FLEA BEETLES IN CANOLA EMERGING

Flea beetles, mainly striped flea beetle, *Phyllotreta striolata* (Fabricius), are being captured in pheromone traps by Lesley Lubenow at the Langdon REC. The striped flea beetle is small, \( \frac{1}{32} \) to \( \frac{3}{8} \) in. in length, with two yellow stripes on their black wing covers (Figure 1). They emerge earlier than the more common crucifer flea beetle, *Phyllotreta cruciferae* Goeze. Crucifer flea beetles are black beetles with an iridescent blue sheen on the wing covers. Flea beetles have enlarged hind femora (thighs) on their hind legs which they use to jump quickly when disturbed. Their name, flea beetle, arose from this behavior.

*Phyllotreta* flea beetles have a single generation in the northern Great Plains. They overwinter as adults in the leaf litter of shelterbelts or grassy areas and rarely overwinter in canola stubble. Beetles emerge when temperatures warm up to 57 to 59°F in early spring. Flea beetles feed on volunteer canola and weeds, such as wild mustard, before moving to spring planted canola fields. Depending on the temperature, it may take up to three weeks for adults to leave their overwintering sites.

Warm, dry, and calm weather promotes flea beetle flight and feeding activity throughout the field, while simultaneously slowing canola growth. When weather conditions are cool, wet, and windy, flea beetles may creep slowly into the field and concentrate feeding on the field edges.

For more information, see the NDSU Extension publication E1234 (revised): Integrated Pest Management of Flea Beetles in Canola.

Janet J. Knodel
Extension Entomologist
SOYBEAN MANAGEMENT

Soybean producers provided production information from a total of about 1100 soybean fields over four seasons (2014-2017).

Conclusions based on the grower survey data
1. Growing soybean after corn resulted in about 5 bushels greater yield compared to growing soybean after soybean. Crop rotation is important.
2. An established soybean plant stand of 150,000 plants per acre is recommended.
3. On average, 12.3% of planted seeds did not result in an established soybean plant.
4. Planting soybean before mid-May, if conditions are favorable, provided the highest soybean yields. Delaying planting, between May 1 and June 1, based on 2014 to 2017 data, resulted in an average reduction of 0.35 bushel per acre per day (Figure 1).
5. Selecting the latest maturing soybean adapted for your growing region may increase yields.
6. A row spacing of 15-22 inch provided greater yields when compared to 30 inch, during the reporting period from 2014 to 2017 (Figure 2).
7. Seed treatments resulted in greater yields (Figure 3).
8. There is a difference in yield response with different seed treatments.
9. There is a positive relationship between higher established plants per acre and soil cover by the soybean crop.
10. Between early season stand establishment and the end of the season soybean population, 6.3% of the soybean plants died.

Figure 1. The relationship between planting date from May 1 to June 1 and soybean yield for North Dakota grower fields for the period 2014 to 2017.
Resources

- **Sifting and Winnowing: Analysis of Farmer Field Data for Soybean in the US North Central Region** *(including ND)*.
- **Key Management Practices That Explain Soybean Yield Gaps across the North Central US** *(including ND)*.
- **Benchmarking Soybean Production Systems in the North Central US** *(including ND)*.

*Figure 2. The relationship between row spacing and soybean yield for 774 North Dakota grower fields for the period 2014 to 2017.*

*Figure 3. Soybean yield with and without chemical seed treatment, North Dakota 2014-2017.*
LATE PLANTING IMPACTS ON CORN AND WHEAT YIELDS

Conditions have not been favorable for planting crops this spring. In the most recent USDA-NASS Crop Progress report, only 13 percent of the spring wheat acreage in North Dakota had been planted, behind 18 percent last year and well behind the average of 37 percent. In the case of corn, only 3 percent of the corn acreage had been planted, which is similar to last year but well behind the average of 23 percent.

Late planting usually means lower yields. The optimum planting dates for wheat is between the 2nd week in April to the 1st week in May depending on region of the state. The optimum planting date for corn across all regions of the state is the first two weeks of May. Most yield charts suggest there will be a 1% reduction in yield for every day delay in planting beyond the optimum planting range. Planting date can be an important determinant of yield and every effort should be made to plant both crops as early as is practical this spring. Nevertheless, crop yields are ultimately determined by a multitude of environmental, biological and management factors thus making it difficult to predict yield based on planting date alone.

In fact, when we look across the state the past 11 years there has been little relationship between the date when 50% of the spring wheat acreage was planted and yield at the end of the season. Last year was a good example of this poor relationship; 48 percent of spring wheat was planted after May 14 (5th latest), yet the state harvested the greatest yield on record (49 bu per acre). The relationship between the date when 50% of the corn was planted and statewide yield has been somewhat more predictive for corn. Never the less, last year was the second highest yielding year for corn, even though planted acres did not reach >50% until after May 21. This means that even with our current delays in planting crops this spring, there is still potential for high yield and crops should be managed accordingly.

Establishing a uniform stand is a critical practice in developing a foundation for high yield. This is particularly true of corn. Therefore, it is still important to balance getting the crop planted with establishing an adequate stand with good uniformity. Pre-plant tillage when soils are too wet may result in a poor seed bed. Similarly, planting when conditions are too wet may result in sidewall compaction that will impact establishment and later growth and development.

![Graph showing relationship between date when 50% of corn area was planted and yield for the last 11 seasons in North Dakota.](image)

(continued on next page)
What crops do we grow for sugar and where are these crops produced in the US?
Growers in the US grow and process sugar from sugar cane and sugar beets. Sugar cane is produced in Florida, Louisiana, and Texas. Sugar beets are produced mainly in Minnesota, North Dakota, Idaho, Michigan, Montana, Nebraska, Colorado, Wyoming, Oregon, and California.

How many acres of sugarbeet will be planted by the US in 2019?
The United States Department of Agriculture estimates that 1.12 million acres of sugar beets will be planted in 2019; very similar to the acreage in 2018.

How many acres of sugarbeet will be grown in North Dakota and Minnesota in 2019?
There are three sugar beet cooperatives – American Crystal Sugar Company, Minn-Dak Farmers Cooperative and Southern Minnesota Beet Sugar Cooperative - in North Dakota and Minnesota. There are also growers in western North Dakota who produce beets for the Sidney Sugar Factory in eastern Montana. Together, these growers will plant around 620,000 acres which represents about 55% of the total US sugarbeet production. The 2019 acreage in North Dakota and Minnesota may be slightly higher than in 2018 to make up for the lower yield potential from a later planting.

What are some basic practices growers can follow to have a successful sugarbeet crop?
Growers can continue their efforts at improving efficiency by ensuring that planting is done in properly prepared and weed-free seed beds. Start with a good plant population to give the crop a solid foundation by using an adequate seeding rate and uniform seed spacing. Growers have the option of using several effective fungicidal seed treatments to control Rhizoctonia seedling damping-off should it become warm and wet soon after planting. Growers with a history of Aphanomyces in their fields are encouraged to use Tachigaren seed treatment and to apply and incorporate precipitated calcium carbonate to their fields to manage Aphanomyces damping-off and root rot. We need to be smart and ensure that we do a good job of planting so that we lay the foundation for a high yielding and high quality sugar beet crop.

(continued on next page)
**How soon will growers start planting in the North Dakota and Minnesota?**

Most of our fields are wet at this time because of the prolonged wintry conditions and late snowfalls. Major planting operations are expected to begin in about 7 to 14 days if we get good drying conditions.

**What final message do you have to start the growing season?**

Please adopt best management practices to have a profitable sugarbeet crop in 2019, and as always, practice safety in all your operations!

**SUGARBEET CROP PROGRESS**

Sugarbeet growers at the three sugar cooperatives in North Dakota and Minnesota have been able to plant about 20% of their acreage to date (May 7). The major limiting factor to planting is wet soils. Warmer weather is forecast and this should help in drying out fields to facilitate planting.

Sugarbeet seeds, in the presence of adequate moisture and oxygen, require about 21 days for germination and emergence when the temperature is 38 to 45°F. Current average daily bare soil temperature for the past week was 43°F in Cavalier, 42°F in Grand Forks, 45°F in Hillsboro, Fargo and Sabin, and 46°F in Wahpeton and Williston. When planting in warmer soils, emergence will be much faster (see table below) with adequate moisture.

The following table gives approximate number of days to emergence of sugarbeet seeds planted at different soil temperature ranges and with adequate moisture.

<table>
<thead>
<tr>
<th>Soil Temperature (°F)</th>
<th>Days to Emergence</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-45</td>
<td>21 days or more</td>
</tr>
<tr>
<td>45-52</td>
<td>10-21 days</td>
</tr>
<tr>
<td>52-60</td>
<td>7-12 days</td>
</tr>
<tr>
<td>60-70</td>
<td>5-7 days</td>
</tr>
</tbody>
</table>

I close with best wishes for better planting conditions.

**Mohamed Khan**

Extension Sugarbeet Specialist

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701-231-8596

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**FERTILIZATION IN A COMPRESSED SPRING**

In a ‘normal’ spring, the planting season is about a month long. Cool season crops are planted first, warm season crops second. This season, planting of all crops will happen at once. The result will be that a month of fertilizer application will also be expected to happen in a couple weeks. That is not possible. There is probably not enough application equipment to apply the fertilizer needed in this short a time frame. There will also likely be spot shortages of fertilizer as locally stored fertilizer is depleted. The result is that there might have to be a decision whether to wait to plant, or plant and fertilize later.

Nitrogen will probably be the fertilizer that will be in shortest supply, since it is used at the highest rate for all crops that need it. Nitrogen can be applied after planting. N can be side-dressed in corn and other row crops. N can be top-dressed in wheat and solid-seeded crops. Urea applied later at the soil surface should be treated with a product containing a similar rate of NBPT as Agrotain® per ton of urea. Phosphate is more important at planting time for crops
that require a row- or near-row-placed starter. Starter-requiring crops are corn, small grains, canola, sugar beet and potato. If the decision is to wait for P fertilizer or plant, keep in mind that planting without a starter in these crops may result in yield reductions of over 20%. Therefore, waiting several days for P fertilizer would be wise.

This will not be the easiest spring. In even a short spring with many challenges, most land is eventually planted and fertilized- if not using Plan A, then certainly using Plan B.

WHAT IS NO-TILL?

To many people, any seeding into undisturbed residue from the previous year is considered no-till. However, a field that is truly no-till has changed physically and biologically into soils that are very different than similar soils in conventional tillage. Farmers who have had the experience of trying to seed into stubble/stalks/other after a late fall, or through the misfortune of a very wet fall that made tillage impossible have a poor impression of what they consider no-till. If a field was too wet to work in the fall, chances are that it will still be wet in the spring. Fields that were prepared for tillage in the fall, through use of a chopping corn head, or through chopping the stalks, will have a difficult time drying out in the spring due to that thatch/mulch cover. The result of trying to plant in these conditions is the thought that ‘If this is no-till, I don’t want any part of it’.

Not only farmers have an incorrect perception of what true no-till is, but researchers also suffer from the same affliction. Many papers have been published comparing ‘no-till’ to conventional till, in a 2 to 4-year study, where prior to the investigation all soil was managed using conventional till. The proper title for such work is Conventional Tillage Compared with Transitional No-Till.

True no-till is a system. Whenever you change one thing, several other things have to happen to make it work. Successful no-till starts in the fall. Leaving as much stalk standing in the fall minimizes wind-rowed residue, floating residue due to spring flooding, and enables easier planting in the spring. Some no-till fields, particularly those in the early years of no-till, may benefit from a shallow (2 inches or less) vertical tillage pass.

One of the benefits of a no-till system is that after about 6 years N rates can be reduced. The sites that were included in the long-term no-till data set requiring less N included ‘purist’ no-till (seeding into stubble with a minimal footprint), one-pass seeding (seeding after or during tillage set less than 2 inches in depth) and seeding after a shallow vertical tillage pass. Soil aggregation and soil biology are similar in all of these no-till systems. The important point is that deep tillage is not used, and that the system is continuous over years, and not used intermittently.

Dave Franzen
Extension Soil Specialist
701-799-2565

NEW PUBLICATION ON PALMER AMARANTH AND WATERHENMP IDENTIFICATION, BIOLOGY, AND MANAGEMENT

Palmer amaranth is now listed as a noxious weed in North Dakota. NDSU Extension weed specialists want to remind everyone that we are here to help control and eradicate this weed. Our goal is to work with everyone to prevent this weed from becoming a major issue in North Dakota, not to punish people who unfortunately have this weed on their farms. Thus, we are encouraging people to contact Extension if they suspect Palmer amaranth is on their farm. NDSU Extension Agents and weed specialists are here to help by providing guidance to control Palmer amaranth in 2019, and in future years.

Palmer amaranth is not the only pigweed that concerns NDSU weed scientists. Waterhemp continues to spread to new fields in the eastern half of North Dakota. The biology and management of these two weeds are very similar. Thus, a new Weed Science publication is available. W1916 discusses the identification, biology, and management of Palmer amaranth and waterhemp. These are two plants in the pigweed family that are difficult to control and pose a risk to crop
yields across the state. Palmer amaranth and waterhemp have developed resistance to almost every herbicide used in row-crop production. The growth rate and seed production of these two weeds make them seem like redroot/smooth pigweed on steroids. To control these weeds, we need to think about using more than just herbicides. This publication discusses cultural practices to consider for management of these two weeds.

Joe Ikley
Extension Weed Specialist

USE SOIL-APPLIED HERBICIDES WITH MAY PLANTED SUGARBEET

Sugarbeet planting date dictates the weed control strategy – especially when waterhemp is the most important weed control challenge. Waterhemp germinates and emerges in response to accumulated growing degree days or emerges approximately May 20 in Minnesota and eastern North Dakota. May planted beets simply will not achieve the 2-leaf stage for S-metolachlor, Outlook or Warrant application before waterhemp emerges. That means sugarbeet growers need to use soil-applied herbicides applied at planting or after planting and before sugarbeet emerge. Consider the following options.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ro-Neet SB</td>
<td>4 – 5.3 pt/A</td>
<td>• Low risk of crop injury</td>
<td>• Must be incorporated immediately following application</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Will not work with nurse crops</td>
</tr>
<tr>
<td>Ethofumesate</td>
<td>2 -3 pt/A</td>
<td>• Low risk of crop injury</td>
<td>• Needs 0.75-inch rain to activate if used as PRE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4-weeks waterhemp control</td>
<td>• May reduce cover crop stands</td>
</tr>
<tr>
<td></td>
<td>5 – 7.5pt/A</td>
<td>• Low risk of crop injury for fine textured soils with high organic matter</td>
<td>• Needs 0.75-inch rain to activate if used as PRE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Greater risk for crop injury, especially over 6 pt/A and on course texture soils</td>
<td>• Expensive, consider band-application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 8-10 weeks waterhemp control</td>
<td>• Will not work with nurse crops</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommend minimum of 5pt/A if resistant kochia is present in field</td>
<td></td>
</tr>
<tr>
<td>Dual Magnum</td>
<td>0.5-0.75pt/A</td>
<td>• 2-3 weeks waterhemp control</td>
<td>• Rate dependent on OM content</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Safe for use with most cover crops</td>
<td>• Must sign indemnity label</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires 0.5-inch of rain for activation</td>
<td>• Only branded Dual Magnum is labeled, Pre in sugarbeet</td>
</tr>
</tbody>
</table>

Tom Peters
Extension Sugarbeet Agronomist
NDSU & U of MN
AROUND THE STATE

NORTH CENTRAL ND

Last week’s snow storm was a welcomed site for some growers, as small grain planting had begun across parts of the North Central region. At the NCREC, the liquid equivalent of 0.66” of moisture was recorded. Since then, seasonal to below average temps have been observed across the area as growers patiently await some dry time before returning to the field. As I review the latest forecast, it appears a dry period is included over the next 7-10 days with minor chances of precipitation. That will be a welcomed site as growers look forward to planting.

Do you have an interest in grapevines? Feel free to join us at the NCREC this Saturday from 9 am to 3 pm. Some of the highlighted topics of discussion include pruning, trellising, and pest control. If interested, RSVP by calling 701-857-6444.

TJ Prochaska
Extension Cropping Systems Specialist
NDSU North Central Research Extension Center

NORTHWEST ND

Spring has been off to a rocky start here in the Northwest. We had some warm and sunny days the third week of April and a few people got their field work started early. Most waited until after Easter and started planting the last week of April. Much of the area received snow, rain, or a mix the weekend of the 27th, which was enough to delay field work until late last week. Again, some rain mixed with snow fell over the weekend of May 4th and put the brakes on planting. But Sunday the 5th warmed up and seeders are rolling again this week. This week’s forecast is mostly to partly sunny with temperatures in the 50’s and 60’s with very little chance of rain. Everyone anticipates getting a lot of seeding done. This week into next should provide a good window of opportunity for planting. Best wishes to everyone for a safe and smooth planting season!

Clair Keene
Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

NORTHEAST ND

Optimally, small grains should be seeded the first week of May for the region north of Hwy 2. We are trending slightly behind in planting progress, and this week’s cold snap has soil temperatures remaining cool. At Langdon early in the week, bare soil temperature was recorded at 40°F with morning frosts.

In the valley, early seeding started about 2 weeks ago with sugar beet. Now, the beginning of small grain, field pea and corn seeding is occurring. Out of the valley, the northern tier counties are just starting with spring tillage, fertilization and seeding. I am seeing many anhydrous tanks moving across the countryside. Striped flea beetles are starting to emerge.

Lesley Lubenow
Area Extension Specialist/Agronomy
NDSU Langdon Research Extension Center
SOUTH CENTRAL

The geographic area generally covered by this report includes a northern border of Sheridan County to Griggs County southward to Sargent County and west to Emmons County.

According to NDAWN, the region’s bare soil temperature at 4-inch depth during the past week (April 30-May 6) averaged only 42-48 degrees. At Carrington on May 7, a soil depth of 39°F was needed to reach a low of 32°F.

Alfalfa regrowth is up to 4 inches in height. Winter cereals are in the early tillering stage (see picture). Perennial weeds including quackgrass, dandelion, absinth wormwood, and field bindweed; and winter annual weeds are showing spring growth. Spring annuals including kochia, common lambsquarters, common ragweed, and wild buckwheat also have emerged.

The Carrington REC’s first research trials (pulse crops) were planted on April 23. Planting of small grain in the region generally began late April, and corn planting has started this week. While 2019 crop planting has begun, 2018 corn and soybean harvest continues in scattered fields in the region.
PINTO BEAN RESPONSE TO STARTER PHOSPHORUS FERTILIZER

The following are highlights of nearly a decade of NDSU phosphorus-based starter fertilizer trials conducted at the Carrington REC. The trials evaluated pinto bean response, primarily with liquid 10-34-0 fertilizer, applied using different methods and rates in loam soil which generally testing low in phosphorus.

*Pinto bean seed yield increased more than 3 hundredweight (cwt) per acre with in-furrow (IF, meaning fertilizer placed directly with seed) 10-34-0 applied at 2 to 3 gallons per acre (gpa), compared with the untreated check. However, seed-placed fertilizer can cause bean stand reductions, especially in dry, coarse-textured soils or with high fertilizer rates.

*Yield was similar with IF- and band-applied (2 inches horizontally placed from planted seed) 10-34-0 at 3 to 6 gpa, although the plant population was reduced with IF application.

*Broadcast or midrow (centered between 22- or 30-inch rows) band-applied 10-34-0 did not increase yield.

*Yield was similar between low (2.5 to 3 gpa) and high (5 to 6 gpa) rates of IF-applied 10-34-0. The high fertilizer rate reduced the plant population.

*The plant population and yield were similar between IF-applied 10-34-0 and the low-salt fertilizer 6-24-6.

More information about this research is available in NDSU Extension publication “Pinto Bean Response to Phosphorus Starter Fertilizer in East-central North Dakota.” It is available online at https://www.ag.ndsu.edu/crops/dry-bean.

Greg Endres
Extension Cropping Systems Specialist
NDSU Carrington Research Extension Center
**SOUTHWEST ND**

Similar to last spring, Mother Nature has been indecisive. According to NDAWN the bare soil temperature in Dickinson reached 50°F on April 8th, but 2 days later it was back in the 30’s. It reached the 50’s again on April 19th but has since dropped again after snow and cold weather hit the region April 27th. As of noon on May 7th, the 4” bare soil temperature on NDAWN is at 44°F.

Many have adequate moisture so far; all are hoping it stays adequate throughout the growing season. According to NDAWN from April 1st to May 6th Dickinson received 1.4 inches of moisture. Over the same period, Beach received 1.67 inches, Bowman 1.37 inches, Hettinger 1.41 inches, Mott 1.34 inches, and the Dunn county station received 0.96 inches.

Small grains, pea, and canola acres have been going in over the past month. There are farms throughout the region that have planted all of their wheat and there are some just starting. Many are pushing to get their canola and pea acres in before the crop insurance deadline. While soil temperatures haven’t been ideal, there are some corn acres planted already as well. With the cold wet soils there is concern for seedling diseases. For crops like corn or soybeans especially, be sure to think about the soil conditions. If the seeds take in cold water (below 50°F) it can cause injury resulting in stunted plants and stand loss.

As more are beginning to see acidic soil issues in the region, if you see stunted plants in a part of the field be sure to take a soil sample from 0-3” and 3-6” to check the pH. This year we will be testing a range of different wheat varieties to see how they perform under acidic conditions. In addition, a field trial, sponsored by the ND Wheat Commission, designed to address this issue will record the effects of different rates of beet lime on wheat planted in acidic soils.

Ryan Buetow  
Extension Cropping Systems Specialist  
NDSU Dickinson Research Extension Center
WEATHER FORECAST
The May 9 through May 15, 2019 Weather Summary and Outlook

It may surprise you that temperatures in April were near or just a bit below average across the NDAWN (North Dakota Agricultural Weather Network) mesonet (Figure 1). So, although many thought of it as a cold month, it really would be considered average. It is a reminder that spring is often slow to arrive in our region. What hindered most of us getting into the fields was the moisture which was near or above average across much of the Northern Plains last month. Plus, the two significant snow events only added to the problems in getting “Plant 19” started.

Although April was wet, the first week of May has been, overall, fairly dry with a few exceptions (Figure 2). The rain from yesterday (Wednesday, May 8 and not included in the graphic) was generally light with some exceptions near the North Dakota / South Dakota border.

Figure 1. Temperature Departure from Average for April 2019

Figure 2. Total Rain for the period of May 1 through May 7, 2019
Speaking of rain, the next time frame when precipitation will fall looks to be Saturday. The rain will be associated with an “Alberta Clipper” type storm coming in from our northwest. Precipitation amounts look like some locations probably only recording a trace or a few hundredths of an inch, but other localized areas may get around a quarter of an inch. Starting on Sunday, warmer air will be moving back into the region, but only temporarily. Sunday through Wednesday temperatures should be near average with a day or two even above average for the time of year. By the end of next week, the pattern would suggest that cooler air will be back into our area. The positive news in the next couple of weeks will be conditions favor below average rain; the negative news is that besides some brief periods of warmer air, the pattern continues to favor below average temperatures.

My projected GDDs for the period of May 9 through May 15 is presented in Figure 3. Base 50 is not included this week as the weekly totals at that level will be near zero in most locations.

Figure 3. Projected Growing Degree Days for the next 7 days

Daryl Ritchison
Meteorologist
Interim Director of the North Dakota Agricultural Weather Network
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