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CANOLA: *Brassica napus* L., 'Hyola 357 Magnum'

INSECTICIDE SEED TREATMENT EFFICACY AGAINST FLEA BEETLES ON CANOLA TRIAL A, 2006

Janet Knodel

North Dakota State University
Department of Entomology
202A Hultz Hall
Fargo, ND 58105
Phone: (701) 231-7915
Fax: (701) 231-8557
E-mail: janet.knodel@ndsu.edu

Bryan Hanson

North Dakota State University
Langdon Research and Extension Center
9280 107 Ave. NE.
Langdon, ND 58249
Phone: (701) 256-2582
Fax: (701) 256-2580
E-mail: bryan.hanson@ndsu.edu

Bob Henson

North Dakota State University
Carrington Research and Extension Center
PO Box 219
Carrington, ND 58421-0219
Phone: (701) 652-2951
Fax: (701) 652-2055
E-mail: robert.henson@ndsu.edu

Denise Markle

North Dakota State University
North Central Research and Extension Center
5400 Highway 83 S.
Minot, ND 58701
Phone: (701) 857-7682
Fax: (701) 857-7676
E-mail: denise.markle@ndsu.edu

Crucifer flea beetle: *Phyllotreta cruciferae* Goeze

Striped flea beetle: *Phyllotreta striolata* F.

Trials assessing the different insecticide treatments were conducted in research plots located at the North Central Research Extension Center (REC) in Minot, Carrington REC in Carrington, and the Langdon REC in Langdon, ND. *Brassica napus*, 'Hyola 357 Magnum' was seeded on 5 May in Carrington, 8 May in Minot, and 12 May in Langdon. The seeding rate was approximately 14-17 pure live seeds per ft². Plots were 3.5-4.1 ft (7 rows) × 20-22 ft in a RCB design with five treatments and four replications. Treatments included: untreated check, Tribune (a fungicide seed treatment), Helix XTra (insecticide-fungicide seed treatment), Prosper 400 (insecticide-fungicide seed treatment), and Tribune plus Warrior (a foliar pyrethroid insecticide application for late-season aphid control). To evaluate flea beetle injury, assessments were taken at approximately 14, 21-22, and 28 days after planting (DAP) using the following rating scheme: 1 = 0-3; 2 = 4-9; 3 = 10-15; 4 = 16-25; 5 = >25 pits per seedling; and 6 = dead. Percent coverage (% of land area in plot that was covered with canola foliage) was estimated on 28 DAP. Roundup (1 pt/acre) + AMS were applied for weed control early in the season. Plots were harvested on 3 Aug in Carrington, 4 Aug in Minot, and 23 Aug in Langdon. Variables were subjected to ANOVA and means compared using Fisher's Protected LSD at the 5% significance level.

Flea beetle populations were generally low and slightly higher at Langdon, followed by Carrington, and then Minot during 2006. The foliar insecticide, Warrior, was not applied at any location due to the lack of aphid populations. So, the last treatment, Tribune + Warrior, was identical to Tribune only treatment. All insecticide seed treatments had a significantly lower injury rating than the untreated check, Tribune, and Tribune + Warrior, regardless of the location (Tables 1-3). There were also no significant differences between the Helix XTra and Prosper 400 for all assessment dates of injury ratings. For percent coverage, insecticide seed treatments had significantly higher percent coverage than the untreated check, Tribune, and Tribune + Warrior at Minot and Carrington (Tables 1-2). At Langdon, insecticide seed treatments had significantly higher percent coverage than the untreated check and Tribune, but not the Tribune + Warrior (Table 3). This indicates that the insecticide seed treatment increased early plant vigor over the untreated seed. At Minot, there were no significant differences in yield, probably due to the lower flea beetle populations (Table 1). At Carrington, only Prosper 400 had a significantly higher yield than the untreated check, Tribune, and Tribune + Warrior (Table 2). At Langdon, Helix XTra and Prosper 400 had a significantly higher yield than the untreated check, Tribune, and Tribune + Warrior (Table 3). Regardless, insecticide seed treatments averaged 464 lb/acre more than the untreated checks: 383 lb/acre for Helix XTra and 544 lb/acre for Prosper 400. These results demonstrate the importance of using an insecticide-fungicide seed treatment for protection against flea beetles and soil-borne diseases in canola production.

Table 1. Minot

Treatment/ Formulation	Rate g (Al)/100 kg (unless noted)	14 DAP ^a Rating 1 1-6 ^b	22 DAP ^a Rating 2 1-6 ^b	28 DAP ^a Rating 3 1-6 ^b	28 DAP ^a % coverage	Yield lb/acre
Untreated check	---	4.6a	4.3a	3.9a	36a	1271a
Tribune 28.4FS	34	4.5a	4.3a	3.8a	41ab	1273a
Helix XTra 28.9FS	400	1.0b	1.0c	1.0c	85c	1672a
Prosper 400 2.5FS	375	1.0b	1.0c	1.3bc	83c	1904a
Tribune 28.4FS + Warrior 1CS	34 1.92 fl oz/acre	4.5a	3.3b	2.3c	59b	1477a

Means within a column followed by the same letter are not significantly different (Fisher's Protected LSD; $P = 0.05$).

^a DAP = days after planting

^b Injury rating: 1 = 0-3, 2 = 4-9; 3 = 10-15; 4 = 16-25; 5 = >25 pits per seedling; and 6 = dead seedling.

Table 2. Carrington

Treatment/ Formulation	Rate g (Al)/100 kg (unless noted)	14 DAP ^a Rating 1 1-6 ^b	22 DAP ^a Rating 2 1-6 ^b	28 DAP ^a Rating 3 1-6 ^b	28 DAP ^a % coverage	Yield lb/acre
Untreated check	---	2.4a	3.5b	4.1a	43a	1712a
Tribune 28.4FS	34	2.1a	3.8ab	3.8a	45a	1925a
Helix XTra 28.9FS	400	1.0b	1.1c	1.0b	68b	1995ab
Prosper 400 2.5FS	375	1.0b	1.3c	1.3b	69b	2329b
Tribune 28.4FS + Warrior 1CS	34 1.92 fl oz/acre	2.5a	4.3a	4.8b	40a	1768a

Means within a column followed by the same letter are not significantly different (Fisher's Protected LSD; $P = 0.05$).

^a DAP = days after planting

^b Injury rating: 1 = 0-3, 2 = 4-9; 3 = 10-15; 4 = 16-25; 5 = >25 pits per seedling; and 6 = dead seedling.

Table 3. Langdon

Treatment/ Formulation	Rate g (Al)/100 kg (unless noted)	14 DAP ^a Rating 1 1-6 ^b	22 DAP ^a Rating 2 1-6 ^b	28 DAP ^a Rating 3 1-6 ^b	28 DAP ^a % coverage	Yield lb/acre
Untreated check	---	2.5a	4.0a	2.9a	72a	1669a
Tribune 28.4FS	34	2.0a	3.6a	2.3ab	81a	1847ab
Helix XTra	400	1.0b	2.1b	1.0c	96b	2133b
Prosper 400 2.5FS	375	1.0b	2.3b	1.0c	95b	2053b
Tribune 28.4 FS + Warrior 1CS	34 1.92 fl oz/acre	2.0a	2.1b	2.0b	85ab	1873ab

Means within a column followed by the same letter are not significantly different (Fisher's Protected LSD, $P < 0.05$).

^a DAP = days after planting

^b Injury rating: 1 = 0-3, 2 = 4-9; 3 = 10-15; 4 = 16-25; 5 = > 25 pits per seedling; and 6 = dead seedling.