

OILSEED CROPS



CANOLA

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 back to less than 65,000 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.

Canola Planting Rate and Date

Bushel Weight (Pounds).....	50
Seeds/Pound.....	80,000 to 160,000
Planting Rate, Pounds/Acre.....	3 to 5
Planting Rate, Seeds/Square Foot...	6 to 9
Planting Date	Early Spring

The canola varieties described here are all spring-sown *Brassica napus* types. Fall-planted winter-type canola varieties were evaluated by University of Minnesota researchers over 10 years ago with limited success. A trial with winter-type canola varieties seeded at multiple seeding dates in the fall of 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 large variety trial also was seeded in the fall of 2003 at two locations with a total of 38 winter canola varieties tested, 8 of which are Roundup Ready. Although the very hard winter caused extensive mortality in both trials, some varieties were still able to yield close to 3,000 pounds/acre where the stand was adequate. The variety trial is being conducted again in 2004-05 near Thief River Falls, with 30 varieties being tested in barley stubble and on plowed soil.

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 newly 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). The manual contains detailed information on canola production practices and costs \$59.95 (U.S.). The Canola Grower's Manual is also available for viewing online at www.canola-council.org. 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. Another

Canola Variety Name Changes

Old Name or Experimental Number	New Variety Name
PHS 02-563	InVigor 5630
SW G5235 RR	SW Titan RR

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.). These items can be ordered on line.

Test Sites

Non-Roundup Ready and Roundup Ready variety trials were seeded at three sites in 2004. The Roseau site was on the Kvien farms, the Grygla site was on the Todd Stanley farm, and the Kennedy test site was on the Rob and Tim Rynning farm. Original plans were for only the Roseau and Grygla sites. However, a very cold and wet spring delayed seeding of the Roseau site and prompted the project to add the Kennedy site in mid June to ensure at least two sites. The non-Roundup Ready trial at Kennedy was destroyed because of extensive volunteer canola, and the Grygla Roundup Ready trial is not reported because excessive drowned-out areas caused unreliable data.

Local Support

CHS of Kennedy provided sponsorship for the Kennedy site. 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 2004 canola trials.

Canola seed sources for 2004 planting, keyed to "Variety Information" column in seed yield tables, pages 53-55.

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 Monsanto Canada Seeds, 2915 A Faithful Ave., Sask., SK Canada S7K 8E8, 306-657-4675
 D⁵ Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131
 D⁶ Svalof Weibull Ltd., 2-411 Downey Rd., Saskatoon, SK, Canada S7N 4L8
 D⁷ 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 Interstate Seed Company, 1215 Parkway, West Fargo, ND 58078, 800-437-4120
 M⁴ Monsanto, 3100 Sycamore Rd., De Kalb, IL 60115, 815-754-4809
 M⁵ Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131, 701-298-6894
 Pioneer Hi-Bred International, Inc., Minnesota contact: Zach Fore, 218-280-0926
 M⁶ 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 Kennedy in 2004.

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

* 2002 average yields were analyzed using three replicates from each site (Kennedy and Grygla).

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

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

Variety	Variety Information	Blackleg Resistance	Roseau	Kennedy	Average, Ros & Ken	2003 Aver. R, K,G	2002* Aver. K,G	3-year Average
Crosby	D7,M2,Op	MR	1,844	1,366	1,605	2,379	1,677	1,957
Dekalb DKL223	D1,M4,H	MS	2,104	1,722	1,913	2,297	1,766	2,036
Dekalb DKL34-55	D4,M4,Op	MR	1,868	1,694	1,781	2,297	1,402	1,894
Dekalb DKL35-85	D4,M4,Op	R	2,025	1,530	1,777	—	—	—
HyCLASS 2061	D7,M2,H	MR	1,889	1,637	1,763	2,248	1,766	1,972
HyCLASS 767 SW	D6,M2,Syn	MR	1,916	1,473	1,695	2,368	1,756	2,001
HyCLASS 905	D7,M2,H	R	2,077	1,686	1,881	2,448	1,892	2,127
HyCLASS 910	D7,M2,H	R	2,059	1,655	1,857	2,611	—	—
HyLite 225 RR	D1,M3,OP	MR	2,008	1,639	1,824	—	—	—
Hyola 357 Magnum**	D1,M3,H	MR	2,155	1,925	2,040	2,398	1,764	2,115
Hyola 505 RR	D1,M3,H	R	1,729	1,325	1,527	2,365	—	—
Pioneer 45H21	D5,M5,H	R	2,222	1,976	2,099	2,559	1,876	2,232
RR Hyb 2013	D2,M6,H	R	1,962	1,661	1,811	2,252	1,845	2,010
RR Hyb 2066	D2,M6,H	MR	2,115	1,948	2,032	2,243	1,693	2,026
SW G5246 RR	D6,M3,OP	R	1,892	1,624	1,758	—	—	—
SW Marksman RR	D6,M3,H	MR	2,004	1,719	1,861	2,506	—	—
SW Patriot RR	D6,M3,Syn	MR	2,107	1,660	1,884	2,484	—	—
SW Titan RR	D6,M3,H	R	1,928	1,675	1,801	—	—	—
SWPL98-7835 RR	D6,M3,Syn	R	1,703	1,469	1,586	—	—	—
Z2409 RR	D1,M3,H	R	2,037	1,854	1,946	—	—	—
Mean			1,982	1,662	1822	2,303	1,585	2,037
LSD (0.05)			177.0	207.2	137.02	187.1	216	—
C.V.			6.4	8.9	7.6	10.1	11.9	—

Growth characteristics and oil content of Roundup Ready canola varieties grown near Roseau, seeded June 17, 2004.

Total available fertilizer was 149-100-464-68 (N-P-K-S) down to 24 inches.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to			Height, Inches	Lodging, 1 = Erect 9 = Flat
			95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme		
Crosby	1,844	49.0	31	41	101	46	2.3
DEKALB DKL223	2,104	44.9	30	37	92	39	2.8
DEKALB DKL34-55	1,868	47.1	30	40	99	47	1.5
DEKALB DKL35-85	2,025	46.1	28	40	100	49	3.0
HyCLASS 2061	1,889	45.6	30	39	99	46	2.0
HyCLASS 767 SW	1,916	47.7	29	39	99	46	2.0
HyCLASS 905	2,077	47.6	28	41	100	50	1.3
HyCLASS 910	2,059	48.6	29	42	99	48	1.8
HyLite 225 RR	2,008	50.4	29	37	95	43	3.0
Hyola 357 Magnum**	2,155	46.6	28	36	94	38	2.8
Hyola 505 RR	1,729	47.7	27	42	101	52	2.0
Pioneer 45H21	2,222	47.4	27	40	96	45	2.3
RR Hyb 2013	1,962	47.1	31	40	100	49	1.8
RR Hyb 2066	2,115	48.2	28	39	95	47	2.3
SW G5246 RR	1,892	46.7	28	40	99	48	2.5
SW Marksman RR	2,004	47.4	27	38	97	46	2.3
SW Patriot RR	2,107	47.6	26	38	94	42	2.8
SW Titan RR	1,928	47.5	28	38	95	44	1.8
SWPL98-7835 RR	1,703	45.2	30	41	99	51	1.8
Z2409 RR	2,037	48.0	31	40	97	44	2.8
Mean	1,982	47.3	29	39	97	46	2.2
LSD (0.05)	177.0	1.55	1.3	0.9	2.6	3.6	0.72
C.V.	6.4	2.0	3.3	1.6	1.9	5.6	23.5

Growth characteristics and oil content of Roundup Ready canola varieties grown near Kennedy, seeded June 14, 2004.

Total available fertilizer was 133-55-0-20 (N-P-K-S).

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to			Height, Inches	Lodging, 1 = Erect 9 = Flat
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme			
Crosby	1,366	46.3	48	109	37	4.3	
DEKALB DKL223	1,722	44.6	43	100	32	6.5	
DEKALB DKL34-55	1,694	46.5	46	103	39	4.3	
DEKALB DKL35-85	1,530	46.4	46	103	38	4.8	
HyCLASS 2061	1,637	45.7	47	105	38	3.5	
HyCLASS 767 SW	1,473	47.2	47	107	39	3.3	
HyCLASS 905	1,686	48.3	47	103	45	3.5	
HyCLASS 910	1,655	47.5	48	108	47	2.5	
HyLite 225 RR	1,639	48.0	44	100	35	5.5	
Hyola 357 Magnum**	1,925	46.1	43	99	33	5.3	
Hyola 505 RR	1,325	49.1	48	108	43	3.5	
Pioneer 45H21	1,976	47.6	44	101	42	5.0	
RR Hyb 2013	1,661	46.0	47	106	42	3.0	
RR Hyb 2066	1,948	47.7	45	101	40	4.8	
SW G5246 RR	1,624	46.0	46	104	43	4.5	
SW Marksman RR	1,719	46.1	46	105	39	3.5	
SW Patriot RR	1,660	47.3	46	102	41	4.3	
SW Titan RR	1,675	43.6	45	102	42	3.5	
SWPL98-7835 RR	1,469	47.0	47	107	39	3.0	
Z2409 RR	1,854	48.0	47	105	40	4.0	
Mean	1,662	46.8	46	104	40	4.1	
LSD (0.05)	207.2	3.03	1.1	2.4	3.7	1.07	
C.V.	8.9	3.9	1.6	1.64	6.7	18.6	

Seed yield of Non-Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Roseau and Grygla for 2004.

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 51, and these supplemental codes: H = Hybrid,

RR = Roundup Ready, OP = Open Pollinated, Syn = Synthetic, LL= Liberty Link, C = Clearfield.

***2002 and 2004** average yields were analyzed using three replicates from each site.

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

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

Variety	Variety Information	Blackleg Resistance	Roseau		Average*, Ros & Gry		2003 Average Roseau, Kennedy		2002*Average Kennedy, Grygla		3-Year Average
			Roseau	Grygla	Roseau	Gry	Roseau, Kennedy	Kennedy, Grygla			
99CH01	D2,M6,H	MR	1,613	1,964	1,803		2,181		1,321		1,768
HyLite 618 CL	D1,M3,H,C	R	1,904	2,782	2,332		—		—		—
Hyola 357 Magnum**	D1,M3,H,RR	MR	2,073	2,647	2,374		2,439		—		—
Hyola 420	D1,M3,H	MR	1,993	2,471	2,255		—		—		—
Hyola 440	D1,M3,H	CR	1,918	2,240	2,087		—		—		—
InVigor 2573	D3,M1,H,LL	R	1,964	3,184	2,586		2,565		1,590		2,247
InVigor 2663	D3,M1,H,LL	R	2,101	3,077	2,574		2,612		1,549		2,245
InVigor 4870	D3,M1,H,LL	R	2,110	2,929	2,533		2,616		—		—
InVigor 5630	D3,M1,H,LL	R	2,131	3,188	2,657		—		—		—
PHS 401	D3,M1,H,LL	R	2,061	3,322	2,704		2,735		—		—
PHS02-562	D3,M1,H,LL	R	2,050	3,173	2,618		—		—		—
Mean			1,993	2,816	2,411		2,425		1,317		2,087
LSD (0.05)			165.7	454.7	244.5		119.1		175		—
C.V.			5.8	9.5	8.7		4.9		11.5		—

Growth characteristics and oil content of non-Roundup Ready canola varieties grown near Roseau, seeded June 17, 2004.

Total available fertilizer was 149-100-464-68 (N-P-K-S) down to 24 inches.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to				Height, Inches	Lodging, 1 = Erect 9 = Flat
			95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme			
99CH01	1,613	46.0	30	39	101	49	2.0	
HyLite 618 CL	1,904	47.0	28	39	95	48	1.8	
Hyola 357 Magnum**	2,073	46.6	27	35	93	38	2.5	
Hyola 420	1,993	47.0	29	38	96	42	1.8	
Hyola 440	1,918	49.2	29	41	99	52	1.8	
InVigor 2573	1,964	46.8	27	40	97	52	1.5	
InVigor 2663	2,101	46.7	25	40	97	52	1.3	
InVigor 4870	2,110	48.2	27	40	100	51	1.8	
InVigor 5630	2,131	49.6	25	38	94	45	1.3	
PHS01-401	2,061	47.4	26	40	96	51	1.5	
PHS02-562	2,050	49.4	26	40	99	53	1.0	
Mean	1,993	47.6	27	39	97	48	1.6	
LSD (0.05)	165.7	1.63	1.3	0.8	2.3	3.7	0.88	
C.V.	5.8	2.0	3.2	1.3	1.7	5.3	37.2	

Growth characteristics and oil content of non-Roundup Ready canola varieties grown near Grygla, seeded May 1, 2004.

Total available fertilizer was 174-85-260-490 (N-P-K-S) down to 24 inches.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches	Lodging, 1 = Erect 9 = Flat
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme		
99CH01	1,964	43.3	66	126	46	2.3
HyLite 618 CL	2,782	45.5	64	118	40	3.3
Hyola 357 Magnum	2,647	43.8	59	116	38	4.0
Hyola 420	2,471	43.2	62	119	41	2.7
Hyola 440	2,240	44.8	64	118	42	3.7
InVigor 2573	3,184	44.7	64	117	44	2.7
InVigor 2663	3,077	45.9	63	116	41	2.7
InVigor 4870	2,929	47.2	65	121	44	2.3
InVigor 5630	3,188	45.5	62	117	40	2.7
PHS01-401	3,322	45.9	64	117	46	2.0
PHS02-562	3,173	46.2	64	119	45	2.0
Mean	2,816	45.1	63	119	43	2.8
LSD (0.05)	454.7	2.91	2.0	5.5	5.4	0.73
C.V.	9.5	3.8	1.9	2.7	7.4	15.5

Growth characteristics and oil content of the variety and systems comparison trial grown near Roseau, seeded June 19, 2004.

Total available fertilizer was 149-100-464-68 (N-P-K-S) down to 24 inches. Large plots (400 feet x 30 feet) replicated 4 times.

Each system was sprayed with the respective herbicides and the trial was threshed on October 12, 2004.

Variety	Yield, Lb/Acre at 9% Moisture	Oil, % of Seed Wt. at 0% Moisture	Percent Green Seed	Days After Planting to		Height, Inches	Lodging, 1 = Erect 9 = Flat	Swath Score, 1 = easy 5 = difficult
				Beginning Bloom	Maturity: 30% Seed Color Change On Main Raceme			
Conventional system								
Hyola 401	1,920	42.7	3.8	36	114	38	2.3	1.3
Liberty Link System								
InVigor 4870	2,106	43.4	3.0	39	118	55	4.0	3.3
InVigor 5630	2,160	43.5	2.7	37	114	48	2.8	2.0
Clearfield System								
Pioneer 46A76	2,032	43.1	5.1	40	119	48	3.8	2.6
Roundup Ready System								
Dekalb DKL 223	2,120	40.8	3.1	36	114	41	3.8	2.8
Dekalb DKL 3585	1,967	42.6	5.2	39	117	47	3.8	2.6
Hyola 357 Magnum	2,105	41.4	3.8	35	114	38	3.0	2.3
Pioneer 45H21	2,048	43.5	3.2	39	114	43	2.8	2.3
SW Marksman	2,017	43.1	4.5	38	116	45	3.3	2.1
Mean	2,053	42.7	3.8	38	115	45	3.3	2.3
LSD (0.05)	124.8	1.36	1.80	0.7	0.8	3.2	0.87	0.66
C.V.	4.2	2.2	32.3	1.3	0.5	4.9	18.3	19.3