# 2015
# Montana Statewide
# Spring Canola Variety Trial

MONTANA
STATE UNIVERSITY
College of
AGRICULTURE
&
MONTANA AGRICULTURAL
EXPERIMENT STATION

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# Montana Statewide Spring Canola Variety Trial, 2015


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Table 1. Sponsor contact information for the varieties tested in the 2015 Montana Statewide Spring Canola Variety

| SPONSOR | VARIETY | TYPE | HERBICIDE RESISTANCE | CONTACT |
|---|---|---|---|---|
| **Bayer CropScience** | InVigor L130 | H | LL | Jordan Varberg |
| | InVigor L140P | H | LL | 1524 Walnut Street, Grand Forks, ND 58201 |
| | InVigor L252 | H | LL | PH: 701-755-2700 |
| | InVigor 5440 | H | LL | EM: jordan.varberg@bayer.com |
| **Brett Young** | 6074 RR | H | RR | Rene Mabon |
| | 6044 RR | H | RR | Box 99 ST Norbert Postal Station |
| | | | | Winnipeg, MB Canada R3V1L5 |
| | | | | PH: 204-261-7932 |
| | | | | EM: rene.mabon@brettyoung.ca |
| **Cibus** | C1516 | H | SU | Jameson Hall |
| | C1511 | H | SU | 6455 Nancy Ridge Dr. |
| | | | | San Diego, CA 92121 |
| | | | | PH: 858-450-0008 |
| | | | | EM: jhall@cibus.com |
| **Croplan by Winfield** | HyClass 930 | H | RR | Paul S. Gregor |
| | HyClass 955 | H | RR | 10515 115th St NW |
| | HyClass 970 | H | RR | Thief River Falls, MN 56701 |
| | | | | PH: 218-964-5168 |
| | | | | EM: psgregor@landolakes.com |
| **Monsanto** | DKL 38-48 | H | RR | Jeff Herrmann |
| | DKL 70-07 | H | RR | 800 N. Lindbergh Boulevard, Mailzone E3NC |
| | DKL 70-50 | H | RR | St. Louis, MO 63167 |
| | DKL 70-10 | H | RR | PH: 314-694-2723 |
| | G28101 | H | RR | EM: jeffrey.e.herrmann@monsanto.com |
| | G49720 | H | RR | |
| **University of Idaho** | Cara | OP | NA | Jim Davis |
| | Arriba | OP | NA | 875 Perimeter Drive MS 2339 |
| | | | | Moscow, ID 83844 |
| | | | | PH: 208-885-7760 |
| | | | | EM: jdavis@uidaho.edu |
| **Green and Grow** | HyClass 930 + CTRL 000 | H | RR | Gary Nijak Jr |
| | AGR 100 | H | RR | 6793 W. Wills Road |
| | AGR 200 | H | RR | Chandler, AZ 85226 |
| | AGR 300 | H | RR | PH: 574-386-6128 |
| | | | | EM: gnijak@greenandgrow.com |

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

Figure 1.

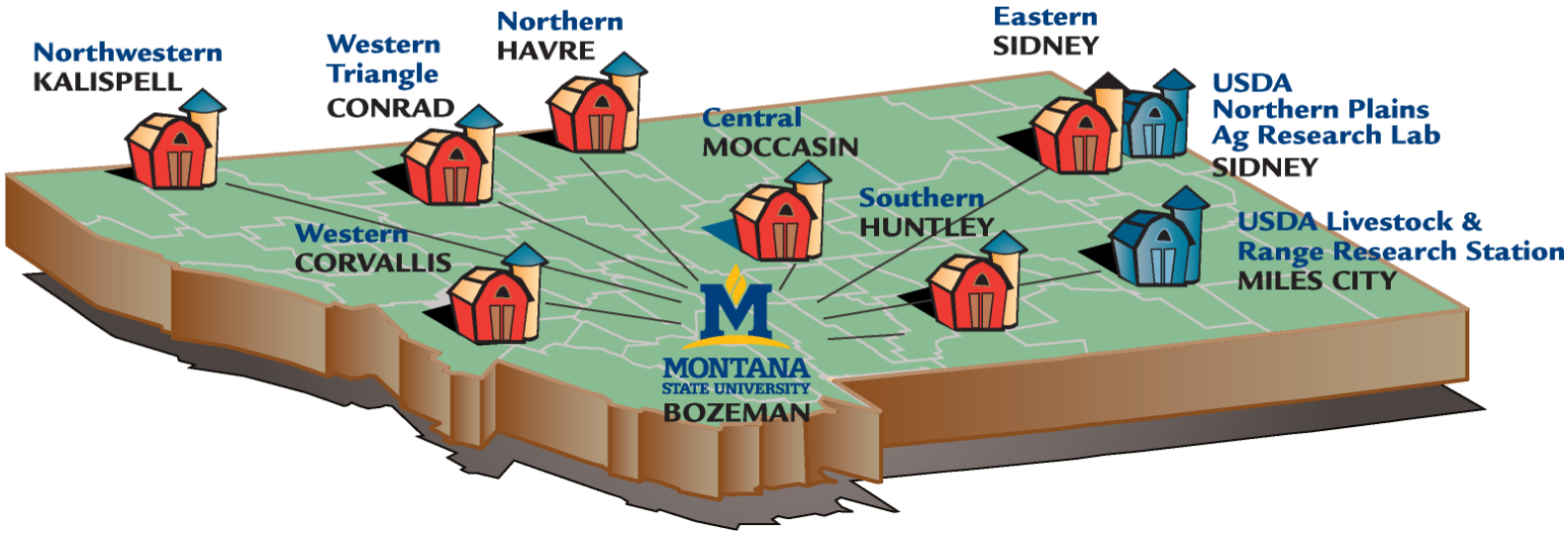

Table 2. Summary of climatic data by location for the 2014-2015 crop year (September thru August).

| | NARC Havre | NWARC Kalispell | CARC Moccasin | WTARC Conrad |
|---|---|---|---|---|
| **Precipitation (inches)** | 12.1 | 15.9 | 14.0 | 9.0 |
| **Mean Temperature ($^{o}$F)** | 45°F | 45°F | 45°F | 44°F |
| **Last killing frost spring 2015** | 5/20 (32°F) | 5/18 (32°F) | 5/30 (31°F) | 5/18 (31°F) |
| **First killing frost fall 2015** | 9/27 (31°F) | 9/17 (29°F) | 9/17 (30°F) | 9/17 (32°F) |
| **Frost free period 2015** | 131 days | 122 days | 110 days | 122 days |
| **Maximum summer temperature 2015** | 6/29 & 8/14 (98°F) | 6/29 (95°F) | 8/14 (97°F) | 8/8 (97°F) |
| **Minimum winter temperature crop year** | 11/14/14, 2/4 & 2/5/15 (-19°F) | 12/30/14 (-24°F) | 12/30 & 12/31/14 (-22°F) | 12/30/14 (-20°F) |

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

## Introduction

Canola acreage in Montana is on the rise, and in 2015 78,000 acres were harvested, yielding 132,600,000 lbs. Currently, Montana is ranked third nationally, behind North Dakota and Oklahoma for the number of acres harvested. This report summarizes canola performance from five 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.

## 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 five 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 2015, sixteen spring canola varieties (*Brassica napus*) and four seed treatments applied to one variety (HyClass 930) were submitted by seven sponsors (Table 1). The seed was distributed to five agricultural research centers: Northern (Havre), Northwestern (Kalispell), Central (Moccasin), Southern (Huntley), and Western Triangle (Conrad), for testing during the 2015 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 x TKW x 9.6) / 70 % survival. The entries were replicated four times using a randomized complete block design.

Seeding date, field crop history, tillage, fertility program, pesticide application, and harvest date are presented for each location.

Data was collected on: number of plants per square foot, date of 50 percent flower, plant height, percent shatter and 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 variety data are presented by location in tables 7 through 14. The Green and Grow seed treatment data by location are presented in tables 15 through 20. 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 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.

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 variety, yield, and oil content are presented in Tables 3 through 6 and the Green and Grow seed treatment summaries are in tables 15 and 16.

## Results and Summary

### Northern Agricultural Research Center (NARC), Havre

Dry conditions at seeding resulted in low stand densities with an average of 4.7 plants/sqft. Yields averaged 22.8 bu/A and ranged from 12.2 to 31.8 bu/A (Table 7), with one variety yielding statistically equivalent to the highest yielding variety 'G28101'. Test weight averaged 53.4 lb/bu and oil content averaged 40.1 percent.

The Green and Grow seed treatments had no effect on any of the measured response variables (Table 17).

### Northwestern Agricultural Research Center (NWARC), Kalispell

Despite the unseasonably low amount of precipitation at seeding, the achieved plant density exceeded the targeted population with an average of 15.5 plants/sqft. Yields averaged 61.3 bu/A and ranged from 43.2 to 72.9 bu/A. Eleven varieties yielded statistically equivalent to the highest yielding variety, 'InVigor 5440'. Test weight averaged 51.0 lb/bu and oil content averaged 50.4 percent (Table 9).

The Green and Grow seed treatments had a significant effect on plant density. The AGR200 afforded 17.0 plants/sqft (Table 18).

### Central Agricultural Research Center (CARC), Moccasin

Hot and dry conditions resulted in reduced stand establishment and low yields at Moccasin. The average plant density was 4.5 plants/sqft. Yields averaged 7.9 bu/A and ranged from 5.4 to 9.8 bu/A. Eight varieties yielded statistically equivalent to the highest yielding variety, 'InVigor L252'. Average test weight and oil content were 48.9 lb/bu and 44.1 percent, respectively (Table 11).

No significant differences were observed with the Green and Grow seed treatments, (Table 19).

### Western Triangle Agricultural Research Center (WTARC), Conrad

Plant density averaged 5.2 plants/sqft. Yields averaged 15.0 bu/A and ranged from 9.2 to 21.7 bu/A (Table 13). However, no significant differences were observed for yield. Test weight averaged 50.8 lb/bu and oil content averaged 40.0 percent.

The Green and Grow seed treatments did have a significant effect on test weight. AGR100 treatment afforded a test weight of 52.9 lb/bu (Table 20).

Southern Agricultural Research Center (SARC), Huntley

Southern research center experienced unfavorable weather conditions, resulting in the abandonment of this trial location.

## Future Plans

With global canola demand and Montana acreage increasing, coupled with continued support from the canola industry and research center personnel, multi-location canola evaluations will continue in 2016.

Table 3. Yield (bu/A) summary from the Montana statewide spring canola variety trial - 2015

| Variety | NARC Havre | NWARC Kalispell | CARC Moccasin | WTARC Conrad |
|---|---|---|---|---|
| 6044RR | 22.1 | 64.6 | 7.0 | 11.9 |
| 6074RR | 19.7 | 50.4 | 7.3 | 9.9 |
| C1511 | 17.9 | 53.9 | 7.5 | 13.4 |
| C1516 | 12.2 | 47.3 | 7.9 | 9.2 |
| Cara | 15.7 | 43.2 | 5.4 | 9.8 |
| Arriba | 17.2 | 55.0 | 6.0 | 12.2 |
| HyClass 930 | 27.7 | 71.3 | 9.2 | 15.7 |
| HyClass 955 | 31.5 | 68.4 | 6.5 | 18.9 |
| HyClass 970 | 22.4 | 64.0 | 7.4 | 13.6 |
| InVigor L130 | 21.3 | 59.7 | 8.9 | 13.7 |
| InVigor L140P | 24.3 | 64.1 | 7.5 | 11.8 |
| InVigor L252 | 22.1 | 68.3 | 9.8 | 11.9 |
| InVigor 5440 | 20.8 | 72.9 | 8.8 | 16.3 |
| DKL 38-48 | 24.6 | 64.8 | 8.1 | 15.4 |
| DKL 70-07 | 28.3 | 68.6 | 9.1 | 20.4 |
| DKL 70-10 | 27.0 | 65.1 | 9.1 | 19.1 |
| DKL 70-50CR | 23.0 | 54.6 | 7.9 | 20.4 |
| G28101 | 31.8 | 61.6 | 8.1 | 20.2 |
| G49720 | 23.0 | 66.0 | 8.9 | 21.7 |
| Mean | 22.8 | 61.3 | 7.9 | 15.0 |
| CV | 10.5 | 14.3 | 16.0 | 43.1 |
| LSD | 3.4 | 12.4 | 1.8 | ns |
| Pr>F | 0.0001 | 0.0001 | 0.0003 | 0.1050 |

Table 4. Yield (bu/A) summary 2012 - 2015 from the Montana statewide spring canola variety trial

| Year | NARC | NWARC | CARC | WTARC |
|---|---|---|---|---|
| 2012 | 33.1 | 44.3 | 3.5 | 35.6 |
| 2013 | 23.6 | 42.2 | 26.1 | 38.6 |
| 2014 | 31.9 | 73.2 | 21.7 | 22.1 |
| 2015 | 22.8 | 61.3 | 7.9 | 15.0 |
| Mean | 27.9 | 55.3 | 14.8 | 27.8 |

Table 5. Percent oil content summary from the Montana statewide spring canola variety trial - 2015

| Variety | NARC Havre | NWARC Kalispell | CARC Moccasin | WTARC Conrad |
|---|---|---|---|---|
| 6044RR | 39.3 | 52.4 | 43.7 | 38.7 |
| 6074RR | 39.1 | 54.8 | 44.0 | 38.7 |
| C1511 | 36.3 | 50.0 | 41.9 | 35.2 |
| C1516 | 36.5 | 54.8 | 43.4 | 38.1 |
| Cara | 42.1 | 50.4 | 44.6 | 39.8 |
| Arriba | 40.5 | 47.7 | 43.7 | 38.9 |
| HyClass 930 | 42.0 | 49.3 | 45.2 | 42.3 |
| HyClass 955 | 41.7 | 49.3 | 45.3 | 42.4 |
| HyClass 970 | 40.0 | 52.9 | 44.1 | 40.0 |
| InVigor L130 | 40.7 | 46.8 | 44.9 | 41.6 |
| InVigor L140P | 40.7 | 47.7 | 43.9 | 41.7 |
| InVigor L252 | 41.0 | 54.7 | 44.9 | 42.0 |
| InVigor 5440 | 40.0 | 49.5 | 43.5 | 39.7 |
| DKL 38-48 | 40.6 | 49.1 | 44.8 | 40.1 |
| DKL 70-07 | 41.6 | 49.4 | 44.6 | 40.6 |
| DKL 70-10 | 38.7 | 47.1 | 43.5 | 40.1 |
| DKL 70-50CR | 40.4 | 52.3 | 43.4 | 40.9 |
| G28101 | 42.9 | 49.1 | 44.9 | 43.6 |
| G49720 | 37.2 | 49.9 | 43.1 | 36.0 |
| Mean | 40.1 | 50.4 | 44.1 | 40.0 |
| CV | 1.6 | 3.6 | 1.3 | 2.5 |
| LSD | 0.9 | 2.6 | 0.8 | 1.4 |
| Pr>F | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

Table 6. Percent oil content 2012 - 2015 from the Montana statewide spring canola variety trial

| Year | NARC | NWARC | CARC | WTARC |
|---|---|---|---|---|
| 2012 | 42.6 | 41.6 | 47.2 | 37.9 |
| 2013 | 46.4 | 46.0 | 41.0 | 44.0 |
| 2014 | 46.0 | 47.6 | 44.7 | . |
| 2015 | 40.1 | 50.4 | 44.1 | 40.0 |
| Mean | 43.8 | 46.4 | 44.3 | 40.6 |

2015 Montana Statewide Canola Variety Trial, Northern Agricultural Research Center, Havre

| | | | |
|---|---|---|---|
| Seeding Date: | 4/21/2015 | Harvest Date: | 7/31/2015 |
| Julian Date: | 111 | Julian Date: | 212 |
| Seeding Rate: | 10 plnt/sqft 12" rows | Soil Type: | Telstad Clay Loam |
| Previous Crop: | Dry Pea | Soil Test: | 115-14-229-52 |
| Tillage: | No-till | Fertilizer: | 50-15-0-20 |
| Irrigation: | None | Herbicide: | None |

Table 7. Agronomic data from the statewide canola variety trial, Havre, MT - 2015

| Variety | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| 6044RR | 4.2 | 167 | 37.1 | 0.0 | 0.0 | 22.1 | 39.3 | 55.0 |
| 6074RR | 4.3 | 168 | 41.0 | 0.0 | 0.3 | 19.7 | 39.1 | 54.9 |
| C1511 | 4.4 | 166 | 43.1 | 0.0 | 0.8 | 17.9 | 36.3 | 55.1 |
| C1516 | 4.3 | 169 | 41.2 | 0.0 | 0.8 | 12.2 | 36.5 | 56.8 |
| Cara | 3.7 | 165 | 40.9 | 0.0 | 0.3 | 15.7 | 42.1 | 53.0 |
| Arriba | 5.0 | 163 | 35.0 | 0.0 | 0.8 | 17.2 | 40.5 | 54.0 |
| HyClass 930 | 5.9 | 162 | 41.6 | 0.0 | 0.3 | 27.7 | 42.0 | 51.2 |
| HyClass 955 | 4.4 | 162 | 39.8 | 0.0 | 0.0 | 31.5 | 41.7 | 51.1 |
| HyClass 970 | 4.5 | 164 | 42.6 | 0.0 | 1.8 | 22.4 | 40.0 | 52.2 |
| InVigor L130 | 5.7 | 167 | 43.8 | 0.0 | 0.5 | 21.3 | 40.7 | 53.8 |
| InVigor L140P | 4.8 | 167 | 45.0 | 0.0 | 0.0 | 24.3 | 40.7 | 53.2 |
| InVigor L252 | 5.3 | 168 | 41.5 | 0.0 | 0.5 | 22.1 | 41.0 | 53.9 |
| InVigor 5440 | 4.9 | 168 | 42.6 | 0.0 | 0.3 | 20.8 | 40.0 | 54.9 |
| DKL 38-48 | 4.0 | 163 | 37.9 | 0.0 | 0.0 | 24.6 | 40.6 | 52.8 |
| DKL 70-07 | 4.9 | 163 | 42.4 | 0.0 | 0.5 | 28.3 | 41.6 | 52.3 |
| DKL 70-10 | 5.5 | 163 | 40.0 | 0.0 | 0.3 | 27.0 | 38.7 | 52.1 |
| DKL 70-50CR | 5.3 | 164 | 44.6 | 0.0 | 4.3 | 23.0 | 40.4 | 52.7 |
| G28101 | 4.2 | 162 | 42.8 | 0.0 | 2.8 | 31.8 | 42.9 | 52.6 |
| G49720 | 5.2 | 164 | 40.0 | ns | 0.5 | 23.0 | 37.2 | 52.6 |
| Mean | 4.7 | 165 | 41.2 | 0.0 | 0.8 | 22.8 | 40.1 | 53.4 |
| CV | 19.3 | 0.4 | 8.2 | 0.0 | 113.7 | 10.5 | 1.6 | 1.1 |
| LSD | ns | 1.0 | 4.8 | 0.0 | 1.2 | 3.4 | 0.9 | 0.8 |
| Pr>F | 0.0684 | 0.0001 | 0.0112 | 1.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter
YLD: yield, TWT: test weight, ns: nonsignificant

[1] adjusted to 8% moisture.

Table 8. Canola yield (bu/A) summary 2013 - 2015, Havre, MT

| Variety | 2013 | 2014 | 2015 | Avg. |
|---|---|---|---|---|
| 6044RR | . | 32 | 22 | 27 |
| Arriba | 16 | 28 | 17 | 20 |
| Cara | 18 | 27 | 16 | 20 |
| DKL 38-48 | 25 | 33 | 25 | 28 |
| DKL 70-07 | 28 | 30 | 28 | 29 |
| HyClass 930 | 31 | 35 | 28 | 31 |
| HyClass 955 | 30 | 31 | 32 | 31 |
| InVigor 5440 | 26 | 33 | 21 | 27 |
| InVigor L130 | 25 | 34 | 21 | 27 |
| InVigor L140P | . | 33 | 24 | 29 |
| InVigor L252 | . | 35 | 22 | 29 |

2015 Montana Statewide Canola Variety Trial, Northwestern Agricultural Research Center, Kalispell

| | | | |
|---|---|---|---|
| Seeding Date: | 4/21/2015 | Harvest Date: | 8/10/2015 |
| Julian Date: | 111 | Julian Date: | 222 |
| Seeding Rate: | 10 plnt/sqft 6" rows | Soil Type: | Creston SiL |
| Previous Crop: | Spring Wheat | Soil Test: | 61-8-180-62 |
| Tillage: | Conventional | Fertilizer: | 125-35-35-20 |
| Irrigation: | None | Insecticide: | Warrior II 1.92 oz/A |
| Herbicide: | Stinger 8 oz/A | Fungicide: | Quadris 6 oz/A |

Table 9. Agronomic data from the statewide canola variety trial, Kalispell, MT - 2015

| Variety | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| 6044RR | 16.6 | 170 | 47.3 | 13.8 | 0.0 | 64.6 | 52.4 | 52.7 |
| 6074RR | 12.2 | 171 | 49.5 | 10.0 | 0.0 | 50.4 | 54.8 | 56.6 |
| C1511 | 14.0 | 169 | 50.0 | 13.0 | 0.0 | 53.9 | 50.0 | 54.4 |
| C1516 | 12.7 | 171 | 51.5 | 15.0 | 0.0 | 47.3 | 54.8 | 57.4 |
| Cara | 9.8 | 169 | 45.8 | 14.3 | 0.0 | 43.2 | 50.4 | 51.0 |
| Arriba | 17.5 | 168 | 41.8 | 8.8 | 0.0 | 55.0 | 47.7 | 49.5 |
| HyClass 930 | 14.3 | 166 | 46.8 | 7.3 | 0.0 | 71.3 | 49.3 | 48.7 |
| HyClass 955 | 16.8 | 167 | 46.3 | 8.3 | 0.0 | 68.4 | 49.3 | 48.5 |
| HyClass 970 | 12.7 | 169 | 47.0 | 14.3 | 0.0 | 64.0 | 52.9 | 51.5 |
| InVigor L130 | 20.4 | 169 | 50.3 | 7.0 | 0.0 | 59.7 | 46.8 | 49.1 |
| InVigor L140P | 19.0 | 169 | 48.3 | 13.0 | 0.0 | 64.1 | 47.7 | 49.4 |
| InVigor L252 | 15.2 | 169 | 48.8 | 9.5 | 0.0 | 68.3 | 54.7 | 51.8 |
| InVigor 5440 | 16.9 | 169 | 53.3 | 14.3 | 0.0 | 72.9 | 49.5 | 51.0 |
| DKL 38-48 | 13.5 | 167 | 44.5 | 10.0 | 0.0 | 64.8 | 49.1 | 49.8 |
| DKL 70-07 | 16.3 | 168 | 48.5 | 9.3 | 0.0 | 68.6 | 49.4 | 48.9 |
| DKL 70-10 | 16.7 | 169 | 49.8 | 6.3 | 0.0 | 65.1 | 47.1 | 49.5 |
| DKL 70-50CR | 16.3 | 168 | 44.8 | 15.0 | 0.0 | 54.6 | 52.3 | 50.3 |
| G28101 | 16.0 | 169 | 47.0 | 15.3 | 0.0 | 61.6 | 49.1 | 49.2 |
| G49720 | 17.0 | 169 | 45.8 | 16.3 | 0.0 | 66.0 | 49.9 | 49.7 |
| Mean | 15.5 | 169 | 47.7 | 11.6 | 0.0 | 61.3 | 50.4 | 51.0 |
| CV | 19.7 | 0.5 | 7.0 | 60.5 | 0.0 | 14.3 | 3.6 | 1.7 |
| LSD | 4.3 | 1.2 | 4.7 | ns | ns | 12.4 | 2.6 | 1.2 |
| Pr>F | 0.0016 | 0.0001 | 0.0029 | 0.6236 | 1.0000 | 0.0001 | 0.0001 | 0.0001 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter
YLD: yield, TWT: test weight, ns: nonsignificant

[1] adjusted to 8% moisture.

Table 10. Canola yield (bu/A) summary 2013 - 2015, Kalispell, MT

| Variety | 2013 | 2014 | 2015 | Avg. |
|---|---|---|---|---|
| 6044RR | . | 66 | 65 | 65 |
| Arriba | 20 | 41 | 55 | 39 |
| Cara | 29 | 47 | 43 | 40 |
| DKL 38-48 | 40 | 83 | 65 | 63 |
| DKL 70-07 | 49 | 76 | 69 | 64 |
| HyClass 930 | 53 | 82 | 71 | 69 |
| HyClass 955 | 49 | 75 | 68 | 64 |
| InVigor 5440 | 63 | 76 | 73 | 71 |
| InVigor L130 | 47 | 78 | 60 | 62 |
| InVigor L140P | . | 84 | 64 | 74 |
| InVigor L252 | . | 80 | 68 | 74 |

2015 Montana Statewide Canola Variety Trial, Central Agricultural Research Center, Moccasin

| | | | |
|---|---|---|---|
| Seeding Date: | 4/24/2015 | Harvest Date: | 8/14/2015 |
| Julian Date: | 114 | Julian Date: | 226 |
| Seeding Rate: | 10 plnt/sqft 12" rows | Soil Type: | Judith clay loam |
| Previous Crop: | Barley | Soil Test: | NA |
| Tillage: | Conventional | Fertilizer: | 60-0-0-34 |
| Irrigation: | None | Herbicide: | Prowl H2O 2.5pt/A + Glystar 12oz/A |

Table 11. Agronomic data from the statewide canola variety trial, Moccassin, MT - 2015

| Variety | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| 6044RR | 3.6 | 174 | 31.2 | 0.0 | 0.0 | 7.0 | 43.7 | 49.5 |
| 6074RR | 3.0 | 175 | 33.7 | 0.0 | 0.0 | 7.3 | 44.0 | 49.0 |
| C1511 | 3.9 | 175 | 25.3 | 0.0 | 0.0 | 7.5 | 41.9 | 48.3 |
| C1516 | 4.8 | 174 | 36.1 | 0.0 | 0.0 | 7.9 | 43.4 | 49.3 |
| Cara | 3.6 | 176 | 31.8 | 0.0 | 0.0 | 5.4 | 44.6 | 48.8 |
| Arriba | 3.4 | 177 | 32.1 | 0.0 | 0.0 | 6.0 | 43.7 | 49.2 |
| HyClass 930 | 6.1 | 172 | 33.3 | 0.0 | 0.0 | 9.2 | 45.2 | 48.5 |
| HyClass 955 | 3.2 | 177 | 31.5 | 0.0 | 0.0 | 6.5 | 45.3 | 48.4 |
| HyClass 970 | 4.9 | 178 | 34.7 | 0.0 | 0.0 | 7.4 | 44.1 | 48.5 |
| InVigor L130 | 4.6 | 176 | 32.1 | 0.0 | 0.0 | 8.9 | 44.9 | 49.0 |
| InVigor L140P | 4.3 | 174 | 34.1 | 0.0 | 0.0 | 7.5 | 43.9 | 48.9 |
| InVigor L252 | 3.7 | 177 | 37.6 | 0.0 | 0.0 | 9.8 | 44.9 | 49.5 |
| InVigor 5440 | 3.1 | 177 | 36.6 | 0.0 | 0.0 | 8.8 | 43.5 | 49.6 |
| DKL 38-48 | 5.5 | 177 | 32.7 | 0.0 | 0.0 | 8.1 | 44.8 | 48.9 |
| DKL 70-07 | 4.3 | 178 | 31.6 | 0.0 | 0.0 | 9.1 | 44.6 | 48.7 |
| DKL 70-10 | 6.2 | 177 | 32.3 | 0.0 | 0.0 | 9.1 | 43.5 | 48.8 |
| DKL 70-50CR | 6.6 | 178 | 35.5 | 0.0 | 0.0 | 7.9 | 43.4 | 48.6 |
| G28101 | 4.4 | 177 | 34.2 | 0.0 | 0.0 | 8.1 | 44.9 | 49.0 |
| G49720 | 5.9 | 178 | 33.5 | ns | ns | 8.9 | 43.1 | 48.7 |
| Mean | 4.5 | 176 | 33.1 | 0.0 | 0.0 | 7.9 | 44.1 | 48.9 |
| CV | 31.3 | 0.4 | 11.5 | 0.0 | 0.0 | 16.0 | 1.3 | 0.7 |
| LSD | 2.0 | 0.9 | 5.4 | 0.0 | 0.0 | 1.8 | 0.8 | 0.5 |
| Pr>F | 0.0032 | 0.0001 | 0.0299 | 1.0000 | 1.0000 | 0.0003 | 0.0001 | 0.0001 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter
YLD: yield, TWT: test weight
[1] adjusted to 8% moisture.

Table 12. Canola yield (bu/A) summary 2013 - 2015, Moccasin, MT

| Variety | 2013 | 2014 | 2015 | Avg. |
|---|---|---|---|---|
| 6044RR | . | 20 | 7 | 13 |
| Arriba | 22 | 19 | 6 | 16 |
| Cara | 25 | 17 | 5 | 16 |
| DKL 38-48 | 26 | 23 | 8 | 19 |
| DKL 70-07 | 28 | 25 | 9 | 21 |
| HyClass 930 | 23 | 23 | 9 | 18 |
| HyClass 955 | 29 | 25 | 7 | 20 |
| InVigor 5440 | 27 | 22 | 9 | 19 |
| InVigor L130 | 24 | 23 | 9 | 18 |
| InVigor L140P | . | 21 | 8 | 14 |
| InVigor L252 | . | 25 | 10 | 17 |

2015 Montana Statewide Canola Variety Trial, Western Triangle Agricultural Research Center, Conrad

| | | | |
|---|---|---|---|
| Seeding Date: | 4/21/2015 | Harvest Date: | 8/21/2015 |
| Julian Date: | 114 | Julian Date: | 227 |
| Seeding Rate: | 10 plnt/sqft 12" rows | Soil Type: | Scobey sl |
| Previous Crop: | Barley | Soil Test: | 15.1-17-375 |
| Tillage: | Chemical Fallow | Fertilizer: | 120-22.5-55-20 |
| Irrigation: | None | Herbicide: | RT3 16 oz/ac |

Table 13. Agronomic data from the statewide canola variety trial, Conrad, MT - 2015

| Variety | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[2] % | TWT[2] lb/bu |
|---|---|---|---|---|---|---|---|---|
| 6044RR | 6.0 | 179 | 31.3 | - | - | 11.9 | 38.7 | 51.2 |
| 6074RR | 5.1 | 178 | 36.8 | - | - | 9.9 | 38.7 | 50.9 |
| C1511 | 5.2 | 174 | 38.5 | - | - | 13.4 | 35.2 | 50.8 |
| C1516 | 4.8 | 176 | 36.8 | - | - | 9.2 | 38.1 | 51.3 |
| Cara | 5.6 | 176 | 32.0 | - | - | 9.8 | 39.8 | 50.5 |
| Arriba | 5.1 | 175 | 27.3 | - | - | 12.2 | 38.9 | 50.4 |
| HyClass 930 | 6.7 | 173 | 34.5 | - | - | 15.7 | 42.3 | 50.2 |
| HyClass 955 | 4.8 | 172 | 37.0 | - | - | 18.9 | 42.4 | 50.4 |
| HyClass 970 | 4.9 | 177 | 35.5 | - | - | 13.6 | 40.0 | 51.1 |
| InVigor L130 | 3.0 | 175 | 36.3 | - | - | 13.7 | 41.6 | 51.1 |
| InVigor L140P | 4.8 | 179 | 36.0 | - | - | 11.8 | 41.7 | 50.6 |
| InVigor L252 | 3.6 | 177 | 35.8 | - | - | 11.9 | 42.0 | 50.7 |
| InVigor 5440 | 4.8 | 180 | 35.5 | - | - | 16.3 | 39.7 | 51.7 |
| DKL 38-48 | 5.0 | 173 | 36.3 | - | - | 15.4 | 40.1 | 50.6 |
| DKL 70-07 | 6.2 | 177 | 37.3 | - | - | 20.4 | 40.6 | 50.5 |
| DKL 70-10 | 5.9 | 174 | 37.3 | - | - | 19.1 | 40.1 | 50.5 |
| DKL 70-50CR | 6.4 | 176 | 37.3 | - | - | 20.4 | 40.9 | 50.8 |
| G28101 | 4.9 | 173 | 39.0 | - | - | 20.2 | 43.6 | 50.2 |
| G49720 | 5.5 | 178 | 35.5 | - | - | 21.7 | 36.0 | 51.4 |
| Mean | 5.2 | 176 | 35.6 | - | - | 15.0 | 40.0 | 50.8 |
| CV | 37.1 | 2.3 | 11.4 | - | - | 43.1 | 2.5 | 0.7 |
| LSD | ns | ns | 5.7 | - | - | ns | 1.4 | 0.5 |
| Pr>F | 0.6338 | 0.1627 | 0.0415 | - | - | 0.1050 | 0.0001 | 0.0001 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter
YLD: yield, TWT: test weight, ns: nonsignificant
[1] reported as was at harvest [2] adjusted to 8% moisture.
Lodging and shatter not reported.

Table 14. Canola yield (bu/A) summary 2013 - 2015, Conrad, MT

| Variety | 2013 | 2014 | 2015 | Avg. |
|---|---|---|---|---|
| 6044RR | . | 23 | 12 | 17 |
| Arriba | 34 | 37 | 12 | 28 |
| Cara | 30 | 16 | 10 | 19 |
| DKL 38-48 | 38 | 13 | 15 | 22 |
| DKL 70-07 | 44 | 28 | 20 | 31 |
| HyClass 930 | 46 | 21 | 16 | 28 |
| HyClass 955 | 46 | 41 | 19 | 35 |
| InVigor 5440 | 45 | 14 | 16 | 25 |
| InVigor L130 | 42 | 15 | 14 | 23 |
| InVigor L140P | . | 17 | 12 | 14 |
| InVigor L252 | . | 17 | 12 | 15 |

Table 15. Yield (bu/A) summary from the Montana statewide Green and Grow spring canola seed treatment trial - 2015

| Variety | NARC Havre | NWARC Kalispell | CARC Moccasin | WTARC Conrad |
|---|---|---|---|---|
| CTRL | 33.1 | 65.7 | 8.3 | 16.9 |
| AGR100 | 33.1 | 76.1 | 8.6 | 19.3 |
| AGR200 | 36.6 | 72.8 | 8.1 | 17.4 |
| AGR300 | 37.2 | 70.3 | 8.2 | 17.2 |
| Mean | 35.0 | 71.2 | 8.3 | 17.7 |
| CV | 8.5 | 14.5 | 13.6 | 17.2 |
| LSD | ns | ns | ns | ns |
| Pr>F | 0.1572 | 0.5662 | 0.9198 | 0.6768 |

AGR: Agriplier seed treatment, ns: nonsignificant

Table 16. Percent oil content summary from the Montana statewide Green and Grow spring canola seed treatment trial - 2015

| Variety | NARC Havre | NWARC Kalispell | CARC Moccasin | WTARC Conrad |
|---|---|---|---|---|
| CTRL | 41.9 | 48.0 | 45.2 | 45.7 |
| AGR100 | 43.3 | 48.6 | 45.4 | 40.7 |
| AGR200 | 42.1 | 48.2 | 45.2 | 40.6 |
| AGR300 | 41.8 | 48.2 | 45.4 | 40.9 |
| Mean | 42.3 | 48.3 | 45.3 | 42.0 |
| CV | 2.9 | 1.8 | 0.8 | 6.6 |
| LSD | ns | ns | ns | ns |
| Pr>F | 0.3370 | 0.8204 | 0.6346 | 0.0783 |

AGR: Agriplier seed treatment, ns: nonsignificant

Table 17. Agronomic data from the statewide Green and Grow seed treatment trial, Havre, MT - 2015

| Treatment | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| CTRL | 6.2 | 162 | 40.0 | 0.0 | 0.0 | 33.1 | 41.9 | 51.0 |
| AGR100 | 6.3 | 162 | 39.4 | 0.0 | 0.0 | 33.1 | 43.3 | 52.6 |
| AGR200 | 4.8 | 162 | 39.9 | 0.0 | 0.0 | 36.6 | 42.1 | 50.9 |
| AGR300 | 6.2 | 163 | 38.1 | 0.0 | 0.0 | 37.2 | 41.8 | 51.4 |
| Mean | 5.9 | 162 | 39.3 | 0.0 | 0.0 | 35.0 | 42.3 | 51.5 |
| CV | 12.7 | 0.3 | 7.0 | 0.0 | 0.0 | 8.5 | 2.9 | 3.0 |
| LSD | ns | ns | ns | ns | ns | ns | ns | ns |
| Pr>F | 0.0536 | 0.5493 | 0.7638 | 1.0000 | 1.0000 | 0.1572 | 0.3370 | 0.4048 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight, ns: nonsignificant

[1] adjusted to 8% moisture.

Table 18. Agronomic data from the statewide Green and Grow seed Treatment Trial, Kalispell, MT - 2015

| Treatment | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| CTRL | 12.3 | 165 | 43.3 | 5.5 | 0.0 | 65.7 | 48.0 | 52.6 |
| AGR100 | 12.0 | 165 | 45.0 | 1.8 | 0.0 | 76.1 | 48.6 | 52.3 |
| AGR200 | 17.0 | 165 | 44.3 | 0.8 | 0.0 | 72.8 | 48.2 | 52.3 |
| AGR300 | 9.3 | 165 | 44.3 | 2.5 | 0.0 | 70.3 | 48.2 | 52.3 |
| Mean | 12.7 | 165 | 44.2 | 2.6 | 0.0 | 71.2 | 48.3 | 52.4 |
| CV | 25.2 | 0.2 | 4.5 | 183.7 | 0.0 | 14.5 | 1.8 | 0.4 |
| LSD | 5.1 | ns | ns | ns | ns | ns | ns | ns |
| Pr>F | 0.0437 | 0.4363 | 0.6732 | 0.5646 | 1.0000 | 0.5662 | 0.8204 | 0.2243 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter,YLD: yield, TWT: test weight

[1] adjusted to 8% moisture.

Table 19. Agronomic data from the statewide Green and Grow seed treatment trial, Moccassin, MT - 2015

| Treatment | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[1] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| CTRL | 4.1 | 170 | 30.4 | 0.0 | 0.0 | 8.3 | 45.2 | 48.6 |
| AGR100 | 5.0 | 172 | 28.6 | 0.0 | 0.0 | 8.6 | 45.4 | 48.5 |
| AGR200 | 5.3 | 172 | 28.1 | 0.0 | 0.0 | 8.1 | 45.2 | 48.4 |
| AGR300 | 5.5 | 171 | 30.3 | 0.0 | 0.0 | 8.2 | 45.4 | 48.5 |
| Mean | 4.98 | 171 | 29.4 | 0.0 | 0.0 | 8.3 | 45.3 | 48.5 |
| CV | 28.3 | 0.4 | 5.8 | 0.0 | 0.0 | 13.6 | 0.8 | 0.6 |
| LSD | ns | 1.2 | ns | ns | ns | ns | ns | ns |
| Pr>F | 0.5223 | 0.0247 | 0.2138 | 1.0000 | 1.0000 | 0.9198 | 0.6346 | 0.8576 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter, YLD: yield, TWT: test weight, ns: nonsignificant

[1] adjusted to 8% moisture.

Table 20. Agronomic data from the statewide Green and Grow seed treatment trial, Conrad, MT - 2015

| Treatment | PLNT sqft | FLWR Julian | HT in | LOD % | SHTTR % | YLD[1] bu/A | OIL[2] % | TWT[1] lb/bu |
|---|---|---|---|---|---|---|---|---|
| CTRL | 6.2 | 175 | 31.3 | 0.0 | 0.0 | 16.9 | 45.7 | 52.1 |
| AGR100 | 4.8 | 177 | 30.5 | 0.0 | 0.0 | 19.3 | 40.7 | 52.9 |
| AGR200 | 5.8 | 178 | 30.5 | 0.0 | 0.0 | 17.4 | 40.6 | 52.1 |
| AGR300 | 4.3 | 178 | 32.3 | 0.0 | 0.0 | 17.2 | 40.9 | 52.3 |
| Mean | 5.2 | 177 | 31.1 | 0.0 | 0.0 | 17.7 | 42.0 | 52.4 |
| CV | 33.6 | 1.6 | 7.7 | 0.0 | 0.0 | 17.2 | 6.6 | 0.5 |
| LSD | ns | ns | ns | ns | ns | ns | ns | 0.4 |
| Pr>F | 0.4315 | 0.5102 | 0.7082 | 1.0000 | 1.0000 | 0.6768 | 0.0783 | 0.0028 |

PLNT: plant, FLWR: 50% flowering, HT: height, LOD: lodging, SHTTR: shatter,YLD: yield, TWT: test weight

[1] reported as was at harvest.

[2] adjusted to 8% moisture.