

XI SEED TREATMENT TRIAL

Objective: To evaluate the impact of new seed treatments on seedling diseases and insect control for canola as it relates to yield, quality and contribution margins.

Background: The most widespread problem of canola production is stand establishment. Poor stand establishment may be caused by a seedling disease complex including pathogens such as *Rhizoctonia solani*, along with *Fusarium* and *Pythium* species. Seed treatment fungicides are used extensively in canola production as a first line of defence to control seedling diseases. In addition, some new insecticide products are being evaluated to determine their effectiveness for flea beetle control.

Methodology: The seed treatment trial included the following treatments:

- A) Foundation (check)
- B) Foundation Lite (check)
- C) Foundation Premium
- D) Foundation Plus
- E) Gaucho Platinum
- F) Titan FL
- G) Helix
- H) Helix Xtra

The following flea beetle damage guide was used to estimate the percentage of (shot hole) damage to leaf area using the following scale:

- 0 = No leaf damage
- 1 = Less than 10 % leaf damage
- 2 = 11 to 25 % leaf damage
- 3 = 26 to 50 % leaf damage
- 4 = 51 to 75 % leaf damage
- 5 = 76 to 100 % leaf damage

For assistance in estimating percent damage use the Flea Beetle Damage Guide (BASF).

All seed treatments were applied to the same seed lot of the Roundup Ready variety DKL34-55. All other agronomic practices remained the same.

Western Canadian Summary:

CPC Location	Dauphin MB		Grenfell SK		Naicam SK		Lethbridge (Irr) AB	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SEED TREATMENT TRIAL								
Foundation (check)	34.4	71	33.2	78	28.8	71	30.0	53
Foundation Lite (check)	32.7	61	29.9	57	26.6	57	24.0	13
Foundation Premium	34.0	N/A	34.5	N/A	31.0	N/A	29.9	N/A
Foundation Premium Plus	32.7	N/A	36.0	N/A	30.2	N/A	28.7	N/A
Gaicho Platinum	35.0	64	35.3	82	30.4	72	30.5	58
Titan FL	33.8	N/A	35.8	N/A	30.1	N/A	30.5	N/A
Helix	33.0	57	34.4	82	30.7	80	30.0	50
Helix Xtra	34.0	57	36.8	92	31.0	75	31.7	57

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data (\$/ac)
 N/A - At time of writing, no cost figures were available for these seed treatments.
 Trial sites were chosen in areas where high numbers of flea beetles were expected. The Foundation Lite (fungicide only) treatments would normally have been sprayed with a foliar insecticide for flea beetle control. In these trials, a foliar insecticide was not applied.

DAUPHIN

Methodology:

Rains and extremely wet soil conditions during early May delayed seeding until May 29. The in-crop herbicide application included Roundup Transorb at 0.5 L/ac. All other agronomic practices were performed as described in the *Site Information*.

Observations:

Emergence was quick due to adequate soil moisture and warm temperatures. No disease symptoms were observed at the seedling stage. There was flea beetle pressure, but significant damage was done only to the Foundation Lite treatment because no insecticide component was present. However, damage was limited to loss of leaf area, as the plant population remained the same as the other treatments. The other treatments had a few shot holes, but little damage was done to affect total leaf area. Throughout the growing season, the Foundation Lite treatment was several days behind in growth compared to the rest of the trial. At swathing, the Foundation Lite treatment was one to two days behind in maturity. The population of lygus bugs was very low (0.2-0.3 per sweep). Flea beetles were present at swathing which raises concerns for high flea beetle populations next spring.

Results:

Table 1. Average number of emerged (plants/m²)

Treatment	7 DAE	14 DAE	21 DAE
Foundation (check)	118	145	98
Foundation Lite (check)	112	139	100
Foundation Premium	123	140	113
Foundation Premium Plus	122	140	102
Gaucho Platinum	125	134	104
Titan FL	120	143	106
Helix	135	141	100
Helix Xtra	124	156	110

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% of leaf area damaged)

Treatment	7 DAE	14 DAE	21 DAE
Foundation (check)	0	0	0
Foundation Lite (check)	26-50	1-10	0
Foundation Premium	0	0	0
Foundation Premium Plus	0	0	0
Gaucho Platinum	0	0	0
Titan FL	0	0	0
Helix	0	0	0
Helix Xtra	0	0	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Dauphin, MB			
Treatment	Yield (bu/ac)	Contribution Margin (\$/ac)	Oil (%)
Foundation (check)	34.4	71.30	43.1
Foundation Lite (check)	32.7	60.50	43.2
Foundation Premium	34.0	N/A	43.3
Foundation Premium Plus	32.7	N/A	42.9
Gaucho Platinum	35.0	64.40	43.8
Titan FL	33.8	N/A	43.4
Helix	33.0	57.32	43.9
Helix Xtra	34.0	57.10	43.5
LSD	1.71		0.50
CV%	4.2		1.0

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion:

Seed treatment did not appear to have a large impact on plant density, and only the Foundation Lite treatment which had no insecticide, suffered significant flea beetle damage. While maturity was delayed throughout the season in this treatment, the crop recovered reasonably well with respect to yield. Only Gaucho Platinum produced a statistically significant yield advantage over the Foundation Lite. All treatments graded #1, and only Helix and Gaucho Platinum provided a significantly higher oil content than the checks.

GRENFELL**Methodology:**

Seeding took place on May 16. The Roundup Ready variety DKL34-55 was seeded at 6.2 lb/ac. A fertilizer blend of 10-25-10-5 (actual) was seed- placed for all treatments. Vantage Plus was applied at _ L/ac at the 2 to 3-leaf stage of the crop. A fungicide was also applied to control sclerotinia stem rot.

Observations:

Excellent moisture and warm soil temperatures resulted in rapid emergence. Emergence occurred on May 27. Canada thistle, wild buckwheat and volunteer barley were the predominant weeds. Weed pressure was moderate in most areas. In-crop weed control was good. Flea beetle infestations were sporadic. Shot hole damage was in excess of 25 % in some areas during early plant development. Plants outgrew damage because of excellent growing conditions. The Foundation Lite treatment was delayed by three to four days during early plant development due to flea beetle damage. There were no lygus bugs observed at this site.

Results:**Table 1. Average number of emerged (plants/m²)**

Treatment	8 DAE	15 DAE	22 DAE
Foundation (check)	133	140	138
Foundation Lite (check)	124	133	134
Foundation Premium	134	143	141
Foundation Premium Plus	133	142	142
Gaucho Platinum	133	146	145
Titan FL	141	148	146
Helix	136	145	144
Helix Xtra	137	144	144

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	8 DAE	15 DAE	22 DAE
Foundation (check)	0	1-10	1-10
Foundation Lite (check)	1-10	26-50	11-25
Foundation Premium	0	1-10	1-10
Foundation Premium Plus	0	0	0
Gaicho Platinum	0	0	0
Titan FL	0	0	0
Helix	0	0	0
Helix Xtra	0	0	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Grenfell, SK			
Treatment	Yield (bu/ac)	Contribution Margin (\$/ac)	Oil (%)
Foundation (check)	33.2	78.25	44.1
Foundation Lite (check)	29.9	56.90	43.6
Foundation Premium	34.5	N/A	44.1
Foundation Premium Plus	36.0	N/A	43.5
Gaicho Platinum	35.3	82.38	44.6
Titan FL	35.8	N/A	43.8
Helix	34.4	82.20	43.9
Helix Xtra	36.8	91.89	44.8
LSD	2.65		0.75
CV%	5.3		1.2

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion:

Flea beetle damage was moderate (up to 50 %) in the Foundation Lite treatment. Reduced leaf area at early plant development, from flea beetle damage in the Foundation Lite treatment resulted in a significantly lower yield. Oil content varied significantly among treatments. All treatments graded #1. Contribution margins reflect yield variation and seed treatment costs.

NAICAM

Methodology:

Seeding took place on May 5. The Roundup Ready variety DKL34-55 was seeded at 6.2 lb/ac. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Vantage Plus was applied at _ L/ac at the 2 to 3-leaf stage of the crop.

Observations:

Climatic conditions (see *Site Information - Comments*) delayed emergence until May 22. Canada thistle, wild buckwheat and volunteer wheat were the predominant weeds. Weed pressure was moderate in most areas. In-crop weed control was good. Flea beetle damage increased by the first week of June. Shot hole damage in some areas was in excess of 50 %. Newly emerging leaves in the Foundation Lite treatment were unable to recover from flea beetle damage. Damage was consistent across all replicates of the Foundation Lite treatment. The Foundation Lite treatment was delayed by six to seven days during early plant development due to flea beetle damage. There were no lygus bugs observed at this site.

Results:**Table 1. Average number of emerged (plants/m²)**

Treatment	6 DAE	13 DAE	22 DAE
Foundation (check)	28	164	152
Foundation Lite (check)	30	162	164
Foundation Premium	28	177	146
Foundation Premium Plus	32	176	150
Gacho Platinum	36	182	188
Titan FL	29	156	172
Helix	40	165	168
Helix Xtra	42	154	170

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	6 DAE	13 DAE	22 DAE
Foundation (check)	11-25	1-10	0
Foundation Lite (check)	11-25	51-75	1-10
Foundation Premium	1-10	1-10	0
Foundation Premium Plus	1-10	1-10	0
Gacho Platinum	1-10	1-10	0
Titan FL	1-10	1-10	0
Helix	1-10	1-10	0
Helix Xtra	1-10	1-10	0

DAE = Days After Emergence

Table 3. Yield and quality data

SEED TREATMENT TRIAL Naicam, SK			
Treatment	Yield (bu/ac)	Contribution Margin (\$/ac)	Oil (%)
Foundation (check)	28.8	71.07	43.9
Foundation Lite (check)	26.6	57.15	44.7
Foundation Premium	31.0	N/A	44.6
Foundation Premium Plus	30.2	N/A	44.6
Gaucho Platinum	30.4	71.85	44.1
Titan FL	30.1	N/A	44.2
Helix	30.7	79.75	44.2
Helix Xtra	31.0	75.26	44.4
LSD	1.90		0.74
CV%	4.4		1.2

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion:

Rain during the third week of May caused a dramatic increase in plant counts taken thirteen days after emergence. Flea beetle damage was moderate to heavy (up to 75 %) in the Foundation Lite treatment. Reduced leaf area at early plant development, from flea beetle damage in the Foundation Lite treatment, resulted in a significantly lower yield. Oil content was significantly lower for the Foundation treatment compared to Foundation Lite. All treatments graded #1. Contribution margins reflect yield variation and seed treatment costs.

LETHBRIDGE (IRRIGATION)

Methodology:

This trial was seeded on May 9 at a rate of 4 lb/ac.

Observations:

Emergence was even across all treatments and flea beetles were present. Flea beetle damage was the highest in the Foundation Lite treatment (See *Table #2*). Sweep net samples were conducted to determine lygus bug and cabbage seed pod weevil numbers. Sweep net results revealed that there were minimal differences among the treatments (See *Table #3*). The flea beetle damage on the Foundation Lite treatment delayed flowering three to five days. Foundation Lite treatment took 99 days to mature while all other treatments took 96 days.

Results:

Table 1. Average number of emerged (plants/m²)

Treatment	6 DAE	14 DAE	24 DAE
Foundation (check)	111	95	93
Foundation Lite (check)	78	80	73
Foundation Premium	92	96	88
Foundation Premium Plus	95	101	91
Titan FL	98	103	95
Gaucho Platinum	110	99	96
Helix	134	112	98
Helix Xtra	96	99	101

DAE = Days After Emergence

Table 2. Flea beetle damage assessment (% leaf area damage)

Treatment	6 DAE	14 DAE	24 DAE
Foundation (check)	1-10	11-25	1-10
Foundation Lite (check)	11-25	26-50	51-75
Foundation Premium	1-10	1-10	11-25
Foundation Premium Plus	1-10	1-10	1-10
Titan FL	0	1-10	1-10
Gaucho Platinum	1-10	11-25	11-25
Helix	0	1-10	1-10
Helix Xtra	0	1-10	1-10

DAE = Days After Emergence

Table 3. Lygus Bug/Cabbage seed pod weevil #'s (per 10 sweeps)

Treatment	Lygus Bugs		Cabbage Seed Pod Weevil	
	July 3	July 24	July 3	July 24
Foundation (check)	8	1	25	2
Foundation Lite (check)	5	1	18	2
Foundation Premium	6	1	27	1
Foundation Premium Plus	5	2	25	2
Titan FL	7	1	28	1
Gaucho Platinum	5	1	32	1
Helix	10	1	28	1
Helix Xtra	7	1	29	1

Table 4. Yield and quality data

SEED TREATMENT TRIAL Lethbridge, AB (Irrigation)				
Treatment	Yield (bu/ac)	Contribution Margin (\$/ac)	Ground Cover % (June 15)	Oil (%)
Foundation (check)	30.0	52.62	92	42.9
Foundation Lite (check)	24.0	12.72	52	42.3
Foundation Premium	29.9	N/A	94	42.7
Foundation Premium Plus	28.7	N/A	96	42.6
Gaucho Platinum	30.5	58.20	97	42.9
Titan FL	30.5	N/A	98	42.6
Helix	30.0	49.94	98	42.8
Helix Xtra	31.7	57.22	100	42.7
LSD	2.66			0.54
CV%	7.5			1.1

Note: N/A - At time of writing, no cost figures were available for these seed treatments.

Discussion:

The Foundation Lite treatment yielded significantly lower than all other treatments. Helix Xtra yielded significantly higher than Foundation Premium Plus. This year, flea beetle populations flourished due to warm and dry weather. Populations were high enough to cause some damage to all treatments 14 days after emergence, the most severe being the Foundation Lite treatment. Even with good fertility and moisture the Foundation Lite treatment never fully recovered. Ground cover measurements completed June 15 were similar among all treatments with the exception of Foundation Lite, which had 52 % ground cover.