

DuPont's studies have shown less flea beetle feeding on canola seedlings which received the Lumiderm seed treatment. On average, flea beetles feed on untreated and standard seed treated seedlings for 7 minutes and 42 seconds, respectively. In contrast, flea beetles ceased feeding in only 13 seconds on seedling which received the Lumiderm seed treatment. With the absence of flea beetles in the laboratory, Dr. Bob Elliot (AAFC-Saskatoon) found instances where canola seed treated with Lumiderm + a standard seed treatment produced seedling biomass which was statistically greater than the standard seed treatment alone. Moreover, Lumiderm is the only seed treatment product registered to provide cutworm control. Using NDVI (Normalized Difference Vegetation Index) imagery from satellites and drones, DuPont has observed greater crop biomass production in field scale strips that were treated with Lumiderm + Helix Vibrance versus Helix Vibrance alone. Grain yields from these Lumiderm treated strips were also substantially greater.

To be able to demonstrate this to local farmers, two separate but simultaneous demonstrations were set up at the AAFC Scott Research Farm in 2015. Both trials were 2 x 2 factorials arranged as randomized complete block designs with four replicates. The factors were two seeding rates (low and recommended) and the two seed treatments (Proper EverGol and Proper EverGol + Lumiderm for the Liberty Link (L252) canola; Helix Vibrance and Helix Vibrance + Lumiderm for the Roundup Ready canola (D3155C)).

Generally, seeding rate had significant effect on plant density at one and three leaf stages and plant dry weight in both trials (Table 1). Neither seed treatment nor seeding rate x seed treatment interaction had significant effects on plant population and dry weight, except in L252 where plant population at the third leaf stage was significantly affected by seed treatment ($P = 0.0091$) (Table 1). Increasing seeding rate from 60 to 120 seed/m² in both trials resulted in a significant increase in plant population from to 42 and 85 plants m², respectively.

The significant difference in dry matter between the 60 seed/m² and 120 seed/m² in both canola varieties may be because high seeding rates increase early dry matter accumulation and weed competitiveness (Park et al., 2003). However, there was no significant difference in grain yield between the 60 and 120 seed/m² may be due to increased inter-plant competition or because canola can compensate at very low plant populations to result in similar yield potential at both seeding rates.

Table 1: Effects of seeding rate, seed treatment and their interaction on measured response variable in canola in both trials 1 and 2 at Scott, SK in the 2015 growing season.

Trial 1 (L252 variety)			
Effects	Seeding Rate (SR)	Seed Treatment (ST)	SR x ST
<i>Plants/m² (@ 1 leaf stage)</i>	<.0001	0.0874	0.7739
<i>Flea Beetle (%)</i>	0.3087	0.1506	0.9079
<i>Plants/m² (@ 3 leaf stage)</i>	<.0001	0.0091	0.8714
<i>Root Maggot (#)</i>	0.2143	0.3336	0.2143
<i>Dry weight (kg/ha)</i>	0.0011	0.0841	0.9993
<i>Yield (kg/ha)</i>	0.6866	0.1034	0.7370
Trial 2 (D3155C variety)			
<i>Plants/m² (@ 1 leaf stage)</i>	<.0001	0.1561	0.1139
<i>Flea Beetle (%)</i>	0.4105	0.6774	0.6774
<i>Plants/m² (@ 3 leaf stage)</i>	0.0038	0.6617	0.3804
<i>Root Maggot (#)</i>	0.1582	0.5534	0.2495
<i>Dry weight (kg/ha)</i>	0.0035	0.1289	0.3872
<i>Yield (kg/ha)</i>	0.0744	0.6699	0.7156

From the study, based the contribution of seeding rate and seed treatment on canola competitiveness and yield, additional seed treatment may only be warranted when there is a high risk of heavy flea beetle infestation. Provided growing conditions are good and all other stress is minimal, canola may sustain considerable damage without losing substantial yield. At moderate to low flea beetle infestation levels, the added cost of Lumiderm may not be justifiable. Under that condition, however, producers may focus on seeding canola at the recommended or higher seeding rate with a standard seed treatment, provided the additional seed cost is less than that of the added seed treatment (Lumiderm).

Read the full report at:

<http://www.westernappliedresearch.com/research/warc-annual-reports/2015/>

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