



## Canola

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Varietal Trials Results, January 2006



Canola (*Brassica napus* and *B. rapa*) is a crop developed from oilseed rape by Canadian plant breeders; the first canola variety was licensed in 1974. Canola is used for edible oil extraction and protein feed meal. Canola oil is considered one of the highest quality edible oils available. Considerable acreage of spring canola is grown in Canada. Minnesota acreage increased from about 8,000 acres in 1990 to more than 200,000 acres in 1998. Acreage in recent years has dropped to fewer than 60,000 acres.

The oil in canola seed contains less than 2% erucic acid, compared with 20% to 40% found in oilseed rape. The canola meal remaining after oil extraction contains less than 0.1% glucosinolates (sulfur-containing compounds) compared with about 1% in rapeseed meal. Consequently, canola is also referred to as "double low" or "00" rapeseed. High levels of erucic acid in oilseed rape are hazardous to human health, and high levels of glucosinolates are detrimental in livestock feeds.

The canola (*Brassica napus*) varieties described here are both spring types

and fall-planted winter types. Fall-planted winter-type canola varieties were evaluated by University of Minnesota researchers more than 15 years ago with limited success. A trial with winter-type canola varieties seeded at multiple seeding dates in fall 2002 near St. Hilaire yielded up to 2,400 pounds/acre. This trial was repeated in 2003-04 at Thief River Falls, Morris and Waseca with limited survivability at all three locations.

A national winter canola variety trial was also seeded in fall 2003 at two locations in Minnesota. A total of 38 winter canola varieties were tested, 8 of them Roundup Ready. While the very hard winter caused extensive mortality in both trials, some varieties were still able to yield close to 3,000 pounds/acre where stand was adequate.

The 2004-05 national winter canola variety trial was again seeded in fall 2004 on barley stubble and on plowed ground near Thief River Falls. Plots seeded into barley stubble survived the winter very well, but the plots on plowed ground all died. Data presented here are the results from that trial.

The 2005-06 national winter canola variety trial, seeded in fall 2005 west of St. Hilaire on wheat stubble, was very healthy going into the winter.

### Information Sources

The Minnesota Canola Council is a good source for information on canola. The Council can be contacted by mail (4630 Churchill St., Suite 1, St. Paul, MN 55126), phone (651-638-9883) or fax (651-638-0756).

A complete and revised "Canola Growers Manual" on canola production is available from the Canola Council of Canada, 400-167

Lombard Ave, Winnipeg, Manitoba, Canada, R3B 0T6 (phone 204-982-2100, internet [www.canola-council.org](http://www.canola-council.org)). The manual contains detailed information on canola production practices and costs \$59.95 (U.S.). Another management tool is a CD-ROM called the "Canola Growers Decision Support System" available from the Canola Council of Canada for \$28.00 (U.S.). For a limited time the revised "Canola Growers Manual" together with the "Canola Growers Decision Support System" are being offered for \$69.95. The "Canola Growers Manual" is also available for viewing online at [www.canola-council.org](http://www.canola-council.org). Any of these items can be ordered on line.

Please keep in mind when using this manual that not all pesticides used in Canada are legal in the United States. Always confirm the clearance of a pesticide with your local dealer or county extension educator.

### Test Sites

Non-Roundup Ready and Roundup Ready variety trials were seeded at two sites in 2005. The Roseau site was on the Steve Dahl Farm and the Grygla site was on the Todd Stanley farm. The Roseau non-Roundup Ready trial is not reported because excessive drowned-out areas caused unreliable data. The 2005-2005 winter canola trial was on the Lyle Olson farm.

### Local Support

Farmer's Union Oil of Grygla provided support for the Grygla site.

### Field Day Assistance

Extension educators Nathan L. Johnson, Hans J. Kandel and Bill Craig provided field day assistance.



Locations of 2005 canola trials.

### Canola Variety Name Changes

Old Name or Experimental Number	New Variety Name
PHS02-555	InVigor 5550
PR9040	IS 3465 RR
SW G5269 RR	DKL 52-10
Z2409	IS 7145 RR

**Seed sources for 2005 planting, keyed to "Variety Information" column in seed yield tables that follow.**

#### Developers

D1	Advanta Seeds, Unit 3, 75 Scurfield Blvd., Winnipeg, MB, Canada R3Y-1P6
D2	Agriprogress, P.O. Box 2499, Morden, MB, Canada R6M 1C2
D3	Bayer Crop Science, 203-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8; 701-775-2700
D4	Dow AgroSciences, 101-421 Downey Rd., Saskatoon, SK, Canada S7N 4L8
D5	Monsanto Canada Seeds, 2915 A Faithful Ave., Saskatoon, SK, Canada S7K 8E8; 306-657-4675
D6	Pioneer Hi-Bred International, Inc., 7200 N.W. 62nd Ave., Johnston, IA 50131
D7	Svalof Weibull Ltd., 2-411 Downey Road, Saskatoon, SK, Canada S7N 4L8
D8	Not Available

#### Marketers

M1	Bayer Crop Science, 203-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8; 701-775-2700
M2	Croplan Genetics, P.O. Box 1291, Minot, ND 59702; 701-852-3556
M3	Dekalb, 304 Center St., West Fargo, ND 58078; 800-437-4120
M4	Dow AgroSciences, R.R. 1 Box 80, Buchanan, ND 58421; 701-252-6643
M5	Interstate Seed Company, 304 Center St., West Fargo, ND 58078; 800-437-4120
M6	Monsanto, 304 Center St., West Fargo, ND 58078; 800-437-4120
M7	Pioneer Hi-Bred International, Inc., 99 Navaho Ave. Suite 101A, Mankato, MN 56001; 507-625-3045
M8	Proseed, 705 E. Brewster, Harvey, ND 58341; 701-324-4177

### Seed yield of Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Roseau and Grygla in 2005.

**Variety information** includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing above, and these supplemental codes: H = Hybrid, Op = Open Pollinated, Sync = Synthetic.

**Blackleg Resistance Rating** provided by seed companies: CR = Canker Resistant, R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible.

Variety	Variety Information	Blackleg Rating	Roseau **	Grygla	2005	2004	2003	3-Year Average
					Average, Ros & Gry	Average, R,K ***	Average, R, K, G	
04S31	D8,M2,Syn	MR	1,318	1,815	1,567	—	—	—
AV9525 RR	D8,M6,H	R	1,170	1,448	1,309	—	—	—
Crosby	D8,M2,Op	R	1,450	1,602	1,526	1,605	2,379	1,914
DKL35-85	D5,M3,Op	R	1,260	1,775	1,517	1,777	—	—
DKL38-25	D5,M3,H	MR	1,625	1,864	1,744	—	—	—
DKL52-10	D7,M3,Op	R	1,364	1,549	1,457	—	—	—
HyCLASS 712	D8,M2,Syn	MR	1,379	1,928	1,654	—	—	—
HyCLASS 767	D7,M2,Syn	MR	1,162	1,890	1,526	1,695	2,368	1,935

**Seed yield of Roundup Ready canola (*Brassica napus*) varieties at Roseau and Grygla in 2005 (continued).**

Variety	Variety Information	Blackleg Rating	2005		2004	2003	3-Year Average	
			Roseau **	Grygla	Average, Ros & Gry	Average, R,K ***		Average, R, K, G
HyCLASS 905	D8,M2,H	R	1,441	1,807	1,624	1,881	2,448	2,051
HyCLASS 910	D8,M2,H	R	1,197	1,729	1,463	1,857	2,611	2,068
HyLite 225 RR	D1,M5,Op	MR	1,267	1,605	1,436	1,824	—	—
Hyola 357 Magnum*	D1,M5,H	MR	1,551	1,929	1,740	2,040	2,398	2,108
Hyola 514 RR	D8,M5,H	R	1,736	1,629	1,682	—	—	—
IS 3465 RR	D8,M5,Op	R	1,398	1,526	1,462	—	—	—
IS 7145 RR	D1,M5,H	MR	1,489	1,902	1,696	1,946	—	—
Pioneer 45H21	D6,M7,H	R	1,613	1,903	1,758	2,099	2,559	2,199
Pioneer 45H25	D6,M7,H	R	1,693	1,794	1,743	—	—	—
Roughrider Plus	D2,M8,H	MR	1,399	1,457	1,428	—	—	—
RR 2066	D2,M8,H	MR	1,196	1,530	1,363	2,032	2,243	1,931
SW H5263 RR	D7,M6,H	R	1,050	1,679	1,365	—	—	—
SW H5272 RR	D7,M6,H	R	1,593	1,626	1,610	—	—	—
SW Marksman RR	D7,M5,H	MR	1,331	1,921	1,626	1,861	2,506	2,070
SW Patriot RR	D7,M5,Syn	MR	1,460	1,575	1,517	1,884	2,484	2,036
SW Titan RR	D7,M5,H	R	1,381	1,582	1,481	1,801	—	—
Mean			1,397	1,711	1,554	1,822	2,303	1,952
LSD (0.05)			405.8 **	285.5	246	137.02	187.1	—
C.V.			20.6	11.8	16.0	7.6	10.1	—

\* Hyola 357 Magnum was used as a check between the non-Roundup Ready trial and the Roundup Ready trial.

\*\* 2005 Roseau yields were not significantly different.

\*\*\* K = Kennedy.

**Growth characteristics and oil content of Roundup Ready spring canola varieties grown near Roseau, seeded May 16, 2005.**

Differences among treatments for yield and height were not significant.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Wt. at 0% Moisture	Days After Planting To				Lodging, 1 = Erect 9 = Flat
			Begin Bloom	Bloom Duration	Maturity: 30% Seed Color Change On Main Raceme	Height, Inches	
04S31	1,318	41.5	46	24	87	29	3.5
AV9525 RR	1,170	42.6	46	20	85	26	4.5
Crosby	1,450	43.5	48	21	94	27	3.5
DKL35-85	1,260	40.4	48	25	92	26	3.0
DKL38-25	1,625	42.0	46	20	85	29	2.8
DKL52-10	1,364	41.6	46	22	89	29	3.0
HyClass 712	1,379	43.6	46	20	88	28	3.8
HyClass 767	1,162	41.4	45	20	85	25	4.0
HyClass 905	1,441	42.9	46	20	85	31	3.3
HyClass 910	1,197	42.9	46	19	85	27	3.8
HyLite 225 RR	1,267	42.8	45	21	86	26	4.0
Hyola Magnum	1,551	40.8	43	22	89	27	4.5
Hyola 514 RR	1,736	45.1	48	24	91	30	4.5
IS 3465 RR	1,398	40.6	45	26	91	28	3.8
IS 7145 RR	1,489	47.1	46	19	84	27	4.5
Pioneer 45H21	1,613	42.8	46	20	89	30	4.8
Pioneer 45H25	1,693	43.3	45	22	88	32	4.5
Roughrider Plus	1,399	41.8	47	22	90	30	4.0
RR 2066	1,196	42.0	45	21	85	25	3.8
SW H5263 RR	1,050	44.3	48	24	91	23	3.8

**Growth characteristics and oil content of Roundup Ready spring canola varieties grown near Roseau, seeded May 16, 2005 (continued).**

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Wt. at 0% Moisture	Days After Planting To		Maturity: 30% Seed Color Change On Main Raceme	Height, Inches	Lodging, 1 = Erect 9 = Flat
			Begin Bloom	Bloom Duration			
SW H5272 RR	1,593	42.1	46	23	86	30	3.8
SW Marksman RR	1,331	42.9	45	21	85	26	5.0
SW Patriot RR	1,460	43.0	45	21	84	27	4.3
SW Titan RR	1,381	41.9	45	21	86	30	3.8
Mean	1,397	42.6	46	22	87	28	3.9
LSD (0.05)	405.8	1.40	0.9	3.0	0.3	5.2	0.97
Pr > F	0.0851	0.0001	0.0001	0.0001	0.0001	0.1263	0.0005
C.V.	20.6	2.0	1.4	9.9	2.6	13.2	17.7

**Growth characteristics and oil content of Roundup Ready spring canola varieties grown near Grygla, seeded April 29, 2005.**

Total available fertilizer was 140-276-350-490 (N-P-K-S) down to 24 inches.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Wt. at 0% Moisture	Days After Planting To		Maturity: 30% Seed Color Change On Main Raceme	Height, Inches	Lodging, 1 = Erect 9 = Flat
			Begin Bloom	Bloom Duration			
04S31	1,815	41.8	52	24	95	35	3.5
AV9525 RR	1,448	44.7	52	24	94	37	3.5
Crosby	1,602	43.0	53	26	101	31	4.5
DKL35-85	1,775	39.4	53	24	97	37	3.5
DKL38-25	1,864	42.3	51	23	93	36	3.5
DKL52-10	1,549	41.7	52	23	93	35	4.3
HyClass 712	1,928	43.2	52	21	94	38	2.5
HyClass 767	1,890	41.9	51	24	93	37	3.5
HyClass 905	1,807	43.1	52	22	94	37	2.8
HyClass 910	1,729	42.6	52	23	95	35	4.5
HyLite 225 RR	1,605	42.5	51	23	96	33	4.8
Hyola 357 Mag	1,929	41.0	50	23	95	33	3.0
Hyola 514 RR	1,629	46.3	53	23	94	39	3.8
IS 3465 RR	1,526	40.9	52	24	95	33	4.0
IS 7145 RR	1,902	45.1	51	23	92	34	3.0
Pioneer 45H21	1,903	43.0	51	23	95	37	3.5
Pioneer 45H25	1,794	44.6	51	24	94	45	2.8
Roughrider Plus	1,457	43.7	52	25	97	35	4.8
RR 2066	1,530	41.6	51	24	95	33	4.8
SW H5263 RR	1,679	46.0	52	24	95	32	3.8
SW H5272 RR	1,626	43.7	53	23	93	36	3.5
SW Marksman RR	1,921	42.9	51	23	94	36	2.8
SW Patriot RR	1,575	41.9	51	23	94	35	4.3
SW Titan RR	1,582	41.2	51	23	94	36	4.0
Mean	1,711	42.8	52	23	95	36	3.7
LSD (0.05)	285.5	1.48	0.8	1.3	1.7	4.4	1.11
Pr > F	0.0015	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
C.V.	11.8	2.1	1.1	4.0	1.2	8.9	21.4

**Seed yield and growth characteristics of Non-Roundup Ready spring canola (*Brassica napus*) varieties at Grygla, seeded April 30, 2005.**

Total available fertilizer was 140-276-350-490 (N-P-K-S) down to 24 inches.

**Variety information** includes Source Codes: (D# = Developer: M# = Marketer) keyed to listing above, and these supplemental codes: H = Hybrid, RR = Roundup Ready, Op = Open Pollinated, Syn = Synthetic, SP = Specialty Oil Type, LL = Liberty Link, C = Clearfield (Raptor tolerant).

**Blackleg Resistance Rating** provided by seed companies: CR = Canker Resistant, R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible.

Variety	Variety Information	Blackleg Rating	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Wt. at 0% Moist **	Days After Planting To		Lodging, 1 = Erect 9 = Flat	2004 Average, Ros & Gry, Yield, Lb/Acre	
					Begin Bloom **	Maturity: 30% Seed Color Change On Main Raceme			
HyLite 618 CL	D1,M5,H,C	R	1,822	40.7	50	92	36	3.0	2,332
Hyola 357 Magnum*	D1,M5,H,RR	MR	1,978	41.4	50	95	34	2.5	2,374
InVigor 2663	D3,M1,H,LL	R	2,129	39.9	52	93	39	3.3	2,574
InVigor 4870	D3,M1,H,LL	R	2,178	41.8	51	93	42	2.5	2,533
InVigor 5630	D3,M1,H,LL	R	2,057	42.6	51	93	37	3.0	2,657
Nexera 824 CL	D4,M4,OP,SP,C	R	1,287	41.5	55	108	33	5.8	—
Nexera 830 CL	D4,M4,OP,SP,C	R	1,604	41.5	49	104	35	5.5	—
Pioneer 45H72	D6,M6,H,C	R	1,806	41.0	51	95	39	3.3	—
US040501	D4,M4,OP,SP,C	R	1,262	39.7	55	98	33	4.8	—
US040503	D4,M4,OP,SP,C	R	1,605	41.2	54	96	40	2.3	—
US050505	D4,M4,OP,SP	R	1,742	41.6	52	95	39	3.0	—
Mean			1,763	41.2	52	96	36	3.5	2,411
LSD (0.05)			250.1	3.13 **	5.0 **	1.5	3.4	1.06	244.5
Pr > F			0.0001	0.8397	0.3274	0.0001	0.0001	0.0001	0.0001
C.V.			9.9	4.5	6.7	1.1	6.5	20.9	8.7

\* Hyola 357 Magnum was used as a check between the Non-Roundup Ready trial and the Roundup Ready trial.

\*\* Differences among treatments for oil content and begin bloom were not significant.

**Growth characteristics and oil content of the variety and systems comparison trial grown near Grygla, seeded April 29, 2005.**

Total available fertilizer was 138-268-350-490 (N-P-K-S) down to 24 inches.

Large plots (400 feet x 30 feet) replicated 4 times.

All varieties in this trial are spring canola. Commercial equipment used for planting and harvesting.

Each system was sprayed with the respective herbicides and the trial was threshed on August 22, 2005.

Variety	Yield, Lb/Acre at 9% Moisture	Oil, % of Seed Wt. at 0% Moisture	Days After Planting To		Lodging, * 1 = Erect 9 = Flat	Swath Score, * 1 = easy 5 = difficult
			Begin Bloom	Maturity: 30% Seed Color Change On Main Raceme		
<b>Conventional system</b>						
Hyola 401	1,348	42.7	51	93	28	3.0
<b>Liberty Link System</b>						
InVigor 5630	1,423	44.1	50	93	33	3.5
InVigor 4870	1,410	43.4	53	94	36	3.5
<b>Clearfield System</b>						
Pioneer 45H72	1,343	43.1	52	93	36	4.0

**Growth characteristics and oil content of the variety and systems comparison trial grown near Grygla, seeded April 29, 2005 (continued).**

Variety	Yield, Lb/Acre at 9% Mois- ture	Oil, % of Seed Wt. at 0% Moisture	Days After Planting To		Height, Inches	Lodging, * 1 = Erect 9 = Flat	Swath Score, * 1 = easy 5 = difficult
			Begin Bloom	Maturity: 30% Seed Color Change On Main Raceme			
<b>Roundup Ready System</b>							
Hyola 357 Magnum	1,478	42.3	50	94	29	3.0	2.3
DKL38-25	1,455	44.0	52	93	32	3.3	2.5
Pioneer 45H21	1,376	42.9	52	94	33	3.8	2.8
IS 7145 RR	1,338	44.4	51	91	31	3.8	2.8
SW Titan RR	1,255	42.9	52	93	33	3.3	2.0
Roughrider Plus	1,193	43.4	54	96	32	3.8	2.8
Mean	1,362	43.3	51	93	32	3.5	2.6
LSD (0.05)	100.5	0.93	0.8	1.1	2.7	0.77 *	0.67 *
Pr > F	0.0003	0.0011	0.0001	0.0001	0.0001	0.1506	0.1657
C.V.	5.6	1.5	1.0	0.8	5.7	15.3	17.8

\* Differences among treatments for lodging and swath score were not significant.

**Yield, oil content and growth characteristics of winter canola varieties grown near Thief River Falls, seeded September 2, 2004.**

Total available fertilizer was 174-60-332-86 (N-P-K-S) down to 24 inches. Plots were seeded Sept. 2, 2004, into barley stubble and harvested in July 2005.

Two plots of a winter/spring canola cross planted next to the winter canola variety trial and seeded over the soil on April 1, 2005, matured on August 3 and yielded an average 1,645 lb/acre.

Winter Canola Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Wt. at 0% Moisture	Days After April 1* To		Maturity: 30% Seed Color Change On Main Raceme	Fall Vigor, 0 = None 9 = Good	Winter Survival, 0 = None 9 = Good	Spring Stand, Plants/ Sq Ft	Height, Inches	Lodging, 1 = Erect, 9 = Flat
			Begin Bloom	Bloom Duration						
ARC92004	820	37.2	59	33	111	7.7	7.0	3.8	45	3.7
Casino	1051	37.9	60	31	113	5.0	6.3	2.4	44	3.3
KS2004	778	38.2	62	28	113	4.7	3.3	1.7	38	5.0
KS2064	1,006	39.1	60	30	111	5.0	7.3	4.1	41	3.7
KS2098	1,016	38.8	59	31	112	5.7	7.0	2.9	42	3.7
KS2169	1,272	39.6	58	32	111	6.0	7.0	5.3	37	3.3
KS2185	1,244	39.0	56	33	112	5.7	7.0	3.2	37	3.7
KS3018	717	36.2	57	32	108	5.7	6.7	2.1	36	5.7
KS7436	1,076	40.0	58	34	111	5.3	7.0	1.8	40	3.7
KS9124	1,017	38.6	59	30	110	5.3	6.0	3.1	42	4.0
KS9135	1,069	38.8	60	29	111	6.3	8.0	4.5	40	3.0
KS9183	1,019	38.6	58	31	111	6.0	7.0	4.9	40	3.7
Kronos	1,134	37.7	56	33	111	8.0	7.7	3.6	41	3.0
Largo	448	36.9	54	29	96	5.0	8.0	3.0	32	3.3
Plainsman	555	37.5	63	27	114	5.3	4.7	1.1	46	4.0
Sumner	987	39.5	58	30	108	6.3	7.0	2.6	35	4.0
Witchita	1,074	38.1	60	29	110	5.7	7.0	2.3	38	4.3
Mean	958	38.3	59	31	110	5.8	6.7	3.1	11	3.8
LSD (0.05)	296.5	1.7	2.9	2.8	3.0	1.3	2.0	1.8	7.0	1.3
Pr > F	0.0001	0.0063	0.0001	0.0004	0.0001	0.0004	0.0055	0.0014	0.0247	0.0164
C.V.	18.6	2.7	3.0	5.4	1.6	13.4	17.7	35.8	10.6	19.8

\* April 1 was used as the beginning of the growing season because that is when the soil temperature rose above freezing.