
Canola
Research
University
of Minnesota
Canola
PRODUCTION CENTRE
Minnesota
2009 Cooperators
Cargill Specialty Canola Oils
Croplan Genetics
Pioneer Hi-Bred Int. Inc.
Monsanto
Brett Young
Integra
Northern Resources Co-op.
Dekalb Genetics
Interstate Seed
Mycogen Seed
Bayer Crop Sciences
Funded By National Canola Research Program (NCRP)
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University of Minnesota, Canola Council of Canada & Minnesota Canola Council
07/28/2009
University of Minnesota
Extension
Research Site

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MINNESOTA CANOLA PRODUCTION CENTRE RESULTS

ACKNOWLEDGEMENTS

Minnesota Canola Production Centre

The Minnesota Canola Production Centre is a public-private partnership between the Minnesota Canola Council and the University of Minnesota.

Many thanks to all of our local and regional sponsors for their donations of cash, products and services. Their continued generous support has made the Minnesota Production Centre a research project that benefits all growers of canola in this region.

SITE INFORMATION

Location*:** ***Roseau, MN

***Cooperator*:** Brian and Sheldon Rice

***Previous Crop*:** Wheat

***Soil Test Results*:**

Macronutrient Level*:*	*(0-6", 6-24")*
Nitrogen -	12 lb/ac
Phosphorous -	58 ppm
Potassium -	220 ppm
Sulfur -	300 lb/ac

Target Yield:	2000 lb.ac
Fertilizer Applied:	N – 90 lb/ac P- 80 lb/ac S- 30 lb/ac
Soil pH:	7.5
Salinity	0.37 mmho (0-6") (low)

Tillage Operations: The field was chisel plowed in the fall of 2008. Harrowed in the spring of 2009.

Seeding Method: The field was seeded with a John Deere 9350 double disc press drill.

Herbicides Applied: A) Liberty Link varieties – Liberty 34 oz/ac, ammonium sulfate 2 lb/ac.

B) Roundup Ready varieties – Roundup Weather Max 22 oz/ac, ammonium sulfate 2 lb/ac.

Comments: The 2009 growing season began on a cold note, and stayed on that theme all year long. Growing degree units ended up almost 200 behind the season of 2008. Rainfall during the season was 4 inches less than 2008, and below normal at 13 inches. Despite the late planting date, canola yields in the region were very good, averaging 2100 lb/ac.

LARGE PLOT VARIETY COMPARISON TRIAL

Objective: ***To establish agronomic criteria for choosing among variety options.***

Background: The availability of many canola varieties has given producers many options for variety selection. Yield, lodging resistance, maturity, and crop quality are important variety traits for growers to consider when making variety selections. Companies were invited to submit their varieties for entry in large plot trials that would simulate conditions in a grower's field.

Methodology: All varieties were seeded at 5 lb/ac. The trial was laid out as a modified RCB design with four replicates. Roundup Ready varieties were grouped together to facilitate timely herbicide application and to reduce drift to Liberty-Link and Clearfield varieties. Swathing commenced when seed color change was 40% on the main stem, and harvest was completed when suitable conditions existed. Plot size was 300 x 18 ft.

Results: The trial was seeded on June 11 into cool and moist soils. Emergence was uniform however on the slow side. Weed pressure was low, but weather conditions at herbicide application provided very good weed control and suppression.

Table 1: Seed yield, growth characteristics and oil content of canola (Brassica napus) varieties (lb/acre at 8% moisture) at Roseau in 2009.

Brand	Cultivar	Blackleg Rating*	Seedling Vigor	Days to Flower	Days to Maturity	Plant Height	Plant Lodging**	Oil %	Yield lb/ac
Dekalb	30-42	R	1	37	97	43	1	52.6	1817
Dekalb	52-41	R	1	41	97	42	1	53.6	1652
Dekalb	72-55	MR	1	38	97	42	1	54.7	1905
Pioneer	45H28	R	1	39	97	46	1	55.4	1946
Pioneer	45S51	R	1	40	97	46	1	53.6	1763
Cargill	V2010	R	1	42	97	43	1	52.8	1561
Cargill	V2018	MR	1	43	97	42	1	53.6	1756
Cargill	V2030	R	1	45	97	50	2	53.8	1723
Cargill	V1035	R	1	43	97	43	1	54.6	1741
Cargill	V1037	R	1	43	97	40	1	52.9	1675
Proseed	50 Caliber	R	1	42	97	37	1	52.4	1884
Integra	7121R	R	1	44	97	47	1	52	1825
Croplan	HyClass 906	R	1	43	97	46	1	52.6	1840
Croplan	HyClass 921	R	1	42	97	42	1	54.2	1968
Croplan	HyClass 924	R	1	40	97	41	1	53	1814
Croplan	HyClass 940	R	1	41	97	49	1	53.3	1878
Bayer	Invigor 5440	R	1	42	97	49	2	50.6	2063
Bayer	Invigor8440	R	1	39	97	42	2	51.8	2133
							Mean		1830
							LSD 0.05	**<.0001**	170.5
							CV (%)		**6.49**

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

****** Plant Lodging score: 0 = no lodging, 9 = plants lying flat

******* Seedling vigor score: 1 = vigorous, 9 = no vigor

SMALL PLOT VARIETY COMPARISON TRIALS

Objective: To establish agronomic criteria for choosing among existing and forthcoming variety options.

Background: The availability of many canola varieties has given producers many options for variety selection. Yield, lodging resistance, maturity, and crop quality are important variety traits for growers to consider when making variety selections. Companies were invited to submit their current and pending varieties for entry in the trials to compare against similar varieties in a small plot setting.

Methodology: All varieties were seeded at 5 lb/ac. The trial was laid out as a RCB design with four replicates. Roundup Ready varieties were grouped together to facilitate timely herbicide application and to reduce drift to non-Roundup Ready varieties. Swathing commenced when seed color change was 40% on the main stem, and harvest was completed when suitable conditions existed. Plot size was 25 x 6 ft.

Results: The trial was seeded on June 6 into cool and moist soils. Emergence was uniform however on the slow side. Weed pressure was moderate, but weather conditions at herbicide application provided very good weed control and suppression. Overall yields were good.

Table 2: Seed yield, growth characteristics and oil content of Non Roundup-Ready canola (Brassica napus) varieties (lb/acre at 8% moisture) at Roseau in 2009.

Brand	Cultivar	Blackleg Resistance*	Days to Flower	Plant Lodging**	Plant Height cm	Days to Maturity	Seedling vigor***	Oil %	Yield lb/ac
Bayer	8440	R	38	2	45	94	1	51.8	2302
Bayer	5550	R	37	1	50	94	1	53.4	1948
Bayer	5440	R	40	1	51	94	1	50.6	2298
Bayer	5630	R	38	1	46	94	1	53	2196
BrettYoung	5525CL	R	42	2	49	94	1	56.6	2035
							LSD 0.05	NS	
							CV (%)		

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

****** Plant Lodging score: 0 = no lodging, 9 = plants lying flat

******* Seedling vigor score: 1 = vigorous, 9 = no vigor

Table 3: Seed yield, growth characteristics and oil content of Roundup-Ready canola (Brassica napus) varieties (lb/acre at 8% moisture) at Roseau in 2009.

Brand	Cultivar	Blackleg Resistance*	Days to Flower	Plant Lodging **	Plant Height cm	Days to Maturity	Seedling vigor score***	Oil%	Yield lb/ac
Proseed	25 Caliber	R	41	1	43	94	1	52.8	1844
Proseed	30 Caliber	R	46	1	50	94	1	52.9	1949
Proseed	50 Caliber	R	42	1	45	94	1	52.4	1877
Pioneer	45H28	R	42	1	49	94	1	55.4	2056
Pioneer	45S51	R	43	1	50	94	1	53.6	1949
Brett Young	6040RR	R	42	1	49	94	1	52.5	1917
Brett Young	6020RR	R	40	1	48	94	1	56.2	1869
Monsanto	G64034	R	44	1	44	94	1	53.9	1885
Monsanto	G72643	R	43	1	49	94	1	54	2037
Monsanto	G88007	R	38	1	40	94	1	56.1	1818
Monsanto	G88115	R	40	1	42	94	1	55.6	1848
Monsanto	G88117	R	41	1	45	94	1	57.7	2015
Monsanto	G88066	R	42	1	40	94	1	54.6	1979
Monsanto	G88075	R	41	1	45	94	1	55.4	1902
Monsanto	G88006	R	41	1	43	94	1	56.8	2068
Monsanto	G88061	R	39	1	41	94	1	54	1943
Monsanto	G88124	R	41	1	48	94	1	56	1949
Monsanto	G88930	R	42	1	44	94	1	56.9	1800
Monsanto	G72522	R	41	1	46	94	1	55	2110
Monsanto	G88058	R	42	1	42	94	1	52.6	1873

Brand	Cultivar	Blackleg Resistance*	Days to Flower	Plant Lodging **	Plant Height cm	Days to Maturity	Seedling vigor score***	Oil%	Yield lb/ac
Dekalb	52-41	**R**	41	**1**	44	**94**	**1**	**53.6**	1873
Dekalb	30-42	**R**	38	**1**	42	**94**	**1**	**52.6**	1822
Dekalb	72-55	**MR**	40	**1**	43	**94**	**1**	**54.7**	2018
							LSD 0.05	**NS**	
							CV (%)		

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

****** Plant Lodging score: 0 = no lodging, 9 = plants lying flat

******* Seedling vigor score: 1 = vigorous, 9 = no vigor

NITROGEN TOP DRESSING TRIAL

Objective: Evaluate the effectiveness of urea applied at preplant, and topdressed at 4-leaf, as well as ESN (environmentally smart nitrogen) urea at preplant.

Background: Canola requires high levels of N and usually shows increased yields with an N fertilizer application. The high N requirement of canola is one reason why canola acreage in Minnesota is being replaced with soybeans or sunflowers which require substantially lower N amounts. Several growers have had success with a urea product known as ESN, which is a polymer coated urea that releases nitrogen based on temperature and moisture. This study was initiated to see if fertilizer type and timing might be able to reduce the amount of N fertilizer used, while maintaining canola yields.

Methodology: The variety Pioneer P45H28 was used and seeded at 5 lb/ac. The trial was laid out as a RCB design with four replicates. Treatments included Urea (preplant incorporated) at 0, 30, 60, and 90 lb/ac, Urea (topdress at 4-leaf) at 30, 60, and 90 lb/ac, and Ammonium Nitrate (topdress at 4-leaf) at 60 lb/ac, and ESN (preplant incorporated) at 30, 60, and 90 lb/ac. Fertilizer application was made at appropriate timing, preplant incorporated, and at 4-leaf stage. Swathing commenced when seed color change was 40% on the main stem, and harvest was completed when suitable conditions existed. Plot size was 100 x 12 ft.

Results: The trial was seeded on June 4 into cool and moist soils. Yield differences were significantly different, with 90 ESN having the highest yield of 2112 lb/ac. Overall, the rate of 90 urea, regardless of application timing provided the highest yield of canola.

Table 4: Seed yield and growth characteristics of Nitrogen application trial (lb/acre at 8% moisture) at Roseau in 2009.

Treatment	Maturity	Height (inches)	Days flowering	Yield
90 ESN	**98**	**42**	**25**	**2112**
90 46-0-0 ppi	**98**	**43**	**23**	**1949**
90 46-0-0 4l	**98**	**43**	**28**	**1884**
60 46-0-0 4l	**98**	**41**	**26**	**1652**
60 ESN	**98**	**36**	**25**	**1637**
30 46-0-0 4l	**98**	**38**	**27**	**1573**
60 34-0-0 4l	**98**	**43**	**26**	**1559**
30 ESN	**98**	**37**	**23**	**1542**
30 46-0-0 ppi	**98**	**44**	**22**	**1337**
60 46-0-0 ppi	**98**	**43**	**24**	**1283**
No Nitrogen	**98**	**40**	**26**	**1059**
		LSD 0.05	**<.1395**	**394.3**
		CV (%)		**17.01**

STRAIGHT HARVESTING TRIAL

Objective: Evaluate the effectiveness of straight combining versus swathing using an anti-shattering agent.

Background: Canola has conventionally been swathed prior to harvest to eliminate shattering loss, reduce moisture content, and reduce green count. However many growers are interested in ways to eliminate the swathing procedure and find a way to direct harvest canola. This study was initiated to determine the usefulness of a desicant to aid in straight harvest, as compared to conventionally swathing prior to harvest.

Methodology: The trial was laid out as a RCB design with four replicates. Variety Pioneer 45H28 was used. Treatments included swathing, straight harvest with no desicant agent, and straight harvest with a desicant agent (Reglone). Application of Reglone commenced when the intense green color of the pods turned to a lighter green color. A rate of 2 pints/ac of Reglone was applied at 20 liters of water/ac at 45 p.s.i. Swathing commenced when seed color change was 40% on the main stem, and harvest was completed when suitable conditions existed. Plot size was 100 x 6 ft.

Results: Yields in the straight harvest trial ranged from 1476 pounds per acre to 2026 pounds per acre. The variety used was Pioneer Hi-Bred 45H28. It was fertilized at a rate of 90 pounds of nitrogen pre-plant incorporated. The top yield of 2026 pounds was achieved in the conventionally swathed treatment. The yield of plots treated with the desiccant Reglone and straight harvested 7 days later was 1638 pounds. Plots that were straight harvested without the use of a desiccant at 8.5 % moisture was 1697 pounds. Plots that were harvested 2 weeks after canola should have been harvested yielded 1476 pounds likely due to shattering of dry pods.

Table 5: Seed yield of variety Pioneer 45H28 in the straight harvesting trial at Roseau in 2009.

Treatment	Date of Harvest	Yield
Swath	**September 8 (swathed)**	**2207 (9.4% moisture)**
Reglone	**September 23 (sprayed Sep 4)**	**1697 (9.5% moisture)**
Straight Harvest 1	**September 23**	**1638 (7.7% moisture)**
Straight Harvest 2	**September 30**	**1476 (12.5% moisture)**
LSD		**109.3**
CV		**4.0**