The Northern Canola News

Volume 10—Issue 1 February 2004

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Northern Canola Growers Association Hosts Annual Meeting

The seventh annual Northern Canola Growers Association Annual meeting was held in Langdon, North Dakota recently. Over 150 people were in attendance as speakers from North Dakota State University provided information on recent research findings that show yield advantages to split applications of nitrogen fertilizer, and methods of disease control.

Featured speakers for Canola Day were Dave Reimann of Benson Quinn in Winnipeg and Derwyn Hammond of the Canola Council of Canada. Mr. Reimann, Manager of Commercial Accounts for Benson Quinn, gave an analysis of the canola market in 2004. He indicated prices for oilseeds are extremely favorable and are expected to be strong going into the fall of 2004 as well. He indicated that the tight supply of soybeans in the U.S. has had a favorable effect on canola prices as well as the limited supply of palm oil on the world market.

Derwyn Hammond is an agronomist with the Canola Council of Canada. Hammond discussed the research results from Canadian studies on straight-cutting of canola with conventional headers and with a special header from Europe. Results from one year of studies have shown some promise with the new straight-cut header and more research data will be needed before specific recommendations can be changed. Hammond also presented information on blackleg control in Canada with a panel of speakers which included Ron Beneda, Cavalier County Extension Agent, and Bryan Hanson, agronomist with the Langdon Research Center. John Lukach, a researcher with the Langdon Research Center, gave a presentation on fertilizer studies in canola to attendees.

Hanson Recipient of NCGA Excellence Award

During the seventh annual Canola Day held on February 11 in Langdon North Dakota, Bryan Hanson of Langdon was presented with the second annual Northern Canola Excellence Award.

The award was established to recognize those individuals that have significantly contributed to the success of the canola industry, within North Dakota and nationally. Hanson was nominated by his peers and chosen by a selection committee for the award.

Hanson is a research agronomist at the Langdon Research Extension Center, part of the NDSU Agricultural Experiment Station. He conducts very active research programs in canola evaluating varieties and agronomic management. For many years, Hanson was the North Central Region representative for canola research, traveling to Washington, D.C. to report on canola research from this region. Hanson's expertise in conducting canola research has been invaluable to canola producers in the region. Hanson currently is in his 20th year of research at the NDSU Langdon Research Extension Center.

NCGA Holds Elections

The Northern Canola Growers Association held board of director elections during its annual meeting on Wednesday, February 11th, 2004 in Langdon, North Dakota. Bernie Bachman of Langdon and Ryan Pederson of Rolette were elected by the membership as producer directors on the NCGA board, replacing Jason Hanson of Devils Lake and Mike Roark of Berthold. Vance Stueness, representative with Syngenta, was also elected, replacing Barry Rongen of Devils Lake as an industry director on the board.

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The Northern Canola News is published by the Northern Canola Growers Association and delivered free of charge to members of the association. In cooperation with the ND Oilseed Council.

Coleman Named Director of Marketing and Health Promotion

Progressive Consulting, Inc., has recently hired Sheri Coleman as its Director of Marketing and Health Promotion for the Northern Canola Grower's Association. Holding a Bachelor's of Science Degree in Nursing, Coleman joins PCI, bringing with her an extensive background in healthcare, instruction, prevention and program management. Most recently, Coleman was the Director of Education for the North Dakota Nurses Association. Coleman's primary job duties will be working with the marketing, health promotion and education of canola oil in the domestic and international market.

To reach Sheri Coleman, please contact her at PCI, 4007 State Street, Bismarck, ND 58503, (701)221.2028 or scoleman@ndpci.com.

Collaborative Canola Marketing Plans Rolling

Marketing of canola oil will soon be gaining more momentum as the Northern Canola Growers Association has joined forces with Canola Information Services and the Canola Council of Canada on a new in-depth marketing campaign. In an effort to further penetrate the market on the heart-healthy benefits of canola and its variety of uses, a new marketing theme of ***Canola Oil: One Oil…Infinite Possibilities!*** has been developed.

Plans for impact in the food industry market include trade shows at the American Dietetics Association, International Congress of Dietetics, American College of Cardiology Scientific Sessions, American Heart Association, Institute of Food Technology, and the International Association of Culinary Professionals. Canola Cooks II recipe magazines will be distributed as well as a 'mini-cookbook' with the American Heart Association logo. The Northern Canola Growers Association contact information will be provided on marketing materials. Assessment will also be made of *Canola Camp* (held in Canada annually) for feasibility by the Northern Canola Grower's Association in bringing a Canola Camp US to the states.

In education to the public on canola, a *Cooking Light on Tour* campaign will be utilized. Cooking Light on Tour is a 160 day tour at upscale retailers across the U.S., interacting with consumers, distributing coupons, samples, recipes, and tips and conducting product demonstrations. Inside the participating stores, retailers build special displays of products on the tour. The tour timetable is from late March to early November.

With the collaborative efforts and increased marketing dollars, it looks to be an exciting year for canola promotion!

Yellow Canola Seed 'Exciting'

—By Adrian Ewins

Canada's canola crop is already known for the bright yellow hue its flowers lend to the prairie landscape every summer.

Before too many years have passed, the plant's oil-laden and meal-rich black seed could match that golden colour.

Agriculture Canada scientists said last week that after decades of effort, they have finally developed a genetically stable line of yellow-seeded canola.

"This is an important day for the future of the canola industry," said Keith Downey, a retired Agriculture Canada plant breeder who was closely involved in the creation of canola more than 30 years ago.

Yellow-seeded canola has higher oil content and lower fibre content than black-seeded, making it a higher value product.

The announcement was made during a one-day conference that attracted more than 150 canola industry officials, including public and private researchers, agronomists and marketers.

The Agriculture Canada scientists emphasized that while the development of the genetically stable yellow-seeded line is a major development, it's just the first step in a long and challenging process.

They called on the rest of the canola industry, including private plant breeders, to join in a concerted effort to turn all of Canada's canola seed from black to yellow within the next 10-20 years.

"If Canada wants to continue to be a leader in quality and development of the canola crop, then I think what we all want to have in our sights is that being a yellow-seeded crop," said Downey.

"That's what we have been looking towards for many years and we thought we would achieve it much faster than we have."

Yellow-seeded canola has a thinner seed coat than its black-seeded cousin. The lower fibre content increases its digestibility and value as animal feed, while the higher oil content increases the financial returns for vegetable oil processors.

The yellow-seeded brassica napus line unveiled last week also has five percent greater yield than the black-seeded check varieties against which it was measured.

How long it takes to achieve the goal of a yellow-seeded crop will depend on how fast the rest of the industry picks up the ball and runs with it, said Downey. And he said it will be crucial that all researchers, public and private, get on board and work toward the same goal.

Garth Hodges, global canola business manager for Bayer CropScience, said the Ag Canada announcement was "exciting news" and there will undoubtedly be interest from private research companies.

But he added that the goal is to improve the quality of canola to keep it ahead of competitors like palm, sunflower and soybean, not to change seed colour.

"This (yellow seed) is one way to achieve two very desirable characteristics," he said. "But some companies are pursuing those goals using different techniques."

The new line has been developed through conventional open-pollinated breeding methods, rather than genetic modification, and the researchers who developed it want to keep it that way for the next five to 10 years.

"I would like at the beginning to keep it free of transgenes," said Gerhard Rakow, head of crop breeding at the federal department's Saskatoon research centre, who headed up the research team.

Plant breeders can use that time to work on such things as yield, oil and protein content and disease resistance.

Once a solid variety has been developed, it can be taken to the market to see what customers want in terms of going the GM route or not.

2003 Evaluations of Fungicides for Control of Sclerotinia Stem Rot of Canola

Carl Bradley, Greg Endres, Bryan Hanson, Bob Henson, Kent McKay, and Mark Halvorson, North Dakota State University
Paul Porter and David LeGare, University of Minnesota

Fungicide trials on canola were conducted at Carrington, Langdon, and Minot, ND and Thief River Falls, MN to determine their effect on Sclerotinia stem rot. Twenty-two fungicide treatments (including an untreated check) were evaluated at each site. The fungicide treatments consisted of registered and experimental compounds. To ensure that disease was present at each site, plots were inoculated with Sclerotinia ascospores and grown under sprinkler or mist irrigation.

Tables 1 to 4 show the disease and yield data from each site. Data from only the registered fungicide treatments and the untreated check are listed. 'Hyola 357 Magnum' was used as the variety at Carrington and Langdon, and 'Invigor 2663' was used at Minot and Thief River Falls. Disease pressure was high at Langdon, moderately high at Carrington and Thief River Falls, and low at Minot.

Plots treated with Endura had significantly less disease than the untreated check at Carrington, but there were no significant differences among treatments for yield at Carrington. Plots treated with Endura had significantly less disease than the untreated check at Langdon. Plots treated with Endura and with Ronilan at 50% bloom had significantly greater yield than the untreated check at Langdon. Plots treated with Endura, Ronilan, or Topsin M had significantly less disease than the untreated check at Minot, but there were no significant differences among treatments for yield at Minot. Plots treated with Endura, Ronilan, or Topsin M had significantly less disease than the untreated check at Thief River Falls, but no significant differences for yield were detected.

This project was partially funded by a USDA-CSREES North Central Canola Research Program grant.

Table 1. Effect of fungicides on Sclerotinia stem rot and canola yield at Carringto in 2003.

Product	Rate/A	Timing (% bloom)	Disease Severity Index (0-100)	Yield (lb/A)
Untreated check			32 cd	1534 a
Endura	5.8 oz	30	24 ab	1593 a
Endura	5.8 oz	50	17 a	1695 a
Ronilan	12 oz	30	38 d	1576 a
Ronilan	12 oz	50	27 bc	1664 a
Topsin M	16 oz	30	33 cd	1581 a
Topsin M	16 oz	50	31 bcd	1527 a

Data followed by the same letter are not significantly different from each other (9 confidence level).

Table 2. Effect of fungicides on Sclerotinia stem rot and canola yield at Langdon, 2003.

Product	Rate/A	Timing (% bloom)	Disease Severity Index (0-100)	Yield (lb/A)
Untreated check			82 e	1516 a
Endura	5.8 oz	30	53 ab	1978 b
Endura	5.8 oz	50	40 a	2191 c
Ronilan	12 oz	30	78 e	1952 ab
Ronilan	12 oz	50	67 bc	2081 b
Topsin M	16 oz	30	74 be	1911 ab
Topsin M	16 oz	50	79 e	1706 ab

Data followed by the same letter are not significantly different from each other (9 confidence level).

Table 3. Effect of fungicides on Sclerotinia stem rot and canola yield at Minot, ND in 2003.

Product	Rate/A	Timing (% bloom)	Disease Severity Index (0-100)	Yield (lb/A)
Untreated check			6 a	2669 a
Endura	5.8 oz	30	1 b	2630 a
Endura	5.8 oz	50	1 b	2835 a
Ronilan	12 oz	30	1 b	2849 a
Ronilan	12 oz	50	1 b	2943 a
Topsin M	16 oz	30	1 b	2944 a
Topsin M	16 oz	50	1 b	2925 a

Data followed by the same letter are not significantly different from each other (95% confidence level).

Table 4. Effect of fungicides on Sclerotinia stem rot and canola yield at Red Lake Falls, MN in 2003.

Product	Rate/A	Timing (% bloom)	Disease Severity Index (0-100)	Yield (lb/A)
Untreated check			18 b	1870 a
Endura	5.8 oz	30	6 a	1750 a
Endura	5.8 oz	50	3 a	1824 a
Ronilan	12 oz	30	7 a	1755 a
Ronilan	12 oz	50	5 a	1716 a
Topsin M	16 oz	30	4 a	1748 a
Topsin M	16 oz	50	2 a	1680 a

Data followed by the same letter are not significantly different from each other (95% confidence level).

2003 Canola Survey for Diseases and Flea Beetles

Carl Bradley, Janet Knodel, and Art Lamey
North Dakota State University

Field surveys were conducted in swathed canola fields throughout North Dakota and in Kittson and Roseau counties in Minnesota in 2003. A total of 249 fields were surveyed for disease and 156 fields for flea beetles in North Dakota. A total of 11 fields were surveyed for disease in Minnesota. Blackleg and Sclerotinia incidences were measured by evaluated 50 stems within each field for disease. Flea beetle populations were measured by counting the number of beetles caught in a sweep net. Twenty sweeps per field were done.

Results of the survey are in Table 1. Blackleg incidence for 2003 was the second highest amount found in 12 years of doing the survey; although losses attributable to the disease were minimal. Sclerotinia incidence for North Dakota was the lowest amount found in 12 years of doing the survey. High populations of flea beetles were found throughout the traditional canola production regions of North Dakota.

This project was partially funded by a USDA-CSREES North Central Canola Research Program grant.

Table 1. Data from the 2003 canola disease/flea beetle survey in North Dakota and Minnesota.

District	County	% Blackleg	% Sclerotinia	No. of flea beetles
Northeast	Cavalier	27	9.6	21.2
	Nelson	1.4	5.7	NA
	Ramsey	11.7	6.7	NA
	Towner	29.8	6.5	35.8
NE Average		24	7.8	26.7
North Central	Benson	5.1	2.2	85
	Bottineau	0.7	0.3	71
	McHenry	0.5	0	18.7
	Pierce	35.8	11.8	41.7
	Rolette	2	3.4	NA
NC Average		6.9	2.9	60.4
Central	Eddy/Foster	0.5	2.5	33
	Sheridan	2	3.5	16
	Stutsman	0	2.8	64
	Wells	0.4	3.6	46
C Average		0.7	3.1	43
Northwest	Burke	0	0	22
	Mountrail	0.7	0	29.4
	Renville	1.4	0.1	48.4
	Ward	2.4	0	80.1
	Williams	0	0	7.2
NW Average		0.9	0.1	52.1
West Central	McLean	1.6	1.1	142
	Dunn	NA	NA	184.8
WC Average		1.6	1.1	163.4
South Central	Grant	NA	NA	70.2
Southwest	Hettinger, etc.	0.1	NA	56.2
ND Average		10.6	4	51.6
Minnesota	Kittson	0	0	NA
	Roseau	0	17.3	NA
MN Average		0	12.5	NA

Gustafson Flea Beetle Insecticide Seed Treatment Trial on Canola—Minot and Langdon

Janet Knodel, Area Extension Specialist/Crop Protection
North Central Research Extension Center, Minot
Bryan Hanson, Research Agronomist, Langdon Research Extension Center

Objective

To compare efficacy of different insecticides seed treatments of canola against the crucifer flea beetle at several locations in North Dakota.

Materials and Methods

Trials assessing the different insecticide seed treatments were conducted in research plots located at the NCREC in Minot and the Langdon REC in Langdon. *Brassica napus* cv. RaideRR (Integra Seed Ltd., open pollinated) was seeded on May 20, 2003 in Minot and May 13, 2003 in Langdon. The seeding rate was approximately 14-17 pure live seeds per sq. foot. A RCB experimental design with four replicates was used. Experimental plots were 3.5-4.1 ft. (7 rows) x 20-22 ft. Six seed treatments were evaluated:

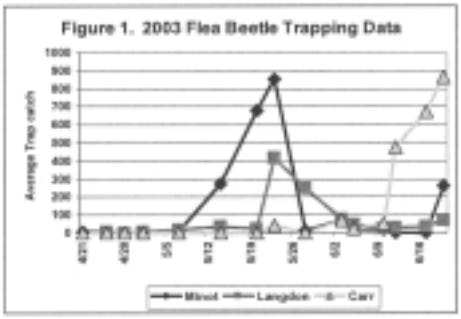
1) Untreated check
2) Prosper low (200 g ai) seed treatment (clothianidin)
3) Prosper high (400 g ai) seed treatment (clothianidin)
4) Helix lite (200 g ai) seed treatment (thiamethoxam)
5) Helix xtra (400 g ai) seed treatment (thaimethoxam)
6) Experimental A

Flea beetle populations were monitored weekly using sticky yellow trap cards. To evaluate flea beetle damage, assessments were taken at 16, 23, 32, and 39 Days After Planting (DAP) using the following rating scheme: 1 = 0-3 pits per seedling; 2 = 4-9 pits per seedling; 3 = 10-15 pits per seedling; 4= 16-25 pits per seedling; 5 = >25 pits per seedling; and 6 = dead.

Roundup (1 pt./A) + AMS was applied for weed control early in the season. A Ronilan application was not necessary in 2003 for disease control due to the environmental conditions in Minot. However, Ronilan (12 oz/a at 20-50% bloom) was sprayed in Langdon. Best management practices were used regarding fertility and harvest operations. Plots were harvested on August 12, 2003 in Minot and September 2, 2003 in Langdon. Yield (lbs/A) was obtained at the end of the season to facilitate comparisons.

Results and Discussion

Flea Beetle Populations:



During 2003, the spring emergence of flea beetle was delayed due to the cool, wet early May. In late May, flea beetles were ready to emerge as the canola seedlings were emerging. This was the major peak of activity, and spring emergence continued until late June. Flea beetle populations were high in Minot and Langdon, and even moderate-high in Carrington during 2003 (Fig. 1). The total number of flea beetles captured from May 1 to July 1 includes: 11,047 for Minot, 5,159 for Langdon, and 11,051 for Carrington. The average trap catch was 85 beetles per trap day in Langdon, 181 beetles per trap day in Minot and Carrington. Langdon had a lower than expected total number of flea beetles and average trap catch, because canola seedlings in the trapping area were almost completely defoliated by flea beetles making the trapping area less attractive. However, flea beetle pressures were very high in Langdon killing most of the canola seedlings in the untreated plots.

Damage Ratings:

Minot: On 16 DAP, insecticide seed treatments had a significantly lower damage rating than the untreated check, and there were no significant differences between any of the insecticide seed treatments (Table 1). On 23 DAP, again the insecticide seed treatment had a significantly lower damage rating than the

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untreated check, and there were no significant differences between the insecticide seed treatments (Table 1). On 32 DAP, only Prosper high, Helix xtra, and Helix lite had a significantly lower damage ratings than the untreated check, and they were not significantly different from each other (Table 2). On 39 DAP, again all of the insecticide seed treatment had a significantly lower damage rating than the untreated check, and there were no significant differences between the insecticide seed treatments (Table 2).

Langdon: On 16 DAP, insecticide seed treatments had a significantly lower damage rating than the untreated check, and there were no significant differences between any of the insecticide seed treatments (Table 1). On 23 DAP, only Prosper high and Helix xtra had significantly lower damage ratings than the untreated check, and they were not significantly different from each other (Table 1). On 32 DAP, there were no significant differences between treatments (Table 2). On 39 DAP, only Prosper high and Helix xtra had a significantly lower damage rating than the untreated check (Table 2). The damage rating for Helix xtra, 3.3, was also significantly lower than Prosper high, 4.4, on 39 DAP.

In Table 3, flea beetle damage ratings are average by site. Treatments listed in ascending order for damage ratings averaged across site include: 2.6 for Helix xtra, 2.9 for Prosper high, 3.2 for Helix lite, 3.3 for Experimental A, 3.5 for Prosper low, and 4.4 for the untreated check (Table 3).

Yield Data: For yield at Minot, only Helix xtra had a significantly higher yield than the untreated check, but it was not significantly different from Prosper high and Helix lite (Table 2). At Langdon, insecticide seed treatments had a significantly higher yield than the untreated check. Within the insecticide treatments, Helix xtra and Prosper high also had a significantly higher yield than Helix lite, Experimental A, and Prosper low, but were not significantly different from each other. Helix lite, Experimental A, and Prosper low, were also not significantly different from each other (Table 2). Overall, the high rate of insecticide seed treatment averaged 1037 lb/A more than the untreated check (1253 lb/A more for Helix xtra and 832 lb/A more for Prosper high); the low rate of insecticide seed treatments averaged 428 lb/A more than the untreated check (701 lb/A more for Helix lite and 254 lb/A more for Prosper low); and Experimental A insecticide seed treatment averaged 426 lb/A more than the untreated check.

Table 1. Flea Beetle Damage Ratings at 16 and 23 DAP.

Treatment	16 DAP ----------Rating 1---------- 1-6*			23 DAP ----------Rating 2---------- 1-6*		
	Minot	Langdon	Average Rating 1	Minot	Langdon	Average Rating 2
Untreated	2.5	4.0	3.3	4.0	6.0	5.0
Prosper low	1.3	2.6	2.0	2.5	6.0	4.3
Prosper high	1.3	2.0	1.6	1.6	5.5	3.5
Helix lite	1.4	2.6	2.0	1.9	5.8	3.9
Helix xtra	1.1	2.0	1.6	1.5	5.3	3.4
Exp. A	1.3	2.0	1.6	2.5	5.9	4.2
LSD (P=.05)	***0.6***	***0.7***		***1.1***	***0.3***	
CV	***27.5***	***17.1***		***31.2***	***3.1***	
Grand Mean	***1.5***	***2.5***		***2.3***	***5.7***	

**Damage Rating: 1= 0-3 pits per seedling, 2= 4-9 pits per seedlings; 3= 10-15 pits per seedling; 4= 16-25 pits per seedling; 5= >25 pits per seedling; and 6= dead seedling.*
DAP=Days After Planting

Table 2. Flea Beetle Damage Ratings at 32 and 39 DAP and Yield.

Treatment	32 DAP ----Rating 3--- 1-6*			39 DAP ----Rating 4--- 1-6*			----------Yield---------- lb/A		
	Minot	Lang	Average Rating 3	Minot	Lang	Average Rating 4	Minot	Lang	Average
Untreated	3.9	5.6	4.8	3.0	6.0	4.5	1020	196	608
Prosper low	2.9	5.4	4.1	2.1	5.4	3.8	1099	625	862
Prosper high	2.0	5.2	3.6	1.3	4.4	2.8	1390	1490	1440
Helix lite	2.0	5.4	3.7	1.3	5.3	3.3	1675	961	1318
Helix xtra	1.4	4.9	3.1	1.1	3.3	2.2	1896	1806	1851
Exp. A	3.0	5.3	4.1	1.6	4.9	3.3	1222	845	1034
LSD (P=.05)	***1.1***	***NS***		***0.7***	***0.9***		***471***	***404***	
CV	***28.4***	***5.9***		***26.9***	***12.6***		***22.6***	***27.5***	
Grand Mean	***2.5***	***5.3***		***1.7***	***4.9***		***1384***	***987***	

**Damage Rating: 1= 0-3 pits per seedling, 2= 4-9 pits per seedlings; 3= 10-15 pits per seedling; 4= 16-25 pits per seedling; 5= >25 pits per seedling; and 6= dead seedling.*
DAP=Days After Planting

2003 Syngenta Flea Beetle Insecticide Seed Treatment Trial on Canola—Minot, Langdon, and Carrington

Janet Knodel, Area Extension Specialist/Crop Protection
North Central Research Extension Center, Minot
Bryan Hanson, Research Agronomist, Langdon Research Extension Center
Bob Henson, Research Agronomist, Carrington Research Extension Center

Objective

To compare efficacy of different insecticides seed treatments of canola against the crucifer flea beetle at several locations in North Dakota.

Materials and Methods

Trials assessing the different insecticide seed treatments were conducted in research plots located at the NCREC in Minot, the Langdon REC in Langdon, and the Carrington REC in Carrington. *Brassica napus* cv. RaideRR (Integra Seed Ltd., open pollinated) was seeded on May 20, 2003 in Minot, May 13, 2003 in Langdon and May 1, 2003 in Carrington. The seeding rate was approximately 14-17 pure live seeds per sq. foot. A RCB experimental design with four replicates was used. Experimental plots were 3.5-4.1 ft. (7 rows) x 20-22 ft. Six insecticide seed treatments were evaluated:

1) Untreated check
2) Prosper low (200 g ai) seed treatment (clothianidin)
3) Prosper high (400 g ai) seed treatment (clothianidin)
4) Helix lite (200 g ai) seed treatment (thiamethoxam)
5) Helix xtra (400 g ai) seed treatment (thiamethoxam)
6) Gaucho 600 (800 g ai) seed treatment (imidacloprid)

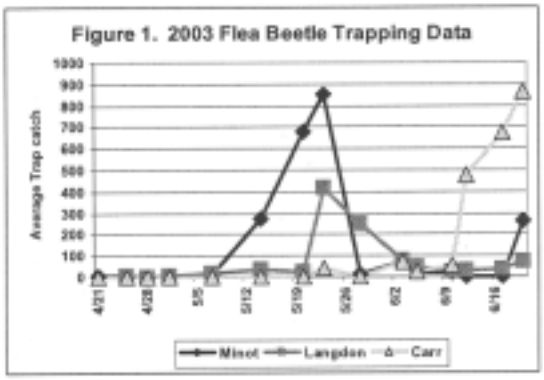
Flea beetle populations were monitored weekly using sticky yellow trap cards. To evaluate flea beetle damage, assessments were taken at 19, 26, 34, and 41 Days After Planting (DAP) using the following rating scheme: 1 = 0-3 pits per seedling; 2 = 4-9 pits per seedling; 3 = 10-15 pits per seedling; 4= 16-25 pits per seedling; 5 = >25 pits per seedling; and 6 = dead.

Roundup (1 pt./A) + AMS was applied for weed control early in the season. A Ronilan application was not necessary in 2003 for disease control due to the environmental conditions at Minot and Carrington. However, Ronilan (12 oz/A at 20-50% bloom) was sprayed in Langdon. Best management practices were used regarding fertility and harvest operations. Plots were harvested on August 12, 2003 in Minot, September 2, 2003 in Langdon, and August 18, 2003 in Carrington. Yield (lbs/A) was obtained at the end of the season to facilitate comparisons.

Results and Discussion

Flea Beetle Populations:

During 2003, the spring emergence of flea beetle was delayed due to the cool, wet early May. In late May, flea beetles were ready to emerge as the canola seedlings were emerging. This was the major peak of activity, and spring emergence continued until late June. Flea beetle populations were high in Minot and Langdon, and even moderate-high in Carrington during 2003 (Fig. 1). The total number of flea beetles captured from May 1 to July 1 includes: 11,047 for Minot, 5,159 for Langdon, and 11,051 for Carrington. The average trap catch was 85 beetles per trap day in Langdon, 181 beetles per trap day in Minot and Carrington. Langdon had a lower than expected total number of flea beetles and average trap catch, because canola seedlings in the trapping area were almost completely defoliated by flea beetles making the trapping area less attractive. However, flea beetle pressures were very high in Langdon killing most of the canola seedlings in the untreated plots.



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Damage Ratings:

Minot: On 19 DAP, there were no significant differences between treatments (Table 1). On 26 DAP, the insecticide seed treatments had a significantly lower damage rating than the untreated check, and Gaucho had a significantly higher damage rating than the other insecticide seed treatments (Table 1). On 34 DAP, Helix xtra, Helix lite, Prosper high, and Propser low had a significantly lower damage rating than Gaucho and the untreated check (Table 2). Helix xtra, Helix lite, Prosper high, and Propser low were not significantly different from each other. On 41 DAP, again the insecticide seed treatments had a significantly lower damage rating than the untreated check, and there were no significant differences between the insecticide seed treatments (Table 2).

Langdon: On 19 DAP, the insecticide seed treatments had a significantly lower damage rating than the untreated check, and there were no significant differences between the insecticide seed treatments (Table 1). On 34 DAP, only Helix xtra and Prosper high had a significantly lower damage rating than the untreated check. Insecticide seed treatments were not significantly different from each other (Table 2). On 41 DAP, Helix xtra, Helix lite, and Prosper high had a significantly lower damage rating than the untreated check. Helix xtra was also significantly lower than Prosper low and Gaucho. There was no significant different between Helix xtra, Helix lite, and Prosper high (Table 2).

Carrington: Carrington was similar to Langdon, except Gaucho was not significantly different from the untreated check on 19 DAP (Table 1). On 26 DAP, Helix xtra, Helix lite, and Prosper high had a significantly lower damage rating than Gaucho and the untreated check (Table 1). Prosper low was not significantly different from any of the treatments. On 34 DAP, only Helix xtra had a significantly lower damage rating than Gaucho and the untreated check. However, Helix xtra was not significantly different from Helix lite, Prosper high, and Prosper low (Table 2). On 41 DAP, Helix xtra, Helix lite, Prosper high, and Prosper low had a significantly lower damage rating than the untreated check. Gaucho was not significantly different from the untreated check, Prosper high, and Propser low, but was significantly higher than Helix xtra and Helix lite. There was no significant difference between Helix xtra, Helix lite, Prosper high and Prosper low (Table 2).

In Table 3, the flea beetle damage ratings are averaged by site and across site. Treatments ranked in ascending order for damage ratings averaged across sites include: 2.5 for Helix xtra, 2.7 for Prosper high, 2.7 for Helix lite, 2.9 for Prosper low, 3.4 for Gaucho, and 4.0 for the untreated check.

Yield Data: For yield, there were no significant differences between treatment in Minot and Carrington (Table 4). At Langdon, all of the insecticide seed treatment had a significantly higher yield than the untreated check (Table 4). Helix xtra was also significantly higher than Prosper low and Gaucho, but not Prosper high and Helix lite. Prosper low was not significantly different from Prosper high and Helix lite. Gaucho was significantly different from all the other treatments. Overall, the high rate of insecticide seed treatments averaged 755 lb/A more than the untreated check (808 lb/A for Helix xtra and 701 lb/A for Prosper high); the low rate of insecticide seed treatments averaged 477 lb/A more than the untreated check (487 lb/A for Helix lite and 466 lb/A for Prosper low); and Gaucho insecticide seed treatment averaged 324 lb/A more than the untreated check. The treatments ranked in descending order for yield averaged across sites include: 1599 lb/A for Helix xtra, 1492 lb/A for Prosper high, 1278 lb/A for Helix lite, 1257 lb/A for Prosper low, 1115 lb/A for Gaucho, and 791 lb/A for the untreated check (Table 4).

Table 1. Flea Beetle Damage Ratings at 19 and 26 DAP.

Treatment	19 DAP ----------Rating 1---------- 1-6*				26 DAP ---------Rating 2------- 1-6*			
	Minot	Lang	Carr	Average Rating 1	Minot	Lang	Carr	Average Rating 2
Untreated	1.6	4.2	2.4	2.8	3.9	6.0	3.9	4.6
Helix xtra (289)	1.5	1.8	1.1	1.5	1.2	5.4	3.0	3.2
Helix lite (156)	1.6	1.8	1.5	1.6	1.1	5.5	3.1	3.3
Prosper low	1.6	1.7	1.5	1.6	1.4	5.5	3.4	3.4
Prosper high	1.5	1.5	1.0	1.3	2.1	5.4	3.2	3.5
Gaucho 600	1.5	2.3	2.5	2.1	2.9	5.9	3.9	4.3
LSD (P=.05)	*NS*	*0.5*	*0.6*		*1.0*	*0.2*	*0.5*	
CV	*5.3*	*15.9*	*23.6*		*31.9*	*2.6*	*10.2*	
Grand Mean	*1.5*	*2.2*	*1.7*		*2.1*	*5.6*	*3.4*	

*Damage Rating: 1= 0-3 pits per seedling, 2= 4-9 pits per seedlings; 3= 10-15 pits per seedling; 4= 16-25 pits per seedling; 5= >25 pits per seedling; and 6= dead seedling.
DAP=Days After Planting

—Continued...

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Table 4. Yield Data.

Treatment	Yield lb/A			
	Minot	Langdon	Carrington	Average
Untreated	992	319	1063	791
Helix xtra (289)	1753	1859	1184	1599
Helix lite (156)	1103	1506	1224	1278
Prosper low	1520	1187	1065	1257
Prosper high	1722	1633	1121	1492
Gaucho 600	1441	762	1142	1115
LSD (P=.05)	***NS***	***386***	***NS***	
CV	***30.7***	***21.2***	***14.3***	
Grand Mean	***1422***	***1859***	***1133***	

Acknowledgements

The authors would like to thank Syngenta Crop Protection, Inc. and the Northern Canola Growers Association for their support, and Wilbur Ellis Company for donating the canola seed.

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