

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.

The oil in canola seed contains less than 2 percent erucic acid, compared with 20 to 40 percent found in oilseed rape. The canola meal remaining after oil extraction contains less than 0.1 percent glucosinolates (sulfur-containing compounds) compared with about 1 percent in rapeseed meal. Consequently, canola is also referred to as “double low” or

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

“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 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 fall 2002 near St. Hilaire yielded up to 2,400 pounds/acre. This trial is being repeated in 2003-04 at Thief River Falls, Morris and Waseca. A large variety trial was also seeded in fall 2003 with 38 winter canola varieties being tested, 8 of which are Roundup Ready.

Information Sources

The Minnesota Canola Council is a good source for information on canola. They 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). It contains detailed information on canola production practices and costs \$68.00 (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 management tool is a CD-ROM called the “Canola Growers Decision Support

System” available from the Canola Council of Canada for \$250.00 (U.S.).

Test Sites

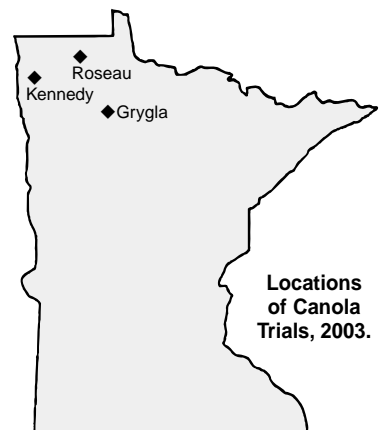
Non-Roundup Ready and Roundup Ready variety trials were conducted at three sites in 2003. The Roseau site was on Braaten Farms, the Grygla site was on the Todd Stanley farm, and the Kennedy test site was on the Rob and Tim Rynning farm. Good weather this season provided for excellent yields. The non-Roundup Ready trial at Grygla was seeded into an unforeseen problem area in the field that resulted in tremendous variability and unreliable data. For this reason that trial is not in this bulletin.

Local Support

Genex-Harvest States of Kennedy provided sponsorship for the Kennedy site. Farmer's Union Oil of Grygla provided support for the Grygla site.

Field Day Assistance

County extension educators Nathan L. Johnson, Hans J. Kandel, Curtis W. Nyegaard, and Bill Craig provided field day assistance.



Canola seed sources for 2004 planting, keyed to "Variety Information" column in seed yield table, page 56.

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

D4 DSV/Brett-Young Seeds, Box 99, St. Norbert, P.O., Winnipeg, MB, Canada R3V 1L5

D5 Monsanto Canada Seeds, 2915 A Faithful Ave., Sask., SK Canada S7K 8E8, 306-657-467

D6 Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131

D7 Svalof Weibull Ltd., 2-411 Downey Rd., Saskatoon, SK, Canada S7N 4L8

D8 Not Available

D9 University of Guelph, 50 Stone Rd. West, Guelph, ON, Canada N1G 2W1, 519-824-4120

Marketers

M1 Bayer Crop Science, 203-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8, 701-775-2700

M2 Brett-Young Seeds, P.O. Box 99 St. Norbert P.S., Winnipeg, MB, Canada R3V 1L5, 204-261-6338

M3 Croplan Genetics, P.O. Box 1291, Minot, ND 59702, 701-852-3556

M4 Interstate Seed Company, 1215 Parkway, West Fargo, ND 58078, 800-437-4120

M5 Monsanto, 3100 Sycamore Rd., De Kalb, IL 60115, 815-758-9323

M6 Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131, 701-298-6894

M7 Proseed, 705 E. Brewster, Harvey, ND 58341, 701-324-4177

M8 Seeds 2000, Box 200, Breckenridge, MN 56520, 218-643-2410

M9 Not Available

Canola Variety Name Changes

Old Name or Experimental Number	New Variety Name
PHS 487	InVigor 4870
Hyb 9387	99CH01
SW F5229 RR	SW Marksman RR
SW F5191 RR	SW Patriot RR

Seed yield of Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Roseau, Kennedy and Grygla in 2003.

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

*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: R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible

Variety	Variety Information	Blackleg Resistance	Roseau	Kennedy	Grygla	Average All Sites	2002 Average Kennedy, Grygla*	2002-03 Average
Crosby	D8,M3,Op	MR	2,622	2,328	2,186	2,379	1,677	2,098
Dekalb DKL223	D1,M5,H	MS	2,447	2,170	2,274	2,297	1,766	2,085
Dekalb DKL34-55	D5,M5,Op	MR	2,546	2,246	2,099	2,297	1,402	1,939
ExCalibuRR	D9,M4,Op	R	2,596	2,128	2,116	2,280	–	–
HyCLASS 2061	D8,M3,H	MR	2,486	2,288	2,092	2,248	1,766	2,055
HyCLASS 767 SW	D7,M3,Syn	MR	2,622	2,336	2,353	2,368	1,756	2,123
HyCLASS 799RR	D4,M3,Syn	MR	2,359	1,940	2,124	2,141	1,444	1,862
HyCLASS 905	D8,M3,H	R	2,545	2,526	2,445	2,448	1,892	2,226
HyCLASS 910	D8,M3,H	R	2,634	2,615	2,585	2,611	–	–
Hyola 357 Magnum**	D1,M4,H	MR	2,758	2,349	2,087	2,398	1,764	2,144
Hyola 505 RR	D1,M4,H	R	2,586	2,335	2,333	2,365	–	–
LBD588RR	D4,M2,Op	R	2,371	2,253	2,085	2,236	–	–
Minot	D8,M3,Op	MR	2,420	2,147	2,047	2,101	1,604	1,902
Pioneer 45H21	D6,M6,H	R	2,781	2,593	2,302	2,559	1,876	2,146
Pioneer 46H23	D6,M6,H	R	2,632	2,236	2,285	2,327	–	–
Razor	D7,M7,Syn	MR	2,522	2,099	1,860	2,160	1,652	1,957
Roughrider	D2,M7,Op	MR	2,129	1,987	2,091	1,985	1,420	1,759
RR Hyb 2013	D2,M7,H	R	2,614	2,232	2,048	2,252	1,845	2,089
RR Hyb 2066	D2,M7,H	MR	2,743	2,254	1,884	2,243	1,693	2,023
SW BadgeRR	D7,M8,Syn	MR	2,367	2,050	1,911	2,065	1,533	1,852
SW GladiatoR	D9,M4,Syn	MR	2,590	2,032	2,098	2,240	1,716	2,031
SW Marksman RR	D7,M4,H	MR	2,835	2,325	2,356	2,506	–	–
SW Patriot RR	D7,M4,H	MR	2,648	2,425	2,380	2,484	–	–
Mean			2,544	2,256	2,176	2,303	1,585	2,016
LSD (0.05)			247.4	207.6	358.4	187.1	216	–
C.V.			6.9	6.5	11.7	10.1	11.9	–

Growth characteristics and oil content of Roundup Ready canola varieties grown near Roseau, seeded May 2, 2003.

Total available fertilizer was 162-70-330-120+ (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		
HyCLASS 799RR	2,359	46.2	42	53	99	50	1.0
Crosby	2,622	47.6	41	52	99	47	2.0
Dekalb DKL223	2,447	41.5	41	49	93	43	3.0
Dekalb DKL34-55	2,546	45.8	41	53	96	49	1.5
ExCalibuRR	2,596	44.5	41	51	97	45	2.0
HyCLASS 2061	2,486	45.9	41	52	98	50	1.5
HyCLASS 767 SW	2,622	46.3	40	53	99	51	1.3
HyCLASS 905	2,545	46.9	41	55	99	53	1.0
HyCLASS 910	2,634	46.2	40	55	99	55	1.0
Hyola 357 Magnum	2,758	43.9	41	50	97	43	3.0
Hyola 505 RR	2,586	46.9	39	55	99	55	1.0
LBD588RR	2,371	45.8	40	54	99	52	1.0
Minot	2,420	44.1	42	51	95	43	2.5
Pioneer 45H21	2,781	46.9	37	52	96	52	2.0
Pioneer 46H23	2,632	49.5	39	52	99	50	2.0
Razor	2,522	44.2	40	53	98	49	1.8
Roughrider	2,129	48.4	44	53	99	47	1.5
RR Hyb 2013	2,614	47.0	42	54	100	54	1.0
RR Hyb 2066	2,743	45.5	41	52	96	48	1.8
SW BadgeRR	2,367	45.6	43	53	99	49	1.3
SW GladiatoR	2,590	45.9	40	51	96	50	1.5
SW Marksman RR	2,835	46.5	40	52	99	50	1.3
SW Patriot RR	2,648	46.1	38	51	97	52	2.0
Mean	2,544	46.0	41	52	98	49	1.7
LSD (0.05)	247.4	1.24	1.7	0.8	1.5	3.7	0.57
C.V.	6.9	1.9	3.0	1.1	1.1	5.4	24.4

Growth characteristics and oil content of Roundup Ready canola varieties grown near Kennedy, seeded April 24, 2003.

Total available fertilizer was 165-76-400-120+ (N-P-K-S) down to 24 inches. Included is a topdressing application of 27-0-0-12 at early flowering.

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		
HyCLASS 799RR	1,940	42.6	57	98	39	1.0
Crosby	2,328	44.1	55	101	38	2.3
Dekalb DKL223	2,170	43.0	53	96	34	3.0
Dekalb DKL34-55	2,246	42.7	55	98	37	2.3
ExCalibuRR	2,128	43.6	54	98	39	2.3
HyCLASS 2061	2,288	42.8	55	98	38	2.0
HyCLASS 767 SW	2,336	42.2	55	98	39	2.5
HyCLASS 905	2,526	43.2	58	103	42	1.5
HyCLASS 910	2,615	43.3	55	101	40	1.8
Hyola 357 Magnum	2,349	44.1	53	96	34	2.8
Hyola 505 RR	2,335	42.7	57	102	42	2.0
LBD588RR	2,253	44.7	56	98	39	2.3
Minot	2,147	43.3	54	96	36	2.5
Pioneer 45H21	2,593	44.2	55	98	41	2.5
Pioneer 46H23	2,236	43.9	56	99	39	2.5
Razor	2,099	45.3	55	97	36	2.3
Roughrider	1,987	41.9	57	102	38	2.0
RR Hyb 2013	2,232	44.1	53	100	41	1.3
RR Hyb 2066	2,254	44.1	56	96	40	2.5
SW BadgeRR	2,050	42.3	57	100	38	2.0
SW GladiatoR	2,032	43.7	54	97	37	2.5
SW Marksman RR	2,325	41.8	55	98	38	2.5
SW Patriot RR	2,425	42.6	55	98	42	2.8
Mean	2,256	43.3	55	99	38	2.2
LSD (0.05)	207.6	2.89	3.0	1.8	2.5	0.56
C.V.	6.5	4.0	3.9	1.3	4.7	18.0

Growth characteristics and oil content of Roundup Ready canola varieties grown near Grygla, seeded May 2, 2003.

Total available fertilizer was 170-80-296-120+ (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				Lodging, 1 = Erect 9 = Flat
			95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches	
799RR	2,124	46.1	39	51	95	45	1.0
Crosby	2,186	48.5	41	50	97	46	1.8
Dekalb DKL223	2,274	42.1	38	46	89	44	2.8
Dekalb DKL34-55	2,099	46.1	39	49	93	47	1.5
ExCalibuRR	2,116	45.7	39	48	93	48	1.8
HyCLASS 2061	2,092	46.4	39	50	93	48	1.0
HyCLASS 767 SW	2,353	45.1	39	50	92	47	1.3
HyCLASS 905	2,445	48.7	39	52	96	50	1.3
HyCLASS 910	2,585	47.2	38	51	96	51	1.8
Hyola 357 Magnum	2,087	42.8	37	46	90	43	2.8
Hyola 505 RR	2,333	48.6	38	51	95	49	1.3
LBD588RR	2,085	46.5	37	49	93	50	1.0
Minot	2,047	44.9	39	48	90	42	2.3
Pioneer 45H21	2,302	45.8	38	49	91	50	2.8
Pioneer 46H23	2,285	49.9	38	48	94	49	3.0
Razor	1,860	44.3	39	50	93	44	2.0
Roughrider	2,091	48.6	42	52	97	49	2.8
RR Hyb 2013	2,048	47.4	42	52	95	49	1.3
RR Hyb 2066	1,884	45.6	40	49	91	47	2.5
SW BadgerRR	1,911	45.9	39	52	96	47	1.3
SW GladiatoR	2,098	43.9	38	48	91	45	1.5
SW Marksman RR	2,356	47.4	38	49	93	47	1.8
SW Patriot RR	2,380	44.9	35	47	92	49	2.3
Mean	2,176	46.2	39	49	93	47	1.8
LSD (0.05)	358.4	1.95	3.0	1.3	2.5	4.5	0.75
C.V.	11.7	2.6	5.5	1.9	1.9	6.8	28.9

Seed yield of Non-Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Roseau and Kennedy in 2003.

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 57, and these supplemental codes: H = Hybrid,

OP = Open Pollinated, LL = Liberty Link, C = Clearfield (Raptor tolerant).

*Average yields were analyzed using three replicates from each site.

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

Variety	Variety Information	Blackleg Resistance	Average*		
			Roseau	Kennedy	
6045CL	D4,M2,Op,C	MR	2,212	1,864	2,038
99CH01	D2,M7,H	MR	2,255	2,107	2,181
D1034 CL	D1,M4,H,C	R	2,689	2,090	2,389
Hyola 357 Magnum**	D1,M4,H,RR	MR	2,517	2,360	2,439
Hyola 401	D1,M4,H	S	2,544	2,145	2,345
InVigor 2573	D3,M1,H,LL	R	2,720	2,411	2,565
InVigor 2663	D3,M1,H,LL	R	2,810	2,413	2,612
InVigor 2733	D3,M1,H,LL	MR	2,434	2,302	2,368
InVigor 4870	D3,M1,H,LL	R	2,863	2,369	2,616
KAB 36	D8,M3,Op,C	R	2,463	1,979	2,221
PHS 401	D3,M1,H,LL	R	2,889	2,580	2,735
PHS 597	D3,M1,H,LL	R	2,790	2,383	2,586
Mean			2,599	2,250	2,425
LSD (0.05)			180.8	161.9	119.1
C.V.			4.8	5.0	4.9

Growth characteristics and oil content of Non-Roundup Ready canola varieties grown near Roseau, seeded May 2, 2003.

Total available fertilizer was 162-70-330-120+ (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		
6045CL	2,212	46.2	41	51	98	46	2.8
99CH01	2,255	46.1	39	53	99	51	1.0
D1034 CL	2,689	44.3	41	52	96	53	1.8
Hyola 357 Magnum	2,517	43.9	38	49	96	48	3.0
Hyola 401	2,544	44.4	39	48	96	41	2.3
InVigor 2573	2,720	45.8	38	53	98	58	1.0
InVigor 2663	2,810	46.4	37	53	98	53	1.5
InVigor 2733	2,434	43.5	37	49	90	51	2.5
InVigor 4870	2,863	46.6	39	53	98	55	1.0
KAB 36	2,463	47.2	41	53	97	50	2.0
PHS 401	2,889	46.2	37	53	97	56	1.5
PHS 597	2,790	47.2	38	50	95	48	2.0
Mean	2,599	45.6	39	51	96	51	1.8
LSD (0.05)	180.8	1.26	1.6	0.8	1.1	3.8	0.59
C.V.	4.8	1.6	2.9	1.1	0.8	5.3	22.1

Growth characteristics and oil content of Non-Roundup Ready canola varieties grown near Kennedy, seeded April 24, 2003.

Total available fertilizer was 165-76-400-120+ (N-P-K-S) down to 24 inches. Included is a topdressing application of 27-0-0-12 at early flowering.

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			
6045CL	1,864	44.4	54	96	42	2.8	
99CH01	2,107	42.7	56	98	43	1.5	
D1034 CL	2,090	41.6	55	95	44	3.0	
Hyola 357 Magnum	2,360	42.2	53	96	37	2.8	
Hyola 401	2,145	40.4	52	94	35	2.8	
InVigor 2573	2,411	42.1	55	98	48	2.5	
InVigor 2663	2,413	43.1	56	96	48	2.3	
InVigor 2733	2,302	43.6	53	94	41	2.8	
InVigor 4870	2,369	44.2	56	97	46	2.5	
KAB 36	1,979	44.3	56	96	41	3.0	
PHS 401	2,580	44.0	55	96	45	2.5	
PHS 597	2,383	43.8	54	96	41	2.5	
Mean	2,250	43.0	55	96	42	2.6	
LSD (0.05)	161.9	1.11	1.1	1.5	2.9	0.71	
C.V.	5.0	1.5	1.4	1.1	4.8	19.2	