2025 Minnesota Canola Production Center (CPC)

Cooperative Project with the Minnesota Canola Council and the University of Minnesota

2025 Research Summary Report

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CPC Site Agronomists

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Minnesota Production Center Results

Acknowledgements

The Minnesota Canola Production Center (CPC) is a public-private partnership between the Minnesota Canola Council and the University of Minnesota.
The efforts of many individuals, companies, organizations, and agencies make it possible to conduct this field research in support of the canola industry. The products, services, information, and financial support provided by local and regional sponsors are, in large part, responsible for the success of the CPC. This generous support makes the Minnesota CPC a research project that benefits not only canola growers in Minnesota, but canola growers in the entire region.

A special thank you goes to Richard Magnusson and Magnusson Farms for providing the land and making provisions for canola research trials in 2025.

SITE INFORMATION - 2025 MN Canola Production Center (CPC)

Location: One mile west of Roseau South of Hwy 11

Cooperator: Richard Magnusson and Magnusson Farms

Previous Crop: Oats

Soil Test Results:

Nitrogen - 0-6'	17 ppm
Nitrogen - 6-24"	18 ppm
Phosphorous -	5 ppm
Potassium -	106 ppm
Target Yield Goal	2,500 #/ac
Fertilizer Applied (#/ac):	N - 140; P - 20; K - 40 S - 20s
%Organic Matter:	3.7
Soil pH:	8.0

Tillage Operations: Field cultivator (2x) in the fall of 2024. In the spring of 2025, a single pass with a ProTill high speed disc with rolling baskets. All plots were rolled after seeding to improve seed-soil contact.

Fertilizer Applied: All small plot trials received 140-20-40-20S on 5/7/25 and was incorporated with the last tillage pass in the spring.

Seeding Method: Small plot trials were seeded with a 5' Hege plot seeder.

Herbicides Applied: Section 3 at 4 oz/ac + 1% crop oil + Warrior 1.5 oz/ac was applied to the entire area, except for the flea beetle trial which received section 3 only, for general grass and flea beetle control on 6/7/25. The herbicides listed below were applied to the appropriate canola varieties.
A) Liberty Link (LL) hybrids - Liberty 280SL 26 fl. oz/ac + AMS @ 2.5% on 6/14/25.

B) Roundup Ready (RR) and Truflex hybrids - Roundup Power Max 16 fl. oz/ac + AMS @ 2.5% on 6/15/25.

Fungicides Applied: Due to the differential canola emergence, a split application of Proline at 5.7 oz/ac was applied to all plots for white mold management on 6/27 and again on 7/2/25.

Swathing: Canola VT plots were swathed on 8/14/25

Direct Harvest: Canola was direct harvested on 9/8 and 9/9/25

Comments:
The fall of 2024 and winter of 2025 was dryer and warmer than average. This trend followed into the spring of 2025. North Dakota Agricultural Weather Network (NDAWN), at the U of MN Magnusson Research Farm, recorded above average daily high temperatures during the spring of 2025. For example, the average daily high temperatures in March was 3, April 3 and May 7 degrees above average. A hot and dry air pattern moved in over the weekend of May 10th and the daily high temperatures above 90 F were recorded from May 11-15. A record high temp of 97 F was recorded on May 11th. This hot and dry weather system brought high winds and relative humidity levels in the 15-25% range. These high temperatures were widespread in northern Minnesota as International Falls reached a maximum temperature of 96 F, which shattered the old daily record of 83 F, and became the highest temperature ever recorded so early in the season at that station.

The winter of 2025 had Palmer drought index ratings in the abnormally dry range. Due to the limited spring precipitation in April, May and June the Palmer drought index moved into the moderate drought category during these three months. Above average rainfall in July resulted in normal canola growth and development for the remainder of the year.

The 2025 canola production center (CPR) was located 1 mile west of Roseau. Magnusson Farms agreed to provide the land for the 2025 CPC small plot research field research trials. Primary tillage at the CPC was completed in the fall of 2024. Fertilizer was applied and incorporated on May 7. All canola trials at the CPC were seeded on May 8, except the no-till trial which was seeded on May 28. Dry soil conditions before and after seeding influenced canola emergence. With dry soil conditions some of the canola seeds were placed in dry soil while others were placed in moisture. NDAWN soil temperature after planting recorded 4 inch soil temperatures in the mid- to- high 60's for a week after planting. With this elevated soil temperatures, the canola seed that was placed in moisture emerged in less than a week while seeds in dry soil didn't emerge until 0.98 inches of rain fell on May 15&16. The rainstorms over May 15&16 brought a change in the weather system and daily high temperatures were in the mid 40's to low 60's and soil temperatures at a 4 inch depth were in the high 40's to mid-50's for a week after this rain event.

The differential canola emergence observed at the CPC was also evident in the farmers canola production field planted in the same timeframe. A contributing factor to the uneven canola emergence was the tillage passes that were evident in both the small plot research and large farm canola field. A visual estimate of canola emergence was 40% early and 60% a couple weeks after the May 15th rain event.

The canola flowering date was influenced by the differential canola emergence. This differential canola emergence confounded the beginning and ending canola bloom period and white mold fungicide applications and management. Beginning and ending bloom notes were not taken in 2025 as the differential emergence patterns confounded the normal canola bloom period.

In 2025, the NDAWN predictive model at the CPC site for Sclerotinia forecasted a light to moderate probability of white mold in the early canola bloom period and an intermediate to high risk for late bloom period. For white mold management, a sequential fungicide treatment (Proline 5.7 oz) was applied on June 26th and again on July 2nd .

A hailstorm that produced quarter sized hail passed over the CPC on August 11th . The hail and the accompanying wind damaged the canola stems and pods. Canola was a couple days from swathing, and a decision was made not to apply fungicide treatments for late season diseases. Canola was swathed on August 14th. Roundup and Roundup/Sharpen was applied in the desiccation trial on August 15th . Harvest began with swathed canola on 8/26 and finished on 9/9 with the direct harvest canola.

Late season flea beetle and Bertha armyworm moth feeding were at a low levels in 2025. One location had diamondback moth levels above threshold levels in 2025. In addition to the CPC, two canola fields in Roseau County were surveyed on a weekly basis after flowering for bertha armyworm and diamondback moth. Two additional canola fields were surveyed on a weekly basis for Canola flower and Swede Midge. A late season flea beetle survey of direct harvest canola fields was conducted to determine the infestation levels of late season flea beetles.

The public canola trials conducted at the 2025 CPC included:

- Small plot canola variety trials
- Swath vs direct harvest canola trial
- Flea beetle seed treatment trial
- Late season flea beetle trial
- Residual effects on canola of pre-plant applied herbicides
- Desiccation as a harvest aid in canola
- Bertha armyworm and diamondback moth surveys
- Canola Flower and Swede Midge surveys
- Late season flea beetle survey

Canola Variety Trial

Objective:
To evaluate agronomic characteristics of canola varieties with different herbicide production systems (Liberty Link (LL) and Roundup Ready (RR) grown in the environmental conditions of northern Minnesota.

Background:
Canola varieties with new and emerging technology traits have given canola growers several options for weed control. Yield, lodging resistance, maturity, and crop quality are important traits for growers to consider when making canola variety selections. Canola seed companies were invited to submit current and pending varieties for entry in the canola variety trial for comparison in a small plot replicated research trial.

Methods:
Canola varieties were seeded at 10-12 PLS/ft.^{2} on 5/8. The experimental design was a randomized complete block (RCB) with four replications. Broadcast fertilizer rate of 140-20-40-20s applied to the entire area and incorporated prior to planting. The individual plot size was 6' x 30', and end-trimmed to a harvest area of 5' x 20'. The LL and RR canola varieties were seeded in separate blocks with buffers to reduce potential herbicide drift. Warrior at 1.5 + Section 3 at 4 oz/ac were applied to all plots on June 7th . Roundup was applied for general weed control on 6/15, and Liberty was applied on 6/14. A sequential treatment of Proline at 5.7 oz/ac was applied to all plots for white mold management. Canola was swathed on 8/14 and harvested on 8/26 & 27. The direct harvest canola was combined on 9/9. Harvested canola was cleaned, weighted and a sub-sample taken from each plot for moisture, percent oil content and other quality factors. Canola yields are adjusted to 8.5% moisture. Additional data collected include early season vigor and percent ground cover, stand counts at harvest, plant height and lodging.

Results:
A total of 32 canola lines were entered in the 2025 CPC (Table 1). A breakdown of the canola varieties: 21 LL and 11 RR varieties were evaluated in this small plot replicated research trial. The Roundup and Liberty canola varieties were planted in separate blocks in the field. In 2025, canola yields ranged from 1,786 to 3,118 #/ac with a trial average of 2,590#/ac. The trial average for LL swathed varieties was 2,626 and RR varieties was 2,379 #/ac. The LSD (0.05) for RR varieties was 331 with a CV of 9.3%. The LSD (0.05) for LL varieties was 325 with a CV of 8.6%.

A comparison of selected canola varieties to swathing and harvest compared to direct harvest is presented in Table 2. The mean yields for direct harvest of the 8 canola varieties (4 RR and 4 LL) was 2,696 and for swathing was 2,532 #/ac. The direct harvest mean of the four RR canola varieties was 2,476#/ac compared to the mean yield of the swathed canola was 2,336#/ac. The direct harvest mean for the four LL canola varieties was 2,915#/ac compared to the mean yield of the swathed canola at 2,762#/ac

A comparison of harvest method (swath and combine vs direct combine) the four RR and four LL canola varieties is listed in Table 3. The direct harvest canola yields (% increase) ranged from -20 to + 23%. The four RR canola varieties ranged from -20 to + 23 and for the four LL varieties ranged from -3 to + 11%. This data would suggest the RR canola varieties selected in this trial were influenced more by harvest method than the LL varieties. The data in this trial would suggest a trend for higher canola yields from direct harvest compared to swathing. However, this data set also points out the importance of knowing how a canola variety will respond to swathing and harvest compared to direct harvest.

A canola seed subsample was taken from each plot and a percentage protein, percent oil, test weight and oil partitioning are presented in Tables 1&2. The range in percent protein of the 32 canola varieties was 19.4 to 23.1 and the percent oil ranged from 42.8 to 46.2. This data is presented as a reference for specific canola varieties. This information may be useful in plant breeding efforts when looking at oil profiles of specific canola varieties.

Canola Seed Treatment Trials

Objective:

The objective of this trial was to evaluate several commercially available canola seed treatments for early season flea beetle control.

Methods:

This experiment was conducted at the CPC in Roseau, MN. The experimental design was a RCB with four replications. Two canola varieties were seeded in this trial. DK400TL (1-13) and LL350PC (14-16). The entire area was fertilized with a 140-20-40-20S blend and incorporated with a high speed disk prior to planting. Canola was seeded on 5/8. The individual plot size was 6’ x 30’ and end-trimmed to a harvest area of 5’ x 20’. With dry soil conditions some of the canola seeds were placed in dry soil while others were placed in moisture. This differential emergence confounded the flea beetle ratings. Section 3 at 4 oz/ac was applied to all plots on June 7th . Liberty was applied on 6/14. A sequential Proline application at 5.7 oz/ac was applied to all plots for white mold management. Canola plots were direct harvested on 9/9. Harvested canola was cleaned, weighted and a sub-sample taken from each plot for moisture, percent oil content and other quality factors. Canola yields were adjusted to 8.5% moisture. Additional data collected included: early season vigor and percent ground cover, stand counts after harvest, plant height and lodging.

The following sixteen treatments were evaluated in this seed treatment trial. Treatment 1-13 were on canola variety DK400TL and 14-16 LL350PC. In the Brigade split application treatment, the first application was to 1-2 leaf canola on 5/28, and the second Brigade application was applied on 6/5.

Trt#	Treatment	Rate (ounces)
1	Fungicide only Check	
2	Fungicide only + Brigade	2.6
3	Helix Vibrance	23
4	Helix Vibrance + Fortenza	23+10.2
5	Helix Vibrance + Fortenza + Brigade	23+10.2+2.6
6	Prosper Evergol (PE)	21.5
7	PE+ Lumiderm	21.5+9.8
8	PE+ Lumiderm + Brigade	21.5+9.8+2.6
9	PE+ Buteo Start	21.5+9.6
10	PE+ Buteo Start	21.5+16
11	PE+ Buteo Start +Brigade	21.5+9.6+2.6
12	Fungicide only +Brigade + Brigade	21.5+2.6 + 2.6
13	PE +Buteo Start+ Lumiderm	21.5+9.6+9.8
14	Fungicide only Check	
15	Fungicide Check + Brigade	2.6
16	Helix Vibrance	23

Results:

Flea beetle pressure was somewhat variable with the hot, dry weather early season but generally moderate in May and light in early June through the remainder of the growing season in 2025.

Canola yield results and other agronomic data for individual treatments are presented in Table 3. The LSD (0.05) for canola yields 213 with a CV of 5.2%. Canola seed yield from the fungicide check was 2,964 and 2,285 #/ac from DK 400 TL and LL 350 PC, respectively. At this location canola yields were higher from DK400TL than LL 350 PC. No differences were detected from any insecticide treatments compared to the fungicide check.

Canola No-till Burndown Trial

Objective:

The objective of this trial was to evaluate several herbicides in combination with Roundup for weed control and it's residual effects on no-till canola.

Methods:

The canola variety in this trial was L345PC with treatments arranged in a RCB design with 4 replications. The individual plot size was 6' x 30', end-trimmed to a harvest area of 5' x 20'. Broadcast fertilizer (140-20-40-20S) was applied on 5/7. The trial area was staked out and burndown treatments applied and plots planted on May 28th. After planting, individual plots were restaked. The weed population was light with the primary

weeds, volunteer cereals, wild oats, common lambsquarters, common dandelion, field pennycress and pennsylvania smartweed. Treatments were applied with a back-pack sprayer. Herbicides treatments and rate applied were:

Roundup PowerMax 24 oz.ac
Roundup PowerMax + Spartan at 2 oz/ac
Roundup PowerMax + Aim at 0.33 oz/ac
Roundup PowerMax + Aim at 0.33 oz/ac + Moxy at 12 oz/acre

The canola emergence and early season vigor was good, and no differences observed due to herbicide treatment. Section 3 at 4 oz/ac + Warrior at 1.5 oz/ac was applied to the entire plot area on June 11.The entire area received an application of Liberty at 26 oz/ac on 6/14. Proline at 5.7 oz was applied to all plots at 50% bloom for white mold management. Canola was harvested on 9/8. Harvested canola was cleaned, weighted and a sub-sample taken from each plot for moisture, percent oil content and other quality factors. Canola yields were adjusted to 8.5% moisture. Additional data collected included early season vigor and percent ground cover, canola stand counts, plant height and lodging.

Results:

Canola yield results and other agronomic data for individual treatments are presented in Table 4. Canola seed yields ranged from 2,106 to 2,520 #/ac. Canola yields from Roundup alone was 351 and from Roundup + aim was 414 #/ac more than the untreated. Roundup + Spartan and Roundup + aim + Moxy gave similar yields as the untreated. In this trial the statistical confidence levels at the 95% confidence level (LSD 0.05) was 290 with a CV of 8.4%.

This trial was conducted to evaluate several burndown herbicide that could be used in combination with Roundup for weed control in a no-till system. The results from this trial suggest that soil applied herbicide (Aim) may have utility for weed control when combined with Roundup applied as a burndown prior to canola planting. Further research should be conducted in no-till canola field with moderate to heavy weed pressure. Weed pressure at this site was light and future trial locations with more weed pressure will give a more accurate picture of herbicide performance when used as a burndown prior to canola planting.

Late Season Flea Beetle Trial

Objective:

The objective of this trial was to determine if late season flea beetle feeding has a negative impact on canola seed yield and if control of the flea beetles can impact yield.

Methods:

The entire area was worked with a high-speed disk in early May. A broadcast fertilizer rate of 140-20-40-20s applied to the entire area and incorporated prior to planting. Canola variety LL 340PC was seeded at 12 PLS/square foot on 5/8. The individual plot size was 6 x 30', end end-trimmed to a harvest area of 5 x 20'. Canola emergence was variable due to the hot dry weather conditions in early May. Section 3 at 4 oz/ac + warrior at 1.5 oz/ac was applied to the entire plot area on June 7. Liberty herbicide was applied for general weed control on 6/14. A sequential Proline at 5.7 oz/ac treatment was applied white mold management. The late season flea beetle trial was staked out and treatments applied with a back-pack sprayer. Canola was direct harvested on 9/9. The treatments in this late season flea beetle trial included:

- Untreated
- Brigade at 2.6 oz/ac on 8/11
- Brigade at 2.6 oz/ac on 8/18
- Brigade at 2.6 oz/ac on 8/25

Harvested canola was cleaned, weighted and a sub-sample taken from each plot for moisture, percent oil content and other quality factors. Canola yields are adjusted to 8.5% moisture. Additional data collected include early season vigor and percent ground cover, stand counts after harvest, plant height and lodging.

Results:

Canola yield results and other agronomic data for individual treatments are presented in Table 6. Canola seed yields ranged from 2,643 to 2,807 #/ac. Statistical analysis of the data indicated no treatment differences for yield, protein, oil, and test weight at the 95% level of confidence. The CV for this trial was 8.1%.

Late season flea beetle population was low in 2025. Flea beetle counts were less than 20/plant throughout the duration of this trial. Research from Canada suggest flea beetle populations have to be over 100/plant before canola seed yield is impacted from late season flea beetle feeding.

Canola Desiccation as a Harvest Aid Trial

Objective:

The objective of this trial was to evaluate several commercially available products that can be used as a desiccant in canola.

Methods:

The entire area for this trial was worked with a high-speed disk in early May of 2025. Broadcast fertilizer rate of 140-20-40-20s applied to the entire area and incorporated prior to planting. Canola variety L345PC was seeded at 12 PLS/square foot on 5/8. The individual plot size was 6 x 30', end end-trimmed to a harvest area of 5 x 20'. Canola emergence was variable due to the hot dry weather conditions in early May. Liberty herbicide was applied for general weed control on 6/14. A sequential treatment of Proline at 5.7 oz/ac was applied to the entire plot area white mold management. The desiccation trial was staked out and treatments applied with a back-pack sprayer. Canola was swathed on 8/14 and harvested on 9/9. The treatments in this desiccation trial included:

- Untreated
- Roundup 24 oz/ac + MSO (1%) + AMS (2%) applied on 8/15
- Roundup 24 oz/ac + Sharpen 2 oz/ac +MSO (1%) + AMS (2%) applied on 8/15
- Reglone 1.5 pints/ac + NIS (0.25%) applied on 8/25
- Sharpen 2 oz/ac + MSO (1%) + AMS (2%) applied on 8/25
- Swathed 8/14

Harvested canola was cleaned, weighted and a sub-sample taken from each plot for moisture, percent oil content and other quality factors. Canola yields are adjusted to 8.5% moisture. Additional data collected include early season vigor and percent ground cover, stand counts after harvest, plant height and lodging.

Results:

Canola yields and other agronomic data for individual treatments are presented in Table 6. Canola seed yields ranged from 2,299 to 2,437 #/ac. In this desiccation trial treatment differences were not detected between treatments at the 95% confidence level. The results of this trial indicate that Roundup + Sharpen gave similar canola yield as swathing. The canola stand at this trial was uniform at harvest and early season herbicides control resulted in a high level of season long weed control.

One of the field observations from the Roundup treatments was that the canola stalks were brown to the soil level. Canola stalks that were brown to the soil level had increased harvest efficiency compared to untreated. Canola in the Reglone and Sharpen alone treatments were green halfway down to the soil level. A consideration

for future trials would be to initiate desiccant trials in canola fields that are weedy and/or variable canola maturity.

There are two reasons to consider a desiccant in canola, 1) dry down weeds prior to harvest and, 2) dry down canola plants in fields that exhibit variable maturity. A contact desiccant like Reglone or Sharpen, will work quickly to dry canola plants and weeds when applied within 7 days of harvest. A systemic desiccant, like glyphosate, takes longer to act but will assist in a more thorough drying down of green weeds and making the canola plants more uniform dry prior to harvest. This will generally improve harvest efficiency.

Bertha Armyworm and Diamondback Moth Survey

Objective:

The objective of this survey was to determine the incidence and severity of Bertha Armyworms (BA) and Diamondback Moths (DBM) in canola fields at two locations in northwest Minnesota.

Methods:

In 2025, two canola fields were surveyed for BA and two fields for DBM. Pheromone traps were hung from a shepherd hook on the edge of canola fields. These traps were placed on the field edge of canola fields on 6/3/25. Both locations were in Roseau County. All traps were checked weekly, and the lantern BA traps, the moths were removed and the sticky boards of the DBM trap were replaced. Pheromone lures were changed after four weeks in the field. Traps were removed on 8/1/25.

Results:

Pheromone traps were effective in the capture of BA and DBM (Table 8).
Total number of BA and DBM were higher at Location 1 than location 2. Total BA capture was 55 at location 1 and 26 at location 2. Total DBM capture was 666 at location 1 and 62 at location 2. Survey results in 2025 indicate BA was below economic at both locations and DBM numbers were above threshold location one.

Canola Flower and Swede Midge Survey

Objective:

The objective of this survey was to determine the incidence and severity of canola flower and Swede midge in canola fields at two locations in northwest Minnesota.

Methods:

In 2025, two canola fields were surveyed for canola flower midge and two fields for Swede midge. Pheromone traps were hung from a shepherd hook on the edge of

canola fields. These traps were placed on the edge of canola fields on 6/9/25. All traps were checked weekly and the sticky boars replaced. Sticky boards were labeled and placed in a freezer. At the end of the trapping season these sticky boards were sent to Jan Knodel's Lab at NDSU. Pheromone lures were changed after four weeks in the field. Traps remained in the field until 8/1/25

Results:

Canola flower and Swede midges are new insect pests that have the potential to cause damage to canola grown in Minnesota. To date, economic thresholds levels have not been established for either of these insect species for canola grown in Minnesota. Swede midge was not detected from any of the traps in 2025. Pheromone traps were effective in the capture of canola flower midge although at low levels. Additional survey information will be required to determine the scope and intensity of these two insect species in canola.

Late Season Flea Beetle Survey

Objective:

The objective of this trial was to evaluate five canola fields in NW MN for late season flea beetles.

Methods:

In 2025, five canola fields were surveyed for late season flea beetle populations. Flea beetle surveys were conducted weekly from full pod development to harvest. Four stops were made at each field, and six canola plants were evaluated for flea beetles. Flea beetle populations were grouped in the following categories:
Low < 20 flea beetles/plant
Medium = 20-50 flea beetles/plant
High =50-75 flea beetles/plant
Very high > 100 flea beetles/plant

Results:

Late season flea beetle population was low at most locations in 2025. One site had a medium level of flea beetles for one week, but the next week populations were back to low levels. Research from Canada suggest flea beetle populations have to be over 100/plant before canola seed yield is impacted from late season flea beetle feeding. Results of this survey indicate that environmental conditions in 2025 were not favorable for late season flea beetle feeding in canola.

2025 Canola Production Center Research
Data Summaries for Minnesota

This summary and previous annual research summaries are on the Web at:
http://www.mncanola.org/CPC.php

Standard Management Practices for Canola Research Plots

Standard Management Practices for University of Minnesota Canola Small Plot Production Research

General management regime of research plots in Northern Minnesota:

Planting

Seeding rate=10-12PLS/ft.2 with 20# spring wheat
The wheat can aid canola emergence if a soil crust developes after a hard rain
It can also help protect young canola seedlings from wind damage
Seeder=5' Hege cone seeder with double disk openers and 6" rows
Target seeding depth= 3/4"
Plot size= 6' x 30' end trimmed to approximately 25'
Soil preparation-
Conventional fall- disk chisel/cultivator
Spring seedbed- conventional cultivate/harrow

Fertilizer application=140-40-40-20S applied
preplant incorporate prior to final seedbed tillage

Early season grass and flea beetle control-
Section 3(clethodim) + Grizzly II(lambdacyhalothrin)
about 3 weeks after planting (depending on flea beetle pressure)

General weed control-
Depending on herbicide tolerance of the variety, Roundup(glyphosate)
Liberty(glufosinate) applied approximately 5 weeks after planting

Fungicide application(white mold ie. Sclerotinia)
Proline applied at first petal drop-20% flowering

Harvest-
Option 1- direct harvest
At least 80% seed color change and 8-10% seed moisture
If problem amounts of green material(weeds or immature canola) exist,
desiccation with Roundup,Sharpen or Reglone can be 3 days to 2 weeks prior to combining

Option 2- swath
60% seed color change
Combine -10 days or more after swathing

Table 1.

2025 Canola Variety Trial
Magnusson Farms-Roseau,Mn

Entry#	Company	Variety	Herbicide Tolerance	Yield[1] #/acre[1]	% of mean[1a]	test weight	Harvest Ht(in.)	Plants/ft[3]	Protein[2]	Oil[2]	Palmitic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Erucic acid	Eicosenoic acid
Swathed [2]																	
Roundup Ready Varieties																	
1	Canterra Seeds	CS3200 TF	TF	**2634**	102	52.4	58	7.5	21.6	42.5	4.7	1.9	67.1	19.5	7.9	2.3	2.2
2	Canterra Seeds	CS3300 TF	TF	**2977**	115	51.8	60	6.9	19.5	45.0	4.5	1.9	60.5	20.0	9.4	1.0	1.1
3	Star Specialty Seed	StarFlex	TF	**1947**	75	52.2	58	6.8	21.4	44.4	4.4	1.6	64.8	21.6	10.6	1.4	1.3
4	CROPLAN	CP9978TF	TF	**1786**	69	52.2	59	6.5	23.1	42.8	4.5	1.5	66.4	22.2	11.3	1.8	1.0
5	BASF	InVigor LR354PC	LL/TF	**2003**	77	52.8	58	5.6	21.0	43.2	4.8	1.6	67.5	22.1	10.6	2.0	1.3
6	Dekalb	DK400TL	TF+LL	**2415**	93	51.4	62	6.8	20.0	45.3	4.6	1.5	64.9	22.3	11.7	1.7	0.4
7	Dekalb	DK401TL	TF+LL	**2888**	112	52.0	57	6.8	19.6	45.2	4.5	1.8	63.1	20.5	9.5	1.3	1.4
			LSD @ 5% level	**331**	12	0.2	7	1.9	0.6	0.8	0.1	0.1	7.7	0.5	2.1	0.3	0.7
			CV(%)	**9.3**	9	0.2	8	19.5	1.9	1.2	1.4	4.1	8	1.5	3	11	35
Swathed [2]																	
Liberty Link Varieties																	
12	BASF	InVigor L330PC	LL	**2491**	96	51.2	51	5.1	21.6	42.1	4.5	1.7	66.3	20.1	9.9	2.5	1.2
13	BASF	InVigor L333PC	LL	**2482**	96	51.9	52	5.2	20.7	43.0	4.7	1.9	69.2	19.8	9.1	2.2	0.9
14	BASF	InVigor L340PC	LL	**2669**	103	51.0	51	6.5	20.9	42.2	4.7	1.9	67.9	19.4	8.6	3.2	0.6
15	BASF	InVigor L343PC	LL	**2295**	89	51.0	51	5.4	21.5	43.1	4.6	1.8	68.1	19.9	9.9	3.0	0.4
16	BASF	InVigor L350PC	LL	**2964**	114	52.3	52	5.4	20.3	42.8	4.5	2.0	48.5	20.7	9.4	1.3	1.5
17	BASF	InVigor LR354PC	LL/TF	**2604**	101	52.4	52	4.8	19.4	45.1	4.6	1.7	68.9	21.1	10.2	1.7	1.9
18	BASF	EXP 1	LL	**2570**	99	52.0	52	5.9	19.9	45.0	4.5	1.8	57.4	21.0	10.6	1.3	1.0
19	CROPLAN	CP7250LL	LL	**2196**	85	52.2	52	5.4	23.0	43.7	4.3	1.7	67.5	19.9	9.1	1.8	2.1
20	CROPLAN	CP7500LL	LL	**2642**	102	51.9	52	5.3	21.5	45.6	4.5	1.7	60.8	20.4	10.4	1.5	1.3
21	Dekalb	DK800LL	LL	**3055**	118	52.0	52	7.3	19.5	44.6	4.5	2.0	51.8	20.3	9.6	1.6	0.8
22	Dekalb	DK801LL	LL	**2920**	113	51.9	52	7.8	21.3	43.9	4.4	1.7	56.2	20.9	11.0	1.8	0.6
23	Dekalb	DK400TL	TF+LL	**2697**	104	51.7	52	6.9	20.6	45.0	4.6	1.5	62.1	22.5	11.7	1.7	0.7
24	Dekalb	DK401TL	TF+LL	**3054**	118	52.2	52	8.1	19.8	44.6	4.5	1.9	55.5	20.3	9.5	1.4	1.1
25	Canterra Seeds	CS4000 LL	LL	**2482**	96	52.4	52	6.3	21.3	44.1	4.6	1.7	62.1	20.9	10.2	1.6	1.1
26	Canterra Seeds	CS4100 LL	LL	**3031**	117	51.6	52	6.1	19.8	45.8	4.5	1.6	59.2	22.3	11.7	1.7	0.4
27	Pioneer	P520L	LL	**2327**	90	52.4	52	7.6	22.2	43.6	4.5	1.7	59.6	21.0	10.8	1.9	0.5
28	Pioneer	P612L	LL	**2165**	84	52.5	52	5.9	22.5	43.3	4.7	1.7	58.8	21.7	11.0	2.1	0.1
			LSD @ 5% level	**322**	12	0.3	4	1.9	0.7	0.8	0.1	0.1	9	0.4	0.4	0.3	0.9
			CV(%)	**8.6**	9	0.4	5	22	2.3	1.3	1.1	4.9	10.3	1.3	3.1	11	69
	Overall	LSD @ 5% level		**325**		0.3	5	1.9	0.7	0.9	0.1	0.1	8.7	0.4	0.4	0.3	0.9
		CV(%)		**9**		0.4	5	21	2.2	1.4	1.2	5.0	9.9	1.5	3.1	11.0	59.0
			Mean of RR varieties	**2379**													
			Mean of LL varieties	**2626**													
			Mean of all swathed varieties	**2554**													
Direct Harvest																	
Roundup Ready Varieties																	
108	Canterra Seeds	CS3200 TF	TF	**2196**	85	51.4	60	6.3	21.3	42.9	4.5	1.9	66.4	18.9	7.5	2.1	2.6
109	Canterra Seeds	CS3300 TF	TF	**2985**	115	51.7	58	7.4	19.8	46.2	4.6	1.7	67.0	20.1	8.7	1.4	1.8
110	Star Specialty Seed	StarFlex	TF	**2402**	93	52.0	60	8.0	21.5	45.3	4.2	1.6	70.0	20.7	9.8	1.6	0.6
111	CROPLAN	CP9978TF	TF	**2322**	90	51.7	57	6.4	22.7	43.8	4.2	1.5	67.3	21.3	10.5	1.6	0.5
			LSD @ 5% level	194	8	0.1	6	2.0	0.4	0.6	0.1	0.1	1.1	0.4	0.3	0.2	0.2
			CV(%)	4.9	4.9	0.1	6	17.0	1.4	0.8	1.1	2.1	1.0	1.1	1.9	7.5	8.1
Mean of 4 RR lines- direct harvested				2476													
Direct Harvest																	
Liberty Link Varieties																	
129	BASF	InVigor L340PC	LL	**2987**	115	49.6	60	6.0	21.8	41.8	4.5	1.8	64.4	18.7	8.6	2.6	0.8
130	BASF	InVigor L343PC	LL	**2613**	101	49.7	60	6.0	21.8	42.2	4.4	1.7	62.6	19.4	9.7	2.6	0.9
131	Dekalb	DK800LL	LL	**3118**	120	51.9	60	6.8	20.3	45.6	4.6	1.7	65.6	20.5	8.9	1.6	2.1
132	Canterra Seeds	CS4100 LL	LL	**2942**	114	51.6	61	6.5	20.2	46.1	4.5	1.4	64.7	22.3	11.3	2.1	1.1
			LSD @ 5% level	308	11	0.2	4	1.8	0.5	1.8	0.1	0.1	1.7	0.2	0.3	0.2	0.3
			CV(%)	6.6	6.6	0.2	4	18.0	0.7	18.0	1.3	2.4	1.7	0.7	0.2	6.7	17
Mean of 4 LL lines- direct harvested				2915													
Mean of all 32 variety trial entries				**2590**													

Experimental Design: RCB w/4reps

Seeding rate=10-12PLS/Ft.[2] Planting Date- 5/8/2025

*Herbicide Tolerance--LL=Liberty Link, RR=Roundup Ready, Opt.Gly=Optimum Glyphosate Tolerant and TF=TruFlex Roundup Ready

[1]Clean Seed Yields corrected to 8.5% moisture.

[1a]% yield of mean of all 32 variety trial entries

[2]Straight combine plots were not desiccated prior to harvest.
Swathed plots were cut 8/14/2025 and combined 8/26/2025. Straight combine plots 9/9/2025.

[3]Plant counts per ft.2, post harvest

Fertilizer application- 140-20-40-20s applied PPI 5/7/2025.

Past crop= Oats-conventional tillage.

Table 2.

2025 Canola VT-Swath vs. Direct Harvest

Magnusson Farms-Roseau,Mn

Direct Harvest vs. Swath/Combine				Yield(#/acre)		Direct Harvest	Test weight		% oil	
Entry#	**Company**	**Variety**	Tolerance	*Direct*	*Swath*	% Increase	*Direct*	*Swath*	*Direct*	*Swath*
1/108	Canterra Seeds	CS3200 TF	TF	**2196**	**2634**	-20	51.4	52.4	42.9	42.5
2/109	Canterra Seeds	CS3300 TF	TF	**2985**	**2977**	0	51.7	51.8	46.2	45.0
3/110	Star Specialty Seed	StarFlex	TF	**2402**	**1947**	19	52.0	52.2	45.3	44.4
4/111	CROPLAN	CP9978TF	TF	**2322**	**1786**	23	51.7	52.2	43.8	42.8
14/129	BASF	InVigor L340PC	LL	**2987**	**2669**	11	49.6	51.0	41.8	42.2
15/130	BASF	InVigor L343PC	LL	**2613**	**2295**	12	49.7	51.0	42.2	43.1
21/131	Dekalb	DK800LL	LL	**3118**	**2920**	6	51.9	52.0	45.6	44.6
26/132	Canterra Seeds	CS4100 LL	LL	**2942**	**3031**	-3	51.6	51.6	46.1	45.8
mean yield of 4 direct vs swath				**2696**	**2532**	6				

			Herbicide	Yield[1]		test	Harvest		Seed Quality Components								
Entry#	**Company**	**Variety**	**Tolerance**	**#/acre[1]**	% of mean[1a]	weight	height(in.)	Plants/ft[3]	Protein[2]	Oil[2]	Palmitic	Stearic acid	Oleic	Linoleic	Linolenic	Erucic	Eicosenoic
Direct Harvest																	
Roundup Ready Varieties																	
108	Canterra Seeds	CS3200 TF	TF	**2196**	85	51.4	60	6.3	21.3	42.9	4.5	1.9	66.4	18.9	7.5	2.1	2.6
109	Canterra Seeds	CS3300 TF	TF	**2985**	115	51.7	58	7.4	19.8	46.2	4.6	1.7	67.0	20.1	8.7	1.4	1.8
110	Star Specialty Seed	StarFlex	TF	**2402**	93	52.0	60	8.0	21.5	45.3	4.2	1.6	70.0	20.7	9.8	1.6	0.6
111	CROPLAN	CP9978TF	TF	**2322**	90	51.7	57	6.4	22.7	43.8	4.2	1.5	67.3	21.3	10.5	1.6	0.5
			LSD @ 5% level	**194**	12	0.1	6	2.0	0.4	0.6	0.1	0.1	1.1	0.4	0.3	0.2	0.2
			CV(%)	**4.9**	8.7	0.1	6	17.0	1.4	0.8	1.1	2.1	1.0	1.1	1.9	7.5	8.1
Mean of 4 TF lines- direct harvested				2476													
Direct Harvest																	
Liberty Link Varieties																	
129	BASF	InVigor L340PC	LL	**2987**	115	49.6	60	6.0	21.8	41.8	4.5	1.8	64.4	18.7	8.6	2.6	0.8
130	BASF	InVigor L343PC	LL	**2613**	101	49.7	60	6.0	21.8	42.2	4.4	1.7	62.6	19.4	9.7	2.6	0.9
131	Dekalb	DK800LL	LL	**3118**	120	51.9	60	6.8	20.3	45.6	4.6	1.7	65.6	20.5	8.9	1.6	2.1
132	Canterra Seeds	CS4100 LL	LL	**2942**	114	51.6	61	6.5	20.2	46.1	4.5	1.4	64.7	22.3	11.3	2.1	1.1
			LSD @ 5% level	**308**	12	0.2	4	1.8	0.5	1.8	0.1	0.1	1.7	0.2	0.3	0.2	0.3
			CV(%)	**6.6**	8.7	0.2	4	18.0	0.7	18.0	1.3	2.4	1.7	0.7	0.2	6.7	17
Mean of 4 LL lines- direct harvested				2915													
Swathed [2]																	
Roundup Ready Varieties																	
1	Canterra Seeds	CS3200 TF	TF	**2634**	102	52.4	58	7.5	21.6	42.5	4.7	1.9	67.1	19.5	7.9	2.3	2.2
2	Canterra Seeds	CS3300 TF	TF	**2977**	115	51.8	60	6.9	19.5	45.0	4.5	1.9	60.5	20.0	9.4	1.0	1.1
3	Star Specialty Seed	StarFlex	TF	**1947**	75	52.2	58	6.8	21.4	44.4	4.4	1.6	64.8	21.6	10.6	1.4	1.3
4	CROPLAN	CP9978TF	TF	**1786**	69	52.2	59	6.5	23.1	42.8	4.5	1.5	66.4	22.2	11.3	1.8	1.0
			LSD @ 5% level	**331**													
			CV(%)	**9.3**													
Mean of 4 TF lines- swathed				2336													
Swathed [2]																	
Liberty Link Varieties																	
14	BASF	InVigor L340PC	LL	**2669**	103	51.0	51	6.5	20.9	42.2	4.7	1.9	67.9	19.4	8.6	3.2	0.6
15	BASF	InVigor L343PC	LL	**2295**	89	51.0	51	5.4	21.5	43.1	4.6	1.8	68.1	19.9	9.9	3.0	0.4
21	Dekalb	DK800LL	LL	**3055**	118	52.0	52	7.3	19.5	44.6	4.5	2.0	51.8	20.3	9.6	1.6	0.8
26	Canterra Seeds	CS4100 LL	LL	**3031**	117	51.6	52	6.1	19.8	45.8	4.5	1.6	59.2	22.3	11.7	1.7	0.4
			LSD @ 5% level	**322**													
			CV(%)	**8.6**													
Mean of 4 LL lines- swathed				2762													

table 3.

2025 Canola Flea Beetle Control-Seed Treatment

Magnusson Farm-Roseau,Mn

Trt#	Variety	Seed Treatment and Rate@oz./100# (**except Brigade applied post emergent**)	Seed Yield-#/acre 2025	2024	2024-25	Plants/ ft.	ht	#/bu	Protein[2]	Oil[2]
1	DK400TL	Fungicide Only	**2964**	**1880**	**2422**	6.5	57	51.7	19.7	46.4
2	DK400TL	Fungicide Only;**Brigade 2EC 2.6 FL OZ/A**	**2883**	**NA***	**NA***	6.0	57	51.6	19.6	46.8
3	DK400TL	Helix Vibrance 23 FL OZ/Cwt	**3017**	**2203**	**2610**	5.8	60	51.6	19.2	46.9
4	DK400TL	Helix Vibrance 23 FL OZ/Cwt;Fortenza 10.2 FL OZ/Cwt	**2901**	**2385**	**2643**	6.1	59	51.6	19.4	46.9
5	DK400TL	Helix Vibrance 23 FL OZ/Cwt;Fortenza 10.2 FL OZ/Cwt**;Brigade 2EC 2.6 FL OZ/A**	**2994**	**2214**	**2604**	7.6	57	51.5	19.1	46.8
6	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt	**2936**	**2294**	**2615**	6.1	57	51.6	19.2	46.9
7	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Lumiderm 9.8 FL OZ/Cwt	**3061**	**2343**	**2702**	6.8	58	51.7	19.2	46.6
8	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Lumiderm 9.8 FL OZ/Cwt;**Brigade 2EC 2.6 FL OZ/A**	**2980**	**2428**	**2704**	6.5	57	51.6	19.2	46.7
9	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Buteo Start 9.6 FL OZ/Cwt	**2889**	**2426**	**2657**	6.3	58	51.6	19.1	46.6
10	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Buteo Start 16 FL OZ/Cwt	**2961**	**2348**	**2654**	6.0	57	51.7	19.0	46.9
11	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Buteo Start 9.6 FL OZ/Cwt;**Brigade 2EC 2.6 FL OZ/A**	**2934**	**2305**	**2619**	6.0	58	51.7	19.2	46.7
12	DK400TL	Fungicide Only;**Brigade 2EC 2.6 FL OZ/A*****;Brigade 2EC 2.6 FL OZ/A***	**2819**	**2478**	**2648**	5.4	59	51.6	19.2	46.8
13	DK400TL	Prosper Evergol 21.5 FL OZ/Cwt;Buteo Start 9.6 FL OZ/Cwt;Lumiderm 9.8 FL OZ./Cwt	**2984**	**2349**	**2666**	5.5	59	51.6	19.4	46.7
14/1a	L350PC	L350PC - Fungicide Check	**2285**	**NA***	**NA***	6.8	62	51.5	20.3	45.4
15/2a	L350PC	L350PC - Fungicide Only;**Brigade 2EC 2.6 FL OZ/A**	**2169**	**NA***	**NA***	6.1	63	51.5	19.9	45.6
16/3a	L350PC	L350PC - Helix Vibrance 23 FL OZ/Cwt	**2409**	**2720**	**2564**	7.1	63	51.5	20.1	45.0
		LSD @5% level	**213***	**391**	**305**	2	4	0.1	0.4	0.8
		CV(%)	**5.2**	**11.6**	**9.2**	22	5	5.2	1.6	1.3

Experimental Design: RCB w/4reps

All direct harvested on 9/9/2025

Trt#1-3	**DK400TL**	**2948**	
Trt#1-3	**L350**	**2288**	
		660	22%

Brigade treatments applied- 5/28/2025 2:00pm 70F wind 5-8 WNW trt 2,5,8,11,12,&2a

Second Brigade application applied 6/5/2025 to treatment 12

Seeding rate=12PLS/Ft.^{2} Planting Date- 5/8/2025

* No significant difference in yields on treatments 1-13. Yield differences only in the reductions in treatments 14-16 based on variety.

[1]Clean Seed Yields corrected to 8.5% moisture.

[2] Protein and oil reported on dry matter basis.

<u>1st Brigade</u> app-6/17/2024
canola 1-2lf,67F 51%RH
wind NE5-7

<u>2nd Brigade</u> app-6/23/2024
canola-Early rosette stage
72F ,60%RH wind 5 ssw

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

table 4.

2025 Canola Weed Burn Down-No Till

Magnusson Farm-Roseau,Mn

Pre-plant Treatments applied 5/15/2024	**#/Acre[1] 2025**	#/Acre[1] 2024	Plant Count[3]	Protein[2]	Oil[2]	Test wt./bu	Harvest Height (in)
No treatment	**2106**	2687	7.4	24.2	38.9	52.8	54
Roundup PowerMaxII 24oz./ac	**2457**	2990	7.0	23.6	39.0	52.7	55
Roundup PowerMaxII 24oz./ac + 2oz. Spartan	**2009**	2934	9.4	24.0	38.9	53.0	55
Roundup PowerMaxII 24oz./ac +.33oz. Aim	**2520**	3160	7.1	24.0	39.2	52.8	56
Roundup PowerMaxII 24oz./ac + .33oz. Aim+ 120z Moxy(Buctril)	**2053**	3077	8.0	24.0	38.9	52.8	56
LSD @5% level	**290**	NS	2.0	1.2	0.9	0.3	NS
CV(%)	**8.4**	11	17.3	1.2	1.5	0.4	3.8

Experimental Design:RCB w/ 4reps

Planting date-5/28/2025 Variety= L340PC

Treatments applied 5/28/2025 pre-plant

Trade name	common name
Roundup PowerMaxII	glyphosate 4.5#/gal.
Spartan 4F	sulfentrazone 4#/gal.
Aim	carfentrazone 2#/gal.
Moxy(Buctril)	bromoxynil 2#/gal.

[1]Clean Seed Yields corrected to 8.5% moisture.

[2]Protein and oil reported on dry matter basis.

[3]Plant counts per ft.2, post harvest

table 5.

2025 Late Season Flea Beetle Pod Feeding Trial
Magnusson Farm-Roseau,Mn

Trt#	Treatment and Date	**#/Ac**[1]	Protein[2]	Oil[2]	Test wt/ #/bu.	Harvest Height (in)
1	No treatment-straight combine	**2690**	20.3	46.8	51.9	58
2	Brigade -2.6oz. 8/11	**2643**	20.3	46.9	51.9	57
3	Brigade-2.6oz. 8/18	**2807**	20.4	47.0	51.8	55
4	Brigade -2.6oz. 8/25	**2695**	20.3	47.2	51.9	57
	LSD @5% level	**NS**	NS	NS	NS	NS
	CV(%)	**8.1**	1.1	0.8	0.3	6.3

Experimental Design: RCB w/4reps. Variety=DK400TL

A buffer plot was seeded between treatments and mowed down on 8/11/2025.

[1]Clean Seed Yields corrected to 8.5% moisture.

[2]Protein and oil reported on dry matter basis.

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table 6.

2025 Desiccation Applications as a Harvest Aid Evaluation
Magnusson Farms-Roseau,Mn

Trt#	Desiccation Treatment	Date	**#/Ac**[1]	% Harvest moisture	Protein[2]	Oil[2]	Test wt./ bu.	Ht.(in.)
1	None	None	**2391**	7.2	21.5	42.7	49.6	57
2	Reglone 1.5pt.	25-Aug	**2384**	7.3	21.8	42.4	49.4	58
3	Sharpen 2 oz.	25-Aug	**2370**	7.4	21.8	42.5	49.4	57
4	Roundup PowerMaxIII 1.5pt	15-Aug	**2437**	7.8	21.8	42.7	50.0	57
5	Roundup 1.5pt+Sharpen 2 oz.	15-Aug	**2317**	7.1	21.7	42.7	50.1	56
6	Swath	14-Aug	**2299**	7.6	21.7	42.5	49.8	59
		LSD @5% level	**NS**	NS	NS	NS	0.3	NS
		CV(%)	**9.5**	8.0	1.2	1.0	0.4	5.2

Experimental Design: RCB w/4reps. Variety= L340PC

A buffer border isolation plot planted between treatments and mowed down on 8/5/2025.

[1]Clean Seed Yields corrected to 8.5% moisture.

[2]Protein and oil reported on dry matter basis.

Planting date-5/8/2025
Combine harvest date=9/9/2025

Treatment+adjuvunts	Target application timing	Trt. Date
Trt 1 - Untreated	combine-<10%moisture	
Trt 2 - Reglone 1.5 pint + NIS 0.25%	Apply 7 days after 4&5	25-Aug
Trt 3 - Sharpen 2 oz + MSO 1% + AMS 2%	Apply 3-4 days after 4&5	25-Aug
Trt 4 - Roundup 24 oz + MSO 1% + AMS 2%	Apply 70% seed color change	15-Aug
Trt 5 - Roundup 24 oz + Sharpen 2 oz + MSO 1% + AMS 2%	Apply 70%seed color change	15-Aug
Trt 6 - Swathed	Swath 30% seed color change	14-Aug

table 7.

2025 Canola Insect Monitoring Project-Roseau,Mn
Bertha Armyworm and Diamondback Moth[2]

[1]Location		monitor date	Bertha Armyworm	Diamondback Moth	Growth stage	
Magnusson Farm-		9-Jun	**0**	**3**	2.6	vegetative-60% of maximum leaf area
-95.84597	48.87772	16-Jun	**1**	**77**	3.2	flower cluster above rosette-bolting
		23-Jun	**9**	**26**	4.1	first bloom
		27-Jun	**17**	**79**	4.2	mid-flower-lower pods elongating
		3-Jul	**19**	**126**	4.3	lower pods starting to fill
		10-Jul	**7**	**69**	4.3	lower pods starting to fill
		17-Jul	**2**	**72**	4.3	lower pods starting to fill
		25-Jul	**0**	**177**	5.2	seed in lower pods green
		1-Aug	**0**	**37**	5.3	seed in lower pods green-yellow
Total insects trapped 6/9-8/1/2025			**55**	**666**		

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

[1]Location			Bertha Armyworm	Diamondback Moth	Growth stage	
CPC location		9-Jun	**0**	**10**	2.6	vegetative-60% of maximum leaf area
-95.80614	48.84652	16-Jun	**2**	**16**	3.1	flower cluster at center of rosette
		23-Jun	**5**	**6**	4.1	first bloom
		27-Jun	**6**	**3**	4.2	mid-flower-lower pods elongating
		3-Jul	**5**	**2**	4.3	lower pods starting to fill
		10-Jul	**4**	**3**	4.3	lower pods starting to fill
		17-Jul	**1**	**13**	4.3	lower pods starting to fill
		25-Jul	**1**	**6**	5.2	seed in lower pods green
		1-Aug	**2**	**3**	5.3	seed in lower pods green-yellow
Total insects trapped 6/18-8/6/2024			**26**	**62**		

[1]Location-

Canola production center(CPC)- 1 mile westand .2miles south of Roseau,Mn
Magnusson Farms- 1 mile west and .5miles north of Roseau,Mn

[2]Pheromone trap monitors put into field margin on 6/3/2025 at both locations

Bertha armyworm- green bucket traps
Diamondback moth-wing traps

Traps set out- 6/3/2025
Fresh lure put into traps at both locations on 7/3/2025.