
Invigor 5440	45.8	45.5	40.3	43.0
InVigor L120	46.1	45.4	39.9	42.8
Invigor L130	46.4	45.5	39.7	43.8
Invigor L156H	47.2	47.7	42.5	43.7
VT Oasis CL	46.6	47.1	44.0	43.7
VT X121 CL	47.5	44.4	42.7	43.3
Mean	46.4	46.0	41.0	44.0
CV	1.1	1.8	2.3	1.3
LSD	0.7	1.2	1.3	0.8
Pr>F	0.0001	0.0001	0.0001	0.0001

Table 5. Yield summary 2010 - 2013 from the Montana statewide spring canola variety trial

	NARC Havre	NWARC Kalispell	CARC Moccasin	WTARC Conrad	EARC Sidney	SARC Huntley
Year	lb/A					
2010	1207	1613	1204	1517	1153	1589
2011	1994	2490	–	1861	969	1356
2012	1715	2214	171	1796	306	383
2013	1180	2109	1302	1928	–	–
Average	1524	2107	892	1775	1074	1169

Table 6. Oil content 2010 - 2013 from the Montana statewide spring canola variety trial

	NARC Havre	NWARC Kalispell	CARC Moccasin	WTARC Conrad	EARC Sidney	SARC Huntley
Year	%					
2010	47.5	45.7	45.0	45.4	47.8	48.3
2011	46.5	45.7	44.0	–	45.4	50.6
2012	42.6	41.6	47.2	37.9	36.9	49.0
2013	46.4	46.0	41.0	44.0	–	–
Average	45.7	44.7	44.3	42.4	43.4	49.3

2013 Montana Statewide Canola Variety Trial at Northern Agricultural Research Center, Harvre, MT

Seeding Date:	4/25	Irrigation:	None	Harvest Date:	7/27
Julian Day:	115	Soil Type:	Clay Loam	Julian Day:	208
Seeding Rate:	10 plnt/sqft 12" rows	Soil Test:	78-43-257-38		
Previous Crop:	Winter Wheat	Fertilizer:	50-15-0-20		
Tillage:	No Till	Pesticides:	None		

Table 7 . Agronomic data from the Montana statewide canola variety trial, Havre - 2013

Variety	PLNT sqft	FLWR Julian	PM Julian	HT in	LOD %	SHTTR %	YLD lb/A	OIL %	TWT lb/bu
6070 RR	13	169	209	39	0.0	20.0	1246	46.8	51.4
Arriba	15	166	203	34	0.0	46.3	785	43.1	52.5
Cara	10	168	206	36	0.0	21.3	910	43.4	52.4
DKL 30-03	12	167	202	37	0.0	6.3	1253	47.3	51.1
DKL 30-42	10	168	205	37	0.0	6.3	1283	46.3	51.6
DKL 38-48	14	169	206	37	0.0	15.0	1269	46.4	52.1
DKL 55-55	11	168	206	39	0.0	5.0	**1438**	47.6	51.1
DKL 70-07	11	169	205	38	0.0	7.5	**1378**	47.7	51.1
Gem	9	167	205	36	0.0	21.3	776	48.5	51.9
HyClass 930	12	167	205	38	0.0	5.0	**1553**	47.7	51.0
HyClass 955	12	168	204	36	0.0	8.8	**1512**	47.2	51.3
HyClass 969	12	168	206	39	0.0	7.5	**1392**	48.0	51.0
Idaho Zephyr	10	167	203	35	0.0	22.5	960	41.8	53.4
Invigor 5440	11	170	207	40	0.0	18.8	1282	45.8	52.9
InVigor L120	9	170	206	40	0.0	18.8	1315	46.1	50.8
Invigor L130	11	169	208	37	0.0	16.3	1230	46.4	52.2
Invigor L156H	9	170	209	40	0.0	11.3	1066	47.2	50.9
Oasis CL	14	164	204	39	0.0	1.0	962	46.6	51.3
VT X121 CL	13	168	207	41	0.0	1.0	807	47.5	52.2
Mean	12	168	205	38	0.0	13.7	1180	46.4	51.7
CV	19.6	0.5	0.8	6.3	-	35.1	11.8	1.1	0.4
LSD	3.2	1.3	2.3	3.4	-	6.8	196.1	0.7	0.3
Pr>F	0.0046	0.0001	0.0001	0.0039	-	0.0001	0.0001	0.0001	0.0001

PLNT: plants, FLWR: 50% flowering, PM: physiological maturity, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight

Bold Indicates highest yielding variety.

Bold indicates varieties yielding statistically equivalent to hightest yielding variety based on Fisher's protected LSD (p=0.05).

Table 8. Canola yield summary 2011 - 2013, Havre, MT

Variety	2011	2012	2013	2 Year Ave.	3 Year Ave.
	——————— lb/A ———————				
6070 RR	–	–	1246	–	–
Arriba	1864	–	785	1325	–
Cara	–	–	910	–	–
DKL 30-03	–	1844	1253	1548	–
DKL 30-42	2067	1727	1283	1505	1692
DKL 38-48	–	–	1269	–	–
DKL 55-55	2072	1887	1438	1663	1799
DKL 70-07	2169	1674	1378	1526	1740
Gem	–	1382	776	1079	–
HyClass 930	–	–	1553	–	–
HyCLASS 955	2174	1774	1512	1643	1820
HyClass 969	–	–	1392	–	–
Idaho Zephyr	–	–	960	–	–
InVigor 5440	1758	–	1282	1520	–
InVigor L120	–	1513	1315	1414	–
InVigor L130	2068	1552	1230	1391	1617
Invigor L156H	–	–	1066	–	–
VT Oasis CL	1341	–	962	1151	–
VT X121 CL	–	–	807	–	–

2013 Montana Statewide Canola Variety Trial, Northwestern Agricultural Research Center, Kalispell

Seeding Date:	5/2	Irrigation:	None	Harvest Date:	8/26
Julian Day:	122	Soil Type:	Silty Loam	Julian Day:	238
Seeding Rate:	10 plnt/sqft 7" rows	Soil Test:	202-6-162-38		
Previous Crop:	Spring Wheat	Fertilizer:	0-40-40-20		
Tillage:	Conventional	Pesticides:	None		

Table 9. Agronomic data from the Montana statewide canola variety trial, Kalispell - 2013

Variety	PLNT sqft	FLWR Julian	PM Julian	HT Inches	LOD %	SHTTR %	YLD lb/A	OIL %	TWT lb/bu
6070 RR	17	183	227	63	60.0	0.0	2048	47.3	48.9
Arriba	18	179	224	56	93.8	0.0	1016	43.0	48.1
Cara	8	183	226	62	41.3	5.0	1462	44.9	48.5
DKL 30-03	15	178	223	53	66.3	1.3	2115	47.2	48.3
DKL 30-42	12	178	222	54	65.0	2.5	2296	46.1	48.5
DKL 38-48	18	182	224	55	60.0	0.0	2025	44.9	48.4
DKL 55-55	17	179	224	59	42.5	0.8	2388	47.5	47.9
DKL 70-07	17	182	225	57	63.8	0.0	2432	45.8	48.3
Gem	12	180	224	58	77.5	2.5	1340	47.9	48.0
HyClass 930	15	179	224	54	60.0	0.5	2642	47.1	47.7
HyClass 955	15	178	223	60	78.0	0.0	2470	46.7	48.3
HyClass 969	18	182	225	58	58.8	0.0	2100	46.4	47.8
Idaho Zephyr	14	181	225	59	88.8	1.3	1394	43.3	49.5
Invigor 5440	18	184	226	66	22.5	5.0	**3166**	45.5	48.9
InVigor L120	12	183	225	63	28.8	3.3	2335	45.4	47.5
Invigor L130	16	183	225	64	7.5	2.5	**2803**	45.5	48.8
Invigor L156H	14	184	228	63	22.5	2.5	2415	47.7	46.4
Nexera 2012CL	11	183	226	62	6.3	5.0	1935	47.1	48.4
Pioneer 45H29	14	183	227	67	31.3	1.3	2575	46.8	48.4
VT Oasis CL	21	178	226	62	33.8	1.3	1501	44.4	49.2
VT X121 CL	16	180	226	68	18.8	3.3	1826	44.9	49.7
Mean	15	181	225	60	48.9	1.8	2109	46.0	48.3
CV	30.4	0.6	0.52	6.9	37.7	151.2	15.0	1.8	0.8
LSD	6.4	1.6	1.67	5.9	26.0	3.8	446.7	1.2	0.5
Pr>F	0.0404	0.0001	0.0001	0.0001	0.0001	0.0742	0.0001	0.0	0.0001

PLNT: plants, FLWR: 50% flowering, PM: physiological maturity, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight

Bold Indicates highest yielding variety.

Bold indicates varieties yielding statistically equivalent to hightest yielding variety based on Fisher's protected LSD (p=0.05).

Table 10. Canola yield summary 2011 - 2013, Kalispell, MT

Variety	2011	2012	2013	2 Year Ave.	3 Year Ave.
	——— lb/A ———				
6070 RR	–	–	2048	–	–
Arriba	2016	–	1016	1516	–
Cara	–	–	1462	–	–
DKL 30-03	–	2107	2115	2111	–
DKL 30-42	2636	1611	2296	1953	2181
DKL 38-48	–	–	2025	–	–
DKL 55-55	2940	2462	2388	2425	2597
DKL 70-07	2964	2552	2432	2492	2649
Gem	–	1394	1340	1367	–
HyClass 930	–	–	2642	–	–
HyCLASS 955	2579	2197	2470	2334	2415
HyClass 969	–	–	2100	–	–
Idaho Zephyr	–	–	1394	–	–
InVigor 5440	2856	–	3166	3011	–
InVigor L120	–	2457	2335	2396	–
InVigor L130	2606	2528	2803	2666	2646
Invigor L156H	–	–	2415	–	–
Nexera 2012CL	–	–	1935	–	
Pioneer 45H29	–	–	2575	–	
VT Oasis CL	1345	–	1501	1423	–
VT X121 CL	–	–	1826	–	–

2013 Montana Statewide Canola Variety Trial at Central Agricultural Research Center, Moccasin

Seeding Date:	4/20	Irrigation:	None	Harvest Date:	8/13
Julian Day:	110	Soil Type:	Clay Loam	Julian Day:	225
Seeding Rate:	10 plnt/sqft 12" rows	Soil Test:	NA		
Previous Crop:	Winter Wheat	Fertilizer:	None		
Tillage:	No Till	Herbicide:	Glyphosate 16 oz/A and Prowl 2 pints/A		

Table 11. Agronomic data from the Montana statewide canola variety trial, Moccasin - 2013

Variety	PLNT sqft	FLWR Julian	PM Julian	HT in	LOD %	SHTTR %	YLD lb/A	OIL %	TWT lb/bu
6070 RR	–	–	–	40	–	–	1398	42.6	50.3
Arriba	–	–	–	38	–	–	1117	38.2	53.3
Cara	–	–	–	44	–	–	1252	39.5	52.3
DKL 30-03	–	–	–	41	–	–	1353	40.4	53.2
DKL 30-42	–	–	–	44	–	–	**1657**	39.2	52.3
DKL 38-48	–	–	–	39	–	–	1294	39.6	52.9
DKL 55-55	–	–	–	43	–	–	**1444**	41.3	52.2
DKL 70-07	–	–	–	40	–	–	1418	41.2	51.7
Gem	–	–	–	40	–	–	1111	45.3	52.0
HyClass 930	–	–	–	39	–	–	1174	42.1	51.5
HyClass 955	–	–	–	39	–	–	**1462**	41.0	52.8
HyClass 969	–	–	–	41	–	–	1388	41.9	51.8
Idaho Zypher	–	–	–	39	–	–	1338	37.2	53.6
Invigor 5440	–	–	–	43	–	–	1354	40.3	51.1
InVigor L120	–	–	–	45	–	–	1410	39.9	49.2
Invigor L130	–	–	–	41	–	–	1178	39.7	52.4
Invigor L156H	–	–	–	43	–	–	1211	42.5	49.8
Oasis CL	–	–	–	43	–	–	1191	44.0	51.9
VT X121 CL	–	–	–	44	–	–	988	42.7	52.0
Mean	–	–	–	41	–	–	1302	41.0	51.9
CV	–	–	–	6.8	–	–	11.6	2.3	2.2
LSD	–	–	–	3.9	–	–	212.6	1.3	1.6
Pr>F	–	–	–	0.0095	–	–	0.0001	0.0001	0.0001

PLNT: plants, FLWR: 50% flowering, PM: physiological maturity, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight

Bold Indicates highest yielding variety.

Bold indicates varieties yielding statistically equivalent to hightest yielding variety based on Fisher's protected LSD (p=0.05).

Table 12. Canola yield summary 2011 - 2013, Moccasin, MT

Variety	2011	2012	2013	2 Year Ave.	3 Year Ave.
			lb/A		
6070 RR	–	–	1398	–	–
Arriba	1069	–	1117	1093	–
Cara	1217	–	1252	1234	–
DKL 30-03	–	160	1353	756	–
DKL 30-42	1235	176	1657	916	1022
DKL 38-48	–	–	1294	–	–
DKL 55-55	–	227	1444	836	–
DKL 70-07	–	172	1418	795	–
Gem	–	90	1111	600	–
HyClass 930	–	–	1174	–	–
HyCLASS 955	–	189	1462	826	–
HyClass 969	–	–	1388	–	–
Idaho Zephyr	–	–	1338	–	–
InVigor 5440	1476	–	1354	1415	–
InVigor L120	–	214	1410	812	–
InVigor L130	–	161	1178	669	–
Invigor L156H	–	–	1211	–	–
VT Oasis CL	1210	–	1191	1200	–
VT X121 CL	–	–	988	–	–

2013 Montana Statewide Canola Variety Trial, Western Triangle Agricultural Research Center, Conrad

Seeding Date:	5/22	Soil Type:	Clay Loam	Swathing Date:	8/16
Julian Day:	142			Julian Day:	228
Seeding Rate:	10 plnt/sqft 12" rows	Soil Test:	52.5-36-692	Harvest Date:	8/28
Previous Crop:	Barley	Fertilizer:	109-0-55-20 broadcast		
Tillage:	No Till		11-22.5-0 seed placed		
Irrigation:	None	Herbicide:	RoundUp PowerMax 20 oz/A		

Table 13. Agronomic data from the Montana statewide canola variety trial, Conrad, MT - 2013

Variety	PLNT sqft	FLWR Julian	PM Julian	HT in	LOD 1 to 5	SHTTR %	YLD lb/A	Oil %	TWT lb/bu
6070 RR	6	188	–	44	1.0	–	1828	43.2	50.3
Arriba	6	187	–	38	1.0	–	1723	42.5	49.8
Cara	5	187	–	39	1.0	–	1491	43.3	49.8
DKL 30-03	7	186	–	39	1.0	–	1970	45.2	50.1
DKL 30-42	9	186	–	37	1.0	–	**2325**	44.4	49.7
DKL 38-48	5	188	–	39	1.0	–	1903	43.5	50.4
DKL 55-55	6	187	–	41	1.0	–	**2385**	44.1	49.6
DKL 70-07	7	188	–	42	1.0	–	**2207**	44.0	51.2
Gem	8	187	–	35	1.0	–	1576	47.2	47.5
HyClass 930	9	186	–	40	1.0	–	**2285**	45.4	50.3
HyClass 955	7	186	–	40	1.0	–	**2279**	45.3	50.9
HyClass 969	5	188	–	40	1.0	–	**2175**	45.0	50.5
Idaho Zephyr	4	187	–	37	1.0	–	**2122**	42.6	50.4
Invigor 5440	10	189	–	48	1.0	–	**2273**	43.0	51.3
InVigor L120	7	188	–	45	1.0	–	1905	42.8	49.1
Invigor L130	8	188	–	45	1.0	–	**2083**	43.8	50.1
Invigor L156H	6	189	–	45	1.0	–	1712	43.7	49.1
Oasis CL	7	184	–	40	1.0	–	1382	43.7	50.6
VT X121 CL	5	185	–	43	1.0	–	1000	43.3	51.1
Mean	7	187	–	41	1.0	–	1928	44.0	50.1
CV	40.8	0.3	–	5.9	0.0	–	14.9	1.3	1.7
LSD	3.8	0.9	–	3.4	0.0	–	405.4	0.8	1.2
Pr>F	0.189	0.0001	–	0.0001	1	–	0.0001	0.0001	0.0001

PLNT: plants, FLWR: 50% flowering, PM: physiological maturity, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight

Bold Indicates highest yielding variety.

Bold indicates varieties yielding statistically equivalent to hightest yielding variety based on Fisher's protected LSD (p=0.05).

Table 14. Canola yield summary 2011 - 2013, Conrad, MT

Variety	2011	2012	2013	2 Year Ave.	3 Year Ave.
	——— lb/A ———				
6070 RR	–	–	1828	–	–
Arriba	1547	–	1723	1635	–
Cara	–	–	1491	–	–
DKL 30-03	–	1947	1970	1959	–
DKL 30-42	2036	1792	2325	2059	2051
DKL 38-48	–	–	1903	–	–
DKL 55-55	2052	2001	2385	2193	2146
DKL 70-07	2033	1774	2207	1991	2005
Gem	–	1398	1576	1487	–
HyClass 930	–	–	2285	–	–
HyCLASS 955	1912	2073	2279	2176	2088
HyClass 969	–	–	2175	–	–
Idaho Zephyr	–	–	2122	–	–
InVigor 5440	2019	–	2273	2146	–
InVigor L120	–	1729	1905	1817	–
InVigor L130	2038	1856	2083	1969	1992
Invigor L156H	–	–	1712	–	–
VT Oasis CL	950	–	1382	1166	–
VT X121 CL	–	–	1000	–	–