2004 Insecticide Seed Treatment Efficacy against Flea Beetles on Canola Trial A

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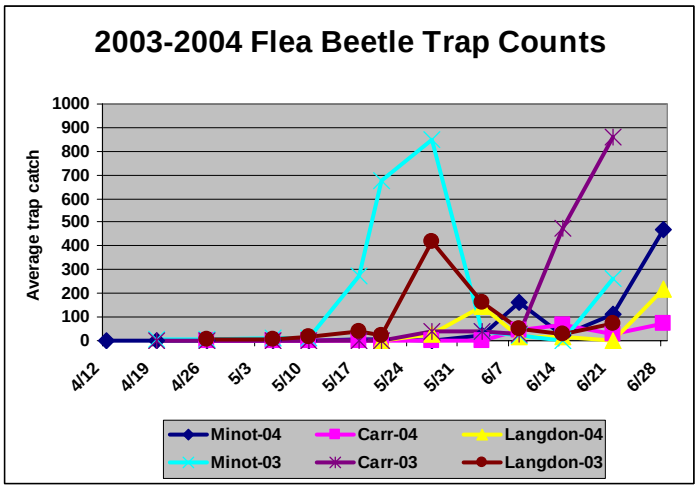
Materials and Methods

Trials assessing the different insecticide seed treatments were conducted in research plots located at the North Central Research Extension Center (REC) 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 7 May in Langdon and 17 May in Minot and Carrington. The seeding rate was approximately 14-17 pure live seeds per sq. foot. A RCB experimental design with four replicates was used. To evaluate flea beetle damage, assessments were taken at approximately 18, 27, and 34 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. Percent coverage (% of land area in plot that was covered with canola seedlings) was estimated on 34 DAP. Roundup (1 pt./acre) + AMS was applied for weed control early in the season. Plots were harvested on 12 Aug in Minot, 9 Sep in Carrington, and 17 Sep in Langdon. Variables were subjected to ANOVA and means compared using Fisher's PLSD at the 5% significance level.

Results and Discussion

Flea Beetle Populations:

During 2003 and 2004, the spring emergence of flea beetle was delayed due to the cool, wet early May (Fig. 1). In 2004, flea beetles were ready to emerge as the canola seedlings were emerging in late May and first week of June. This was the major peak of activity, and spring emergence continued until late June. However, flea beetle populations were much lower in 2004 than 2003. There was no strong peak of spring trap catches in 2004 compared to 2003. The average trap catch for 2003 and 2004, respectively, was 13 and 181 beetles per trap day in Minot, 4 and 181 beetles per trap day in Carrington, and 7 and 85 beetles per trap day in Langdon. Overall, flea beetle population decreased at trap sites. The cool and wet weather caused a prolonged delay in flea beetle emergence and feeding, and this may have demised their energy reserves. As a result, the overwintering mortality was probably higher than normal in 2004.



Flea Beetle Damage Ratings and Yield (Table 1-3):

There were no significant differences in flea beetle damage ratings on 19 DAP, regardless of the location. Flea beetles had not moved into plots to feed yet, due to the cool spring temperatures delaying emergence. All of the insecticide seed treatments had a lower damage rating than the untreated checks (fungicide seed treatment). In addition, the two high rates of insecticide seed treatments, Helix xtra and Prosper 400, usually had a lower damage rating than the two low rates of insecticide seed treatments, Helix lite and Prosper 200. For percent coverage, insecticide seed treatments had significantly higher percent coverage than the two untreated checks, but insecticide treatments were usually not significantly different from each other. At Langdon and Carrington, there were no significant differences in yield. At Minot, all of the insecticide seed treatments had a higher yield than the untreated check. However, only Helix xtra had significantly higher yield than untreated checks. Overall, the high rate of insecticide seed treatments averaged 445 lb/acre more than the untreated checks (428 lb/acre for Helix xtra and 461

lb/acre for Prosper 400); and the low rate of insecticide seed treatments averaged 294 lb/acre more than the untreated checks (277 lb/acre for Helix lite and 311 lb/acre for Prosper 200).

Table 1. Minot.

Treatment/ formulation	Rate g AI/100 kg	18 DAP[a] Rating 1 1-6[b]	27 DAP[a] Rating 2 1-6[b]	34 DAP[a] Rating 3 1-6[b]	34 DAP[a] % Coverage	Yield lb/acre
Untreated check A		1.0a	4.8a	5.2a	7.5a	476a
Untreated check B		1.0a	4.8a	5.3a	7.5a	447a
Helix xtra	400	1.0a	1.0c	1.8c	55.0b	1011b
Prosper 400	400	1.0a	1.0c	1.9bc	57.5b	798ab
Helix lite	200	1.0a	1.5bc	2.3b	45.0b	786ab
Prosper 200	200	1.0a	1.9b	2.4b	45.0b	728ab
LSD(P=.05)		***NS***	***0.5***	***0.5***	***10.3***	***321***
CV		***0.0***	***12.0***	***9.8***	***18.9***	***30.1***
Grand Mean		***1.0***	***2.5***	***3.1***	***36.3***	***708***

Means within a column followed by the same letter are not significantly different (ANOVA, Fisher's PLSD, P<0.05).
[a] DAP = Days After Planting
[b] 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.

Table 2. Carrington.

Treatment/ formulation	Rate g AI/100 kg	18 DAP[a] Rating 1 1-6[b]	27 DAP[a] Rating 2 1-6[b]	34 DAP[a] Rating 3 1-6[b]	34 DAP[a] % Coverage	Yield lb/acre
Untreated check A		1.0a	4.5a	5.1a	17.5a	1966a
Untreated check B		1.0a	4.5a	5.1a	8.8a	1669a
Helix xtra	400	1.0a	2.5c	2.8c	50.0c	2221a
Prosper 400	400	1.0a	2.6c	3.1c	50.0c	2382a
Helix lite	200	1.0a	3.6b	3.9b	33.8b	1955a
Prosper 200	200	1.0a	3.1bc	4.0b	41.3bc	2226a
LSD(P=.05)		***NS***	***0.6***	***0.4***	***9.5***	***NS***
CV		***19.9***	***11.4***	***6.1***	***18.8***	***18.2***
Grand Mean		***0.09***	***3.5***	***4.0***	***33.5***	***2070***

Means within a column followed by the same letter are not significantly different (ANOVA, Fisher's PLSD, P<0.05).
[a] DAP = Days After Planting
[b] 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.

Table 3. Langdon.

Treatment/ formulation	Rate g AI/100 kg	18 DAP[a] Rating 1 1-6[b]	27 DAP[a] Rating 2 1-6[b]	34 DAP[a] Rating 3 1-6[b]	34 DAP[a] % Coverage	Yield lb/acre
Untreated check A		1.0 a	5.4 a	4.8 a	13.8 a	2003 a
Untreated check B		1.0 a	5.5 a	5.0 a	10.0 a	1823 a
Helix xtra	400	1.0 a	4.4 b	2.0 c	48.8 c	2366 a
Prosper 400	400	1.0 a	4.5 b	2.3 c	46.3 c	2271 a
Helix lite	200	1.0 a	4.6 b	3.0 b	42.5 bc	2329 a
Prosper 200	200	1.0 a	5.1 ab	3.4 b	32.5 b	2127 a
LSD(P=.05)		***NS***	***0.7***	***0.6***	***10.4***	***NS***
CV		***0.0***	***9.1***	***11.4***	***21.8***	***13.1***
Grand Mean		***1.0***	***4.9***	***3.4***	***32.3***	***2153***

Means within a column followed by the same letter are not significantly different (ANOVA, Fisher's PLSD, P<0.05).
[a] DAP = Days After Planting
[b] 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.