

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 has increased from about 8,000 acres in 1990 to more than 200,000 acres in 1998. Minnesota acreage for 2000 was close to 150,000 acres.

The oil in canola seed contains less than 2 percent erucic acid. This compares with the 20- to 40-percent level of erucic acid found in oilseed rape. The meal remaining after oil extraction contains less than 0.1 percent glucosinolate (sulfur-containing compounds) compared with about 1 percent in rapeseed meal. High levels of erucic acid in food oils are haz-

ardous to health, and high levels of glucosinolates are detrimental in livestock feeds.

The canola varieties described here are all spring-sown *Brassica napus* types. Winter canola varieties have been evaluated by University of Minnesota researchers at locations throughout the state. In trials over 15 year/locations, fewer than 30 percent of the trials have overwintered successfully.

Information Sources

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

A complete *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

The Red Lake Falls testing site (formerly called the Crookston site) was on the Monte Casavan farm. At Fosston, the testing site was on the Ellsworth Danielson farm. The Roseau site was on Magnusson Farms. The Grygla site was on the Todd Stanley farm. There was a Kennedy test site on the Rob and Tim Rynning farm this year, but it was hailed out just prior to harvest.

Local Support

Cenex-Harvest States of Kennedy provided sponsorship for the Kennedy site. Fosston Ag Service provided support for the Fosston site. Farmer's Union Oil of Grygla provided support for the Grygla site.

Field Day Assistance

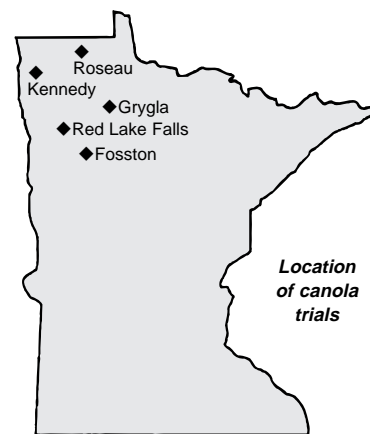
County extension educators Vincent W. Crary, Nathan L. Johnson, Herman J. Kendel, Gene Krause, Curtis W. Nye-gaard, Joseph Shafer and Russ Severson provided field day assistance.

Canola Planting Rate and Date

Bushel Weight (Pounds).....	50
Seeds/Pound.....	80,000 to 160,000
Planting Rate, Pounds/Acre.....	3 to 7
Planting Rate, Seeds/Square Foot...	6 to 9
Planting Date	Early Spring

Canola Variety Name Changes

Old Name or Experimental Number	New Variety Name
PHS98-640	InVigor 2573
PHS98-639	InVigor 2663
1-9175	Biaca II
Proseed RR A104	DS RoughRider



Canola seed sources for 2001 planting, keyed to Variety Information column, seed yield tables, pages 60-61, 66-67.

Developers

- D1 Advanta Seeds, Dijkwelsestraat 70, Kapelle, Netherlands
 D2 Agriprogress, P.O. Box 2499, Morden, Manitoba, Canada R6M 1C2
 D3 Aventis Crop Science, 203-407 Downey Rd., Saskatoon, Saskatchewan, Canada S7N 4L8
 D4 Cargill Ltd., P.O. Box 5900, 300-240 Graham Ave., Winnipeg, Manitoba, Canada
 D5 Croplan Genetics, P.O. Box 1291, Minot, ND 58702
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- D6 Danisco Seed, Mariba Seeds, Copenhagen, Denmark
 D7 DLF-Trifolium, Store Heddinge, Denmark
 D8 Dow AgroSciences, 104-111 Research Dr., Saskatoon, Saskatchewan, S7N 3R2
 D9 InterMountain Canola Cargill, 2300 N. Yellowstone Hwy., Suite 122, Idaho Falls, ID 83401
 D10 LiBred, Box 99, St. Norbert PO, Winnipeg, Manitoba, Canada R3V 1L5
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- D11 Limagrain Canada Seeds Inc., #4-411 Downey Rd, Saskatoon, Saskatchewan, Canada S7N 4L8
 D12 Pioneer Hi-Bred International, Inc., 7200 N.W. 62nd Ave., Johnston, Iowa 50131
 D13 Svalöf Weibull Seed, P.O. Box 217, Lindsay, Ontario, Canada K9V 5Z4
 D14 SWP, ARD, Saskatoon, Saskatchewan, Canada S7N 4L8
 D15 University of Alberta, P.O. Box 2700, Station "M", Calgary, Alberta, Canada T2P 2P5
 D16 Not available

Marketers

- M1 Agritel Grain, Box 808 Beausjour, Manitoba, Canada, R0E 0C0, Phone: 218-289-4045
 M2 Aventis Crop Science, 203-407 Downey Rd., Saskatoon, Saskatchewan, Canada S7N 4L8, Phone: 306-477-9427
 M3 Cargill Ltd., P.O. Box 5900, 300-240 Graham Ave., Winnipeg, Manitoba, Canada R3C 4C5, Phone: 204-947-6319
 M4 Croplan Genetics, P.O. Box 1291, Minot, ND 59702, 701-852-3556
 M5 Integra Seed Ltd., P.O. Box 40, Bozeman, MT 59771, 406-582-8375
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- M6 InterMountain Canola Cargill, 2300 N. Yellowstone Hwy. Suite 122, Idaho Falls, ID 83401, Phone: 208-522-4113
 M7 Interstate Seed Company, 1215 Parkway, West Fargo, ND 58078, Phone: 800-437-4120
 M8 Kaystar Seed, P.O. Box 947, Huron, SD 57350, Phone: 605-352-8791
 M9 Legend Seeds, Box 241, De Smet, SD 57321, Phone: 800-678-3346
 M10 Monsanto, 3100 Sycamore Rd., De Kalb, Il. 60115, Phone: 815-758-9323
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- M11 Mycogen Seeds, 9330 Zionsville Rd., Bldg. 308-3E, Indianapolis, IN 46268, Phone: 800-667-3852
 M12 Performance Seeds Canada Ltd., 422 McDonald St., Regina, Saskatchewan, Canada S4N 6E1, Phone: 306-791-0920
 M13 Pioneer Hi-Bred International, Inc., 130 S.E. Willmar Ave., Willmar, MN. 56201, Phone: 701-298-6894
 M14 Promark, 389 Park Ave. E., Brandon, Manitoba, Canada R7A 7A5, Phone: 204-727-3337
 M15 Proseed, 705 E. Brewster, Harvey, ND, 58341, Phone: 701-324-4177
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- M16 Seeds 2000, Box 200 Breckenridge, MN 56520, Phone: 218-643-2410
 M17 Vandaele Seeds, Box 144, Medora, Manitoba, Canada R0M 1K0, Phone: 204-665-2384
 M18 Not Available

Seed yield of canola (*Brassica napus*) varieties, lb/acre at 8% moisture, at Fosston, Grygla, Red Lake Falls and Roseau in 2000.

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 59, and these supplemental codes: H=Hybrid, SP=Specialty oil, Op=Open Pollinated, Syn=Synthetic, LL=Liberty Link, C=Clearfield (Raptor tolerant). **Note:** The Red Lake Falls location was formerly called Crookston. Grygla was a new location in 2000. ***Note:** Minot is a Roundup Ready variety.

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

Variety	Variety Information	Blackleg Resistance	Roseau	Red Lake Falls	Average,		Fosston	Grygla	Average, All Sites
					Roseau,	Red Lake Falls			
45A03	D12,M13, Op	R	1,779	2,511	2,145		1,453	1,764	1,877
46A65	D12,M13, Op	R	1,919	2,305	2,112		1,770	1,791	1,946
46A76	D12,M13, Op,C	R	1,900	2,301	2,101		2,002	1,865	2,017
601	D5,M4,H	MR	2,053	2,083	2,068		1,958	2,012	2,014
A99-2N	D15,M18,Op,	R	1,825	–	–		–	–	–
Bianca II	D6,M12,Op	R	1,775	–	–		–	–	–
C5027	D13,M5,H,Syn	MR	1,888	–	–		–	–	–
Cheetah	D5,M4,Op,Sp	MS	1,438	1,484	1,461		–	–	–
CL2070	D5,M4,H	MR	1,927	–	–		–	–	–
CL2078	D5,M4,Syn	MR	1,862	2,213	2,038		1,831	1,652	1,890
CrackerJack	D13,M5,H,Syn	MR	1,909	–	–		–	1,729	–
DAS EXP 203	D8,M18,Op,Sp	R	1,771	–	–		–	–	–
DAS EXP 204	D8,M18,Op,Sp	R	1,729	–	–		–	–	–
Eagle	D13,M5,Op	MR	1,557	–	–		–	–	–
Ebony	D11,M1,Op	MR	1,832	2,328	2,080		1,895	1,906	1,990
Golden Boy	D13,M16, Syn	MR	1,874	2,253	2,064		1,756	1,646	1,882
Goliath	D5,M4,Op	MR	1,699	2,151	1,925		1,464	1,701	1,754
Hudson	D5,M4,Op	MR	1,817	2,226	2,022		1,511	1,456	1,753
Hyola 330	D1,M7,H	MS	2,109	2,587	2,348		–	–	–
Hyola 401	D1,M7,H	S	1,776	2,398	2,087		–	–	–
Hyola 420	D1,M7,H	MR	1,920	2,376	2,148		–	–	–
Hyper 5001	D13,M5,H	R	1,838	–	–		–	1,479	–
IMC 201	D9,M6,Op,Sp	MS	1,612	2,074	1,843		–	–	–
IMC 202	D9,M6,Op,Sp	MS	1,539	2,022	1,780		–	–	–
IMC 204	D9,M6,Op,Sp	MS	1,930	1,925	1,927		–	–	–
IMC 205	D9,M6,Op,Sp	MS	1,552	2,263	1,908		–	–	–
IMC 302	D9,M6,Op,Sp	MS	1,532	1,949	1,741		–	–	–
IMC 303	D9,M6,Op,Sp	MS	1,208	1,532	1,370		–	–	–
InVigor 2573	D3,M2,H,LL	R	2,105	–	–		1,988	1,803	–
InVigor 2663	D3,M2,H,LL	R	2,123	–	–		2,128	1,942	–
KC-007	D16,M8,Op	MS	–	2,484	–		–	–	–
KC-701	D16,M8,H	MR	1,712	2,120	1,916		–	–	–
LG3311	D11,M1,Op	R	1,757	2,127	1,942		1,737	1,644	1,816
LG3366	D11,M1,Op	R	1,795	2,251	2,023		1,678	1,906	1,907
LiBred 280	D10,M17,Op	MS	1,947	–	–		–	–	–
LiBred 96-2393LL	D10,M18,Op,LL	MR	2,062	–	–		–	–	–
LiBred Agassiz	D10,M17,Op	MR	1,905	–	–		–	–	–
Lynx	D5,M4,Op,Sp	MS	1,455	–	–		–	–	–
Minot*	D5,M4, Op	MR	1,586	2,054	1,820		1,647	1,754	1,760
N098-0272	D14,M18,Op, C	MR	1,777	2,079	1,928		1,736	1,909	1,875
N098-0439	D14,M18,Op, C	MR	1,810	2,226	2,018		1,708	1,732	1,869
Nex 500	D8,M11,Op	MR	1,884	–	–		–	–	–
Nex 705	D8,M18,Op,Sp	MS	1,662	–	–		–	–	–
Nex 710	D8,M18,Op,Sp	MS	1,687	–	–		–	–	–
NL98-3706	D14,M18,Op	MR	1,792	2,210	2,001		1,600	1,526	1,801
NL98-4413	D14,M18,Op	MR	1,766	1,762	1,764		1,379	1,589	1,624
NS3213	D12,M13, Op, C	R	1,825	–	–		–	–	–

Variety	Variety Information	Blackleg Resistance	Roseau	Red Lake Falls	Average,		Fosston	Grygla	Average, All Sites
					Roseau, Red Lake Falls	Fosston			
NS3223	D12,M13, Op, C	R	1,856	—	—	—	—	—	—
NS3233	D12,M13, Op, C	R	2,110	—	—	—	—	—	—
NS3585	D12,M13, H	R	2,107	—	—	—	—	—	—
Oscar	D5,M4,Op	MR	1,611	—	—	—	—	—	—
PHS99-763	D3,M2,H,LL	MR	2,060	—	—	1,928	2,111	—	—
PHS99-764	D3,M2,H,LL	MR	2,153	—	—	2,089	2,110	—	—
PHS99-836	D3,M2,H,LL	R	2,196	—	—	1,942	2,113	—	—
PHS99-842	D3,M2,H,LL	R	2,305	—	—	1,927	1,862	—	—
Promark 220	D13,M15, Syn	MR	1,845	2,176	2,011	1,735	1,668	1,856	—
Proseed 1492	D2,M15, H	MR	1,771	2,347	2,059	1,997	1,887	2,009	—
Q2	D15,M7,Op	R	1,742	2,263	2,003	—	—	—	—
S8003	D1,M7,Op, C	MR	1,745	2,342	2,043	—	—	—	—
S8013	D1,M7,Op, C	MR	1,477	—	—	—	—	—	—
S8015	D1,M7,Op, C	MR	1,738	—	—	—	—	—	—
Skyhawk	D7,M14, Op	R	1,950	2,225	2,088	2,017	2,053	2,061	—
SW B2691	D13,M18, Syn	MR	1,773	2,385	2,079	—	—	—	—
SW C5026	D13,M18, Syn	MR	1,871	2,382	2,127	—	—	—	—
SW C5048	D13,M18, Syn	MR	2,028	2,294	2,161	—	—	—	—
SWLM C5011	D13,M18, H	MR	1,845	2,283	2,064	—	—	—	—
SW-P98107	D14,M18,H	MR	1,886	2,258	2,072	1,720	1,681	1,886	—
Mean			1,823	2,191	1,981	1,792	1,796	1,879	—
LSD (0.05)			336.4	199.5	194.9	230.6	284.9	132.9	—
C.V.			13.2	6.5	10.0	9.1	11.3	10.1	—

Seed yield of canola (*Brassica napus*) varieties, lb/acre at 8% moisture, across years and locations.

Various combinations of the Roseau (R), Red Lake Falls (L), Fosston (F), Kennedy (K), and Grygla (G) yields across locations and years (1998-2000) for varieties grown in these various combinations are presented. **Note:** The Red Lake Falls locaton was formerly called Crookston. **Note:** Varieties in these trials include non-herbicide tolerant Liberty Link and Clearfield varieties. Long-term averages of Hyola 401 (1993-2000) and 46A65 (1996-2000) are 2,010 and 1,971 lb/acre, respectively.

Variety	'98 - RLKF	'98 - RL	'98 - R	'98 - F		
	'99 - RKF	'99 - RK	'99 - R	'99 - F		
	'00 - RLFG	'00 - RL	'00 - R	'00 - F		
45A03	—	—	1,921	—	1,679	—
46A65	2,050	2,107	2,012	1,945	1,842	1,902
46A76	—	—	2,012	—	1,749	—
96-2393LL	—	—	—	—	1,932	—
CL2070	—	—	—	2,050	1,817	—
CL2078	2,082	2,214	2,017	2,080	1,818	1,874
CrackerJack	—	—	—	2,160	1,860	—
Eagle	—	—	—	1,709	1,499	—
Ebony	—	2,205	1,978	2,000	1,657	1,927
Golden Boy	—	—	1,959	1,927	1,749	1,881
Hudson	1,849	1,927	1,907	1,741	1,739	1,684
Hyola 330	—	2,238	2,149	2,019	1,973	—
Hyola 401	—	2,153	2,026	1,991	1,835	—
Hyola 420	—	2,136	2,055	1,911	1,829	—
InVigor 2663	—	—	—	—	2,037	—
KC-701	—	—	1,934	2,078	1,729	—
Oscar	—	—	—	1,812	1,525	—

Seed yield of canola (*Brassica napus*) varieties, lb/acre at 8% moisture, across years and locations (continued).

Various combinations of the Roseau (R), Red Lake Falls (L), Fosston (F), Kennedy (K), and Grygla (G) yields across locations and years (1998-2000) for varieties grown in these various combinations are presented. **Note:** The Red Lake Falls location was formerly called Crookston. **Note:** Varieties in these trials include non-herbicide tolerant Liberty Link and Clearfield varieties. Long term averages of Hyola 401 (1993-2000) and 46A65 (1996-2000) are 2010 and 1971 lb/acre, respectively.

Variety	'98 - RLKF	'98 - RL		'98 - R		'98 - F
	'99 - RKF	'99 - RK	'99 - RK	'99 - R	'99 - R	'99 - F
	'00 - RLFG	'00 - RL	'00 - RL	'00 - R	'00 - R	'00 - F
Promark 220	—	—	—	2,015	1,772	1,996
Proseed1492	—	—	—	—	1,841	—
Q2	—	2,057	1,941	1,829	1,703	—
SW B2691	—	—	1,995	—	1,766	—
Mean	1994	2,130	1,993	1,951	1,778	1,877

Growth characteristics and oil content of canola varieties grown near Roseau, seeded May 15, 2000.

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		
45A03	1,779	50.7	32	46	85	37	1.8
46A65	1,919	51.2	32	46	85	46	2.0
46A76	1,900	51.3	32	47	86	43	1.0
601	2,053	46.6	32	48	89	47	1.8
A99-2N	1,825	52.1	30	47	88	48	2.0
Bianca II	1,775	53.6	32	45	87	41	1.5
C5027	1,888	51.2	31	45	86	41	1.5
Cheetah	1,438	45.2	35	49	88	34	2.5
CL2070	1,927	46.6	32	48	88	47	1.8
CL2078	1,862	47.4	32	47	88	43	1.5
Cracker Jack	1,909	50.1	31	47	87	43	1.3
DAS Exp 203	1,771	47.8	32	49	88	48	2.0
DAS Exp 204	1,729	48.9	33	47	87	45	2.0
Eagle	1,557	48.1	33	45	85	36	2.0
Ebony	1,832	51.9	31	48	87	41	2.0
Golden Boy	1,874	48.3	33	46	88	41	1.8
Goliath	1,699	48.6	34	45	88	36	2.5
Hudson	1,817	48.6	33	45	85	39	1.8
Hyola 330	2,109	49.7	30	44	83	37	2.3
Hyola 401	1,776	49.8	30	45	85	39	2.0
Hyola 420	1,920	50.6	31	45	86	39	2.3
Hyper 5001	1,838	48.1	32	47	88	41	1.8
IMC 201	1,612	49.3	32	46	87	39	2.3
IMC 202	1,539	51.5	33	47	87	38	2.0
IMC 204	1,930	52.0	31	45	86	41	2.5
IMC 205	1,552	50.3	33	49	87	39	1.5
IMC 302	1,532	45.8	34	49	89	44	1.3
IMC 303	1,208	48.4	34	46	88	34	1.8
InVigor 2573	2,105	50.2	30	48	87	48	2.0
InVigor 2663	2,123	49.4	30	49	87	47	2.0
KC-701	1,712	49.8	32	47	87	41	1.0
LG3311	1,757	49.8	33	45	86	39	2.0
LG3366	1,795	48.6	33	47	88	42	2.0

Days After Planting to

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches	Lodging, 1 = Erect 9 = Flat
LiBred 280	1,947	53.8	31	47	86	50	2.3
LiBred 96-2393LL	2,062	50.2	31	46	88	50	2.3
LiBred Agassiz	1,905	48.7	31	48	88	49	2.3
Lynx	1,455	46.4	34	48	89	37	3.0
Minot*	1,586	50.6	33	46	85	40	2.0
N098-0272	1,777	49.5	31	50	88	40	1.0
N098-0439	1,810	51.6	31	44	84	39	1.8
NEX 500	1,884	50.9	32	48	87	43	1.8
NEX 705	1,662	52.9	32	48	88	43	1.5
NEX 710	1,687	53.1	33	45	87	37	2.3
NL98-3706	1,792	50.8	32	48	86	43	2.0
NL98-4413	1,766	47.2	32	46	86	41	2.3
NS3213	1,825	52.0	31	46	87	43	2.0
NS3223	1,856	48.5	32	49	87	43	2.3
NS3233	2,110	51.5	31	45	86	42	1.3
NS3585	2,107	50.9	31	46	86	45	1.5
Oscar	1,611	46.4	33	46	87	36	2.0
PHS99-763	2,060	50.7	31	46	85	43	2.0
PHS99-764	2,153	50.2	30	46	84	48	2.5
PHS99-836	2,196	49.9	30	47	86	48	1.5
PHS99-842	2,305	48.2	29	50	88	53	2.0
Promark 220	1,845	49.8	33	46	87	38	1.3
Proseed 1492	1,771	50.8	32	46	87	39	2.0
Q2	1,742	48.6	33	47	88	43	1.8
S8003	1,745	50.1	31	45	83	36	2.0
S8013	1,477	49.5	32	51	88	41	2.5
S8015	1,738	51.1	31	50	88	45	2.0
Skyhawk	1,950	50.4	32	45	86	41	1.8
SW B2691	1,773	50.9	32	46	86	39	1.3
SW C5026	1,871	50.3	32	46	86	39	1.5
SW C5048	2,028	48.7	31	47	87	44	1.3
SWLM C5011	1,845	50.8	33	46	87	37	1.8
SW-P98107	1,886	48.8	32	47	86	42	1.8
Mean	1,823	49.8	32	47	87	42	1.9
LSD (0.05)	336.4	2.25	1.5	0.9	1.4	6.4	0.61
C.V.	13.2	3.2	3.5	1.3	1.2	11.0	23.5

Growth characteristics and oil content of canola varieties grown near Red Lake Falls, seeded April 28, 2000.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches
45A03	2,511	47.9	52	94	45
46A65	2,305	49.8	51	95	49
46A76	2,301	48.5	53	97	51
601	2,083	47.4	54	97	51
Cheetah	1,484	47.0	53	97	43
CL2078	2,213	47.3	52	97	50
Ebony	2,328	49.8	52	97	50
Golden Boy	2,253	47.8	52	96	53
Goliath	2,151	51.1	49	99	45

Growth characteristics and oil content of canola varieties grown near Red Lake Falls, seeded April 28, 2000 (continued).

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	
Hudson	2,226	49.0	50	94	44
Hyola 330	2,587	49.2	48	94	39
Hyola 401	2,398	47.5	49	96	40
Hyola 420	2,376	48.7	50	96	45
IMC 201	2,074	49.3	51	96	45
IMC 202	2,022	49.3	52	96	43
IMC 204	1,925	50.2	49	95	39
IMC 205	2,263	49.0	54	96	46
IMC 302	1,949	48.0	54	96	50
IMC 303	1,532	47.6	54	98	41
KC-007	2,484	49.1	54	95	54
KC-701	2,120	47.7	53	97	51
LG 3311	2,127	48.8	51	96	45
LG 3366	2,251	47.8	53	97	49
Minot*	2,054	49.1	52	95	41
N098-0272	2,079	46.7	54	98	49
N098-0439	2,226	49.8	50	95	34
NL98-3706	2,210	49.5	52	95	45
NL98-4413	1,762	45.9	50	96	46
Promark 220	2,176	47.3	52	96	49
Proseed 1492	2,347	47.7	52	98	51
Q2	2,263	48.4	54	97	49
S8003	2,342	47.0	49	95	39
Skyhawk	2,225	47.8	50	96	52
SW B2691	2,385	48.2	51	96	53
SW C5026	2,382	47.8	52	97	50
SW C5048	2,294	48.2	52	96	50
SWLM C5011	2,283	49.1	52	96	51
SW-P98107	2,258	47.4	51	95	50
Mean	2,191	48.4	52	96	47
LSD (0.05)	1,99.5	1.74	1.9	2.1	4.7
C.V.	6.5	2.6	2.6	1.6	7.2

Growth characteristics and oil content of canola varieties grown near Fosston, seeded May 10, 2000.

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		
45A03	1,453	47.8	50	89	47	3.8
46A65	1,770	48.6	50	90	44	3.5
46A76	2,002	47.8	52	93	47	3.0
601	1,958	48.2	52	92	50	2.8
CL2078	1,831	46.5	52	92	45	3.0
Ebony	1,895	48.6	52	92	47	3.3
Golden Boy	1,756	46.1	52	92	51	3.5
Goliath	1,464	49.1	49	92	42	4.8
Hudson	1,511	46.7	49	89	42	4.0
InVigor 2573	1,988	47.3	52	91	52	4.0
InVigor 2663	2,128	47.1	53	90	54	3.0
LG3311	1,737	49.4	50	89	44	3.0

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			
LG3366	1,678	46.8	51	93	49	2.8	
Minot*	1,647	47.8	51	90	41	4.8	
N098-0272	1,736	46.6	55	93	49	3.0	
N098-0439	1,708	48.1	48	88	44	4.0	
NL98-3706	1,600	47.8	51	91	44	5.0	
NL98-4413	1,379	42.4	50	91	45	4.8	
PHS99-763	1,928	46.8	49	90	49	3.8	
PHS99-764	2,089	47.7	48	88	44	3.8	
PHS99-836	1,942	46.7	50	90	48	4.5	
PHS99-842	1,927	46.3	53	92	53	4.3	
Promark 220	1,735	47.2	52	91	51	1.3	
Proseed 1492	1,997	48.3	51	91	48	3.3	
Skyhawk	2,017	48.0	49	90	47	3.8	
SW-P98107	1,720	46.0	52	92	47	2.8	
Mean	1,792	47.3	51	91	47	3.6	
LSD (0.05)	230.6	1.18	0.9	1.5	4.1	1.24	
C.V.	9.1	1.8	1.3	1.2	6.2	24.5	

* Minot is a Roundup Ready variety.

Growth characteristics and oil content of canola varieties grown near Grygla, seeded May 9, 2000.

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		
45A03	1,764	45.0	33	49	89	53	1.8
46A65	1,791	46.8	35	48	90	60	3.3
46A76	1,865	43.4	34	50	92	61	2.0
601	2,012	43.8	32	50	91	59	1.5
CL2078	1,652	42.0	33	49	91	56	1.5
Cracker Jack	1,729	43.5	33	50	91	57	1.8
Ebony	1,906	46.2	33	50	90	55	1.8
Golden Boy	1,646	42.6	34	50	91	60	1.8
Goliath	1,701	46.7	35	48	91	55	3.3
Hudson	1,456	44.1	35	46	86	50	1.8
Hyper 5001	1,479	42.0	33	50	91	59	1.3
InVigor 2573	1,803	42.9	33	50	90	60	2.8
InVigor 2663	1,942	44.3	31	50	88	57	2.8
LG3311	1,644	46.4	34	48	88	54	2.3
LG3366	1,906	44.1	34	50	91	55	2.0
Minot*	1,754	45.8	35	49	89	53	2.8
N098-0272	1,909	44.8	34	52	94	60	1.3
N098-0439	1,732	46.5	34	46	86	49	2.5
NL98-3706	1,526	46.5	34	50	90	52	2.8
NL98-4413	1,589	42.5	34	48	91	56	3.5
PHS99-763	2,111	45.8	33	48	90	52	3.3
PHS99-764	2,110	46.7	31	47	87	49	3.0
PHS99-836	2,113	45.3	32	49	89	55	2.0
PHS99-842	1,862	44.7	32	51	89	57	2.3
Promark 220	1,668	43.6	34	49	91	58	1.0
Proseed 1492	1,897	43.7	33	48	90	58	1.5
Skyhawk	2,053	44.6	33	47	89	56	3.0

* Minot is a Roundup Ready variety.

Growth characteristics and oil content of canola varieties grown near Grygla, seeded May 9, 2000 (continued).

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		
SW-P98107	1,681	44.0	33	50	90	57	1.5
Mean	1,796	44.6	33	49	90	56	2.2
LSD (0.05)	284.9	1.88	1.1	0.8	2.1	4.0	1.03
C.V	11.3	3.0	2.3	1.1	1.7	5.1	33.5

Seed yield of Roundup Ready canola (*Brassica napus*) varieties, lb/acre at 8% moisture, at Fosston, Grygla, Red Lake Falls and Roseau in 2000.

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 00, and these supplemental codes: H=Hybrid, SP=Specialty oil, Op=Open Pollinated, Syn=Synthetic, LL=Liberty Link, C=Clearfield (Raptor tolerant). **Note:** The Red Lake Falls location was formerly called Crookston. Grygla was a new location in 2000.

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

Variety	Variety Information	Blackleg Resistance	Roseau	Red Lake Falls	Average, Roseau, Red Lake Falls	Fosston	Grygla	Average, All Sites
45A51	D12,M13, Op	MS	1,769	2,150	1,957	1,877	1,848	1,910
46A52	D12,M13, Op	MR	1,777	2,047	1,898	1,526	1,788	1,777
7.99 RR	D10,M4, Syn	R	1,546	—	—	—	—	—
A5152.098	D2,M4,Op	MS	1,498	—	—	—	—	—
A99-13NR	D15,M18,Op	R	1,590	—	—	—	—	—
A99-14NR	D15,M18,Op	R	1,547	—	—	—	—	—
C5033 RR	D13,M5, Syn	MR	1,787	—	—	—	—	—
CL2061	D5,M4, H	MR	1,505	—	—	—	—	—
ConQuest	D15,M7, Op	R	1,753	2,098	1,851	—	—	—
DKL 27-20	D11,M10, Op	MS	1,520	1,892	1,735	1,646	1,665	1,695
DS RoughRider	D2,M15, Op	MS	1,569	1,774	1,729	1,651	1,658	1,691
GoldenReady RR	D11,M16, Op	MR	1,607	1,816	1,661	1,734	1,607	1,666
Hyola 357 RR	D1,M7, H	MS	1,818	2,156	2,034	—	—	—
Hyola 454 RR	D1,M7, H	MR	1,923	2,010	1,925	—	—	—
IMC 203 RR	D9,M6, Op	S	1,498	1,795	1,672	—	—	—
LG 3235	D11,M1,Op	MR	1,686	1,984	1,771	1,783	1,829	1,788
LG 3345	D4,M3, Op	MR	1,756	—	—	—	—	—
LG 3455	D11,M1,Op	MR	1,763	1,986	1,839	1,972	1,965	1,904
LiBred 13.99 RR	D10,M18, Syn	MR	1,824	—	—	—	—	—
LiBred 4.99 RR	D10,M18,H	R	1,561	—	—	—	—	—
LiBred 449 RR	D10,M17, Op	R	1,718	—	—	—	—	—
LiBred 561 RR	D10,M17, Op	R	1,555	—	—	—	—	—
LS 296 RR	D9,M9, Op	R	1,769	2,284	2,031	—	1,953	—
Minot	D5,M4, Op	MR	1,867	1,995	1,969	1,758	1,713	1,852
NR98-5877	D14,M18,Op	MR	1,920	2,109	2,045	1,529	1,758	1,844
NR98-6008	D14,M18,Op	MR	1,913	2,123	2,047	1,836	1,731	1,915
NR98-6212	D14,M18,Op	MR	1,793	2,021	1,953	1,663	1,548	1,779
NR98-6741	D14,M18,Op	MR	1,672	1,930	1,802	1,489	1,599	1,673
NS3154	D12,M13, Op	R	1,832	—	—	—	—	—
NS3587	D12,M13, H	R	1,979	—	—	—	—	—
NS3589	D12,M13, H	R	1,428	—	—	—	—	—
PR 5338	D11,M10, Op	MR	1,708	1,989	1,777	1,717	1,790	1,765
QT 2.028	D9,M6, Op	R	1,636	1,900	1,756	—	—	—
RaideRR	D13,M5, Op	MR	1,726	—	—	—	—	—
RideR	D13,M10, Syn	MR	1,581	2,185	1,846	1,800	1,579	1,768

Variety	Variety Information	Blackleg Resistance	Roseau	Red Lake Falls	Average, Roseau, Red Lake Falls	Fosston	Grygla	Average, All Sites
RR Syn 2677	D13,M15, Syn	MR	1,947	2,000	1,906	1,885	1,745	1,860
RTC 12.2118	D9,M6, Op	S	1,683	2,033	1,883	–	–	–
SW B2674 RR	D13,M18, Syn	MS	1,702	2,027	1,906	–	–	–
SW-P9828000	D14,M18,Syn	R	1,832	2,241	2,029	2,271	1,978	2,077
Mean			1,705	2,023	1,873	1,748	1,748	1,806
LSD (0.05)			335.5	255.5	211.9	156.1	271.0	125.8
C.V.			14.1	7.7	11.4	6.3	10.9	10.0

Seed yield of non-Roundup Ready canola (*Brassica napus*) varieties, lb/acre at 8% moisture, across years and locations.

Various combinations of the Roseau (R), Red Lake Falls (L), Fosston (F), Kennedy (K), and Grygla (G) yields across locations and years (1998-2000) for varieties grown in these various combinations are presented. **Note:** The Red Lake Falls location was formerly called Crookston.

Variety	'99-RKF	'99-RK	'99-RF	'99-R	'99-F
	'00-RLFG	'00-RL	'00-RL	'00-R	'00-F
LiBred 449 RR	–	–	–	1,542	–
45A51	1,823	1,903	1,724	1,662	1,650
46A52	–	1,761	–	1,566	–
LiBred 561 RR	–	–	–	1,467	–
A5152.098	–	–	–	1,524	–
CL2061	–	–	–	1,619	–
GoldenReady RR	1,733	1,839	1,640	1,654	1,586
Hyola 357 RR	–	1,935	1,810	1,735	–
IMC 203 RR	–	–	–	1,466	–
LG 3235	1,750	1,775	1,677	1,592	1,661
LG 3345	–	–	–	1,640	–
Minot	1,788	1,875	1,744	1,721	1,650
RaideRR	–	–	–	1,717	–
RideR	–	–	1,694	1,649	1,547
DS RoughRider	–	–	–	1,559	–
SW B2674 RR	–	1,853	–	1,632	–
Mean	1,774	1,849	1,715	1,609	1,619

Growth characteristics and oil content of Roundup Ready canola varieties grown near Roseau, seeded May 15, 2000.

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		
45A51	1,769	49.7	34	45	87	38	1.8
46A52	1,777	47.8	33	48	89	39	2.0
7.99RR	1,546	49.3	35	46	86	38	1.5
A5152.098	1,498	49.1	37	45	89	34	1.5
A99-13NR	1,590	47.1	35	50	89	43	2.0
A99-14NR	1,547	47.5	35	50	89	41	1.8
C5033 RR	1,787	51.2	34	45	86	34	1.3
CL2061	1,505	50.0	36	46	88	38	2.0
Conquest	1,753	48.6	32	49	89	40	2.0
DKL 27-20	1,520	49.0	35	46	86	37	2.8
DS RoughRider	1,569	50.5	36	46	88	36	2.5
GoldenReady RR	1,607	48.2	36	47	87	38	2.5
Hyola 357 RR	1,818	49.0	30	44	86	37	2.5
Hyola 454 RR	1,923	48.5	31	48	88	43	2.0
IMC 203 RR	1,498	47.8	32	49	87	39	2.5
LG3235	1,686	49.4	34	44	84	35	1.8

Growth characteristics and oil content of Roundup Ready canola varieties grown near Rosseau, seeded May 15, 2000 (continued).

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		
LG3345	1,756	50.9	33	45	86	38	2.0
LG3455	1,763	51.2	32	46	87	39	1.8
LiBred 13.99RR	1,824	47.2	36	45	87	39	1.8
LiBred 4.99RR	1,561	49.8	35	45	86	36	1.8
LiBred 449RR	1,718	48.9	31	45	87	40	2.3
LiBred 561RR	1,555	49.5	33	47	86	36	1.0
LS 296 RR	1,769	49.2	33	47	86	38	2.0
Minot	1,867	49.7	34	45	86	38	2.8
NR98-5877	1,920	52.6	33	48	89	42	2.0
NR98-6008	1,913	49.0	32	49	86	40	2.5
NR98-6212	1,793	47.5	33	48	86	37	1.8
NR98-6741	1,672	49.8	32	50	89	42	1.8
NS3154	1,832	50.1	31	46	87	37	2.3
NS3587	1,979	50.4	32	47	86	40	2.0
NS3589	1,428	49.5	32	47	86	35	1.3
PR5338	1,708	50.4	32	44	85	37	2.3
QT 2.028	1,636	48.3	33	48	88	38	2.8
RaiderR	1,726	48.8	33	49	88	39	1.0
RideR	1,581	50.1	32	45	86	36	1.0
RR SYN 2677	1,947	49.2	34	46	87	38	2.0
RTC 12.2118	1,683	49.5	32	47	87	35	2.3
SW B2674 RR	1,702	50.1	32	45	86	36	1.5
SW-P9828000	1,832	50.0	30	46	86	38	1.0
Mean	1,705	49.4	33	46	87	38	1.9
LSD (0.05)	335.5	2.18	2.2	1.1	1.6	4.4	0.67
C.V.	14.1	3.2	4.8	1.7	1.3	8.4	25.1

Growth characteristics and oil content of Roundup Ready canola varieties grown near Red Lake Falls, seeded April 28, 2000.

Variety	Yield, Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	
45A51	2,150	48.2	52	96	47
46A52	2,047	49.1	53	96	48
Conquest	2,098	48.1	55	99	47
DKL 27-20	1,892	47.8	52	95	46
DS RoughRider	1,774	53.2	52	96	46
GoldenReady RR	1,816	48.2	52	96	46
Hyola 357	2,156	47.7	49	95	38
Hyola 454	2,010	49.9	53	95	48
IMC 203 RR	1,795	46.8	53	96	40
LG3235	1,984	49.7	49	95	39
LG3455	1,986	50.3	52	96	47
LS 296 RR	2,284	48.2	52	96	44
Minot	1,995	49.3	52	95	41
NR98-5877	2,109	51.8	53	97	44
NR98-6008	2,123	49.2	54	95	45
NR98-6212	2,021	47.9	53	93	46
NR98-6741	1,930	47.5	54	100	47
PR5338	1,989	50.4	52	95	43

Variety	Yield, Lb/Acre at 8% moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	
QT 2.028	1,900	49.3	53	95	44
RideR	2,185	49.0	52	95	50
RR SYN 2677	2,000	49.6	52	95	49
RTC 12.2118	2,033	47.2	53	96	43
SW B2674 RR	2,027	47.4	52	95	45
SW-P9828000	2,241	47.7	53	98	50
Mean	2,023	48.9	52	96	45
LSD (0.05)	255.5	1.50	1.1	1.7	4.0
C.V.	7.7	2.2	1.3	1.1	5.4

Growth characteristics and oil content of Roundup Ready canola varieties grown near Fosston, seeded May 10, 2000.

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		
45A51	1,877	47.1	50	91	47	4.5
46A52	1,526	46.1	52	92	47	4.5
DKL 27-20	1,646	45.4	50	91	49	5.5
DS RoughRider	1,651	50.2	51	93	46	4.8
GoldenReady RR	1,734	45.7	51	92	45	5.0
LG3235	1,783	47.5	48	88	43	3.8
LG3455	1,972	48.6	49	89	45	3.0
Minot	1,758	47.9	50	90	45	5.5
NR98-5877	1,529	49.6	50	93	45	5.0
NR98-6008	1,836	46.1	52	89	46	4.5
NR98-6212	1,663	44.5	50	88	44	6.5
NR98-6741	1,489	47.4	56	93	50	4.8
PR5338	1,717	48.5	48	89	43	5.0
RideR	1,800	46.3	50	89	47	2.5
RR SYN 2677	1,885	46.9	50	91	48	4.5
SW-P9828000	2,271	47.1	50	91	49	3.0
Mean	1,748	47.1	50	90	46	4.5
LSD (0.05)	156.1	1.39	1.9	1.7	3.9	1.74
C.V.	6.3	2.1	2.6	1.3	6.0	27.5

Growth characteristics and oil content of Roundup Ready canola varieties grown near Grygla, seeded May 9, 2000.

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		
45A51	1,848	45.1	34	49	90	55	1.8
46A52	1,788	44.4	33	50	91	57	1.8
DKL 27-20	1,665	44.4	34	49	90	55	3.8
DS RoughRider	1,658	47.1	34	49	92	56	3.5
GoldenReady RR	1,607	45.3	34	49	92	52	3.5
LG3235	1,829	45.7	33	47	88	50	2.5
LG3455	1,965	48.1	33	49	90	54	1.5
LS 296 RR	1,953	45.1	34	50	90	52	2.8
Minot	1,713	47.5	34	49	88	51	2.3
NR98-5877	1,758	47.8	34	49	92	54	2.3
NR98-6008	1,731	44.2	33	50	89	51	2.8
NR98-6212	1,548	44.4	33	50	87	51	2.5
NR98-6741	1,599	46.4	34	52	92	54	2.8
PR 5338	1,790	47.1	33	48	88	51	2.3
RideR	1,579	44.5	33	49	89	55	2.0
RR SYN 2677	1,745	46.5	34	49	89	52	1.8
SW-P9828000	1,978	45.1	31	49	90	54	1.0
Mean	1,748	45.7	33	49	90	53	2.4
LSD (0.05)	271.0	2.67	1.2	0.9	2.5	3.4	1.05
C.V.	10.9	4.1	2.6	1.2	2.0	4.5	31.3

Minnesota Seed Producers and Promotion Association (MSPPA)

Since the mid 1970s a large group of Minnesota seed growers has identified and marketed certified public varieties of barley, oats, soybeans and wheat developed at the Minnesota Agricultural Experiment Station and other land-grant universities as MPS Seed. For many years their promotion program included production of *The Seed Book*, a catalogue of public barley, oat, soybean and wheat varieties they distributed without charge to Minnesota farmers, usually as an insert in *The Farmer* magazine.

These certified seed growers have discontinued publication of their *Seed Book* and now make a generous contribution to help support the Minnesota Agricultural Experiment Station's production and widespread distribution of this Varietal Trials publication. They continue to promote and market

quality public varieties of barley, oats, soybeans and wheat under the familiar MPS Seed label.

The Minnesota Agricultural Experiment Station appreciates the long-time support of the seedsmen members of MSPPA, their contribution toward the production and distribution of this publication, and their dedication to the production, conditioning and marketing of quality public varieties of farm crops developed here and at the agricultural experiment stations of other land-grant universities. You will know these seedsmen by the MPS brand label on their certified barley, oat, soybean and wheat seed.

