SUNFLOWER INSECT TRAPPING

Sunflowers were late planted this year and most fields now range from R1 (terminal bud with a miniature floral head) to R3 (immature bud elongates > 2 cm above the nearest leaf).

Banded sunflower moth (BSM) and Arthuri sunflower moth (ASM): Identification:

The banded sunflower moth, Cochylis hospes Walsingham, is a small (¼ inch long), straw yellow moth with a wingspan of about ½ inch. Its forewings have a triangular, dark brown band crossing through the middle of the wing (Figure 1). The peak of the triangle is oriented toward the leading margin of the wing. The hind wing is grayish black.

Arthuri sunflower moth, Cochylis arthuri Dang, is similar to BSM, small (¼ inch long), whitish-gray moth with a wingspan of about ½ inch. Its forewings are crossed by a broken brown and gray band and the outer ¼ has brownish markings and dark fringe (Figure 2). The hind wing is white to gray.
Trap counts for BSM and ASM from the *NDSU IPM Survey insect trapping network* indicate that BSM increased this past week in NW, NE and SE areas of ND. ASM is fewer than BSM. Scouting is key now for both moths and should be conducted from the late bud stage (R3) through early flowering. If treatment is warranted, it should be delayed and applied at the R5.1 sunflower plant growth stage (when 10% of head area has disk flowers that are flower). At R5.1, most BSM or ASM eggs have hatched and young larvae are feeding on the florets on the face of the sunflower head.

**Banded Sunflower Moth Trapping Network**

*Cochylis hospes*

_July 5 - July 19, 2019*

**Arturii Sunflower Moth Trapping Network**

*Cochylis Arthurii*

_July 5 - July 19, 2019*

Scouting for BSM and ASM: When sampling, use the W pattern and begin counting at least 75 to 100 feet into the field to avoid field margin effects. Count moths on 20 plants at 5 sampling sites to obtain the total number of moths per 100 plants. When scouting during the day (late morning to early afternoon), the moths remain quiet, resting on upper or lower leaves of sunflower plants or other neighboring broadleaf plants like soybeans. Look for the moth fluttering from plant to plant when disturbed. The table to the right shows a similar threshold for BSM and ASM as last year.

**Sunflower moth:**

Sunflower moth migrates to North Dakota from the southern states. Because of the migratory nature, it is usually not a major problem for sunflower production in North Dakota. However, late-planted sunflower fields will be at more risk for sunflower moth infestation since flowering will be later.

**Identification:** The adult moth is about ⅜ inch long, grayish-tan and has a cigar-shaped appearance when at rest.

**Trap catches for the sunflower moths** were observed at most trap sites, except NE and SW sites (see map on next page; Source: *NDSU IPM Survey insect trapping network*). Most traps catches were <10 moths per trap per week, so the infestation is considered non-economic, so far.

Scouting: Moths move into fields during early bloom. It deposits its eggs on the face of the flower. Damage is caused by the larval feeding on seeds and tunneling in the head. Using the same scouting method as described for BSM, walk a W pattern in the field and count moths on 20 plants at 5 sampling sites and calculate an average number of moths per 5 plants. Since female moths lay eggs on the face of sunflower heads, insecticide should be applied during early flowering (R5.1 - R5.3).

**2019 BSM / ASM Threshold**

**Oilseed sunflower** at 17.5 cents per lb:

- 18,000 – 22,000 plants per acre
- $8 or $10 insecticide cost per acre
- 1 adult moth per 100 plants

**Confection sunflowers** at 23 cents per lb:

<1 moth per 100 plants
SOYBEAN APHIDS VERY LOW

Soybeans are in the blooming (R1) crop stage or approaching R1. However, soybean aphids are absent from fields, perhaps due to numerous thunderstorms and winds, or entomopathogens keeping aphid populations low naturally. The IPM Scouts found soybean aphid counts are still very low, about 0-9% of plants in field infested and an average of 0 to <1 aphid per plant in ND and MN. Continue to scout and stay tuned for more reports. Maps are posted weekly on the NDSU IPM website.
SOYBEAN GALL MIDGE

The soybean gall midge, *Resseliella maxima* (Gagné), is a new species that was recently described by Gagné et al. (2019, Proc. Entomol. Soc. Washington 12: 168-177). This is a new insect pest of soybeans. Its origin has not been determined. Soybean gall midge has been recorded in soybeans in Nebraska, Iowa, South Dakota and Minnesota in 2018, and in Missouri in 2019.

It has not been detected or confirmed in North Dakota yet. Currently, we are conducting a survey for the soybean gall midge, especially in southeastern ND. All fields were negative for soybean gall midge last week. If you see any suspected plants with soybean gall midge in ND, please let me know. Thanks to the ND Soybean Council for support.

**Identification:** The soybean gall midge belongs to the insect family Cecidomyiidae and is about ¼ inch long, with black and white banding on legs and reddish abdomen. There are 15 known species within the genus in North America, and 55 species worldwide. Some midge species are gall formers, and others are fungus feeders or even predacious on insects. Two other Cecidomyiid pests of ND crops are the Hessian fly and the wheat midge.

**Life Cycle:** Soybean gall midge has complete metamorphosis (egg, larva, pupa and adult). They probably overwinter as larval cocoons in the soil, similar to wheat midge. Entomologists have recorded multiple generations per season in Nebraska, but are uncertain on number and timing. In 2019, adult emergence of the 1st generation ranged from mid-June in Nebraska through early July in Minnesota. The adult has a long emergence window which could make insecticide control difficult. Larvae were observed in soybean stems from late June though July in Minnesota.

**Crop Damage** is caused by the larval feeding inside the stem, which causes brittle stems and significant yield losses when populations are high. Midge larvae feed under the epidermis of the stem, weakening the stem and causing lodging, which further adds to the yield losses.

**Scouting:** This is an easy insect to scout for since infestations are most likely on field edges and adjacent to infested soybeans from last year. Walk along the field edges and look for plants with a darken stems at the base near the soil level. The feeding injury is visible after the V2 stage for soybeans. If you peel back the stem epidermis with your fingernail, the larva will be visible. Early instar larvae are white and more mature instar larvae are orange to red. Entomologists are not sure how the larvae get into the stem, maybe from naturally occurring cracks in epidermis or other wounds like hail injury. Soybeans with severe feeding injury will wilt and die. Lodging at soil level is also a symptom of heavily infested stems with soybean gall midge larvae.

On left: *Soybean gall midge larvae inside darkened stem near soil line (J. Knodel)*
On right: *Close up of soybean gall midge larvae, note white younger larva and orange mature larvae (B. Potter, UMN Extension)*

Adult soybean gall midge (B. Potter, UMN Extension)
SCOUT FOR PEA APHIDS IN PULSE CROPS

Economic populations of pea aphids are being reported in NC and NW areas of ND. Pea aphids are small, about ⅛ inch long and pale to dark green with reddish eyes.

Life Cycle: Pea aphids have multiple generations per year and overwinter as eggs in alfalfa, clover or vetch. In the spring, nymphs hatch from eggs and appear similar to the wingless adult but smaller. Nymphs molt four times and mature into adults in 10 to 14 days. Pea aphids can reproduce rapidly when temperatures are around 65 F and relative humidity is near 80 percent. Infestations can originate from local alfalfa fields or migrate in from the Southern states.

Crop Damage: Pea aphids have piercing-sucking mouthparts, which suck the juices from plants. Pea aphids are effective vectors of viral diseases. For example, pea seed-borne mosaic virus (PSbMV) is an economically damaging viral pathogen of field pea that can cause significant losses in seed yield and quality, especially when infections occur before or during flowering. Consult the NDSU Extension publication PP1704 Pea Seed-borne Mosaic Virus (PSbMV) in Field Peas and Lentils, for more information.

Pulse crops are especially susceptible from the flowering to early pod stage and during drought stress. An economic infestation can result in lower yields due to less seed formation and smaller seed size. Protein content and other quality issues do not appear to be affected by aphid feeding.

Aphid populations are usually kept low naturally by heavy rains or beneficial insects including parasitoid wasps and predators, such as ladybird beetles and lacewings. Early seeding also can reduce damage caused by pea aphids.

Pest Management: Scouting for aphids in pulse crops is conducted using a sweep net or examining the number of aphids per plant tip when 50 to 75 percent of the crop is flowering. Take 180-degree sweeps using a 15-inch sweep net or check at least five 8-inch plant tips from five different locations in the field. Population estimates should be calculated by averaging counts taken from five separate areas of the field.

If the economic threshold is exceeded, a single application of insecticide at 50 percent of plants in young pods stage will protect the crop against yield loss. If an insecticide application is necessary during flowering, spray when bee foraging is minimal, preferably during the evening hours (after 8 p.m.).

For more information, consult the NDSU Extension publication E1877 Pulse Crop Insect Diagnostic Series: Field Pea, Lentil and Chickpea, and E1143 North Dakota Field Crop Insect Management Guide.

Threshold for Chickpea: There is no recommended economic threshold for aphids in chickpea. To prevent virus infection, select varieties bred for virus resistance.

Threshold for Field Pea: Aphid feeding on peas in the flowering and early pod stage can result in lower yields due to less seed formation and smaller seed size. Protein content and other quality issues are not impacted by pea aphid feeding injury. During early reproductive growth stages of field pea, an insecticide treatment is recommended when an average of 5 to 19 pea aphids per plant or 3 to 12 pea aphids per 180-degree sweeps with a 15-inch diameter sweep net.

Threshold for Lentil: Insecticide treatment for pea aphid control should be considered (1) when an economic threshold of 30 to 40 aphids are collected per 180-degree sweep with a 15-inch diameter sweep net, (2) when few natural enemies are present, and (3) when aphid numbers do not decline over a 2-day period.

Janet J. Knodel
Extension Entomologist
This spring was a particularly tough time for many crop producers. They were unable to plant at the appropriate time due to wet field conditions. One way to manage excess water in the soil profile is with subsurface drainage (tile). Tile drainage does not remove “plant available” water from the soil; it removes “gravitational” water that would drain naturally if unimpeded by confining layers in the soil. The greatest benefits of tile drainage typically are realized in wet years. Drainage promotes deep root development and crops often have better access to soil moisture in dry years.

The installation and management of tile drainage is increasing in many parts of North Dakota, especially in the Red River Valley, due to seasonal, high water tables and soil salinity (soluble salts). The salinity problem is related to naturally occurring salts lower in the soil profile. Soil salinity in the Red River Valley may potentially be an issue on more than 1.5 million acres. Other parts of the state also have salt issues, especially near field edges.

Tile drainage is a management practice that offers the potential to control and reduce salinity in poorly drained soils. Tile drainage has been successfully utilized on a wide range of soil textures, from sandy to clayey. Level fields can be drained as long as minimum grades of 0.08 to 0.1 percent are maintained for tile laterals and mains. A tile at 0.1 percent grade has 1 foot of fall per 1,000 feet. On level ground, this means that the tile depth would vary by 1 foot over 1,000 feet. Where topography or depth of the outlet ditch does not allow for a gravity outlet, pumped outlets are used, provided a surface waterway exists to discharge the drainage water.

Pipe depth and grade, pipe size and field layout are all extremely important in design and will determine the quality of performance of a tile system. The tile system must be designed and installed properly so it will perform well for many years.

Controlled, or managed, drainage systems incorporate structures that allow the producer/manager to raise the outlet elevation at strategic locations in the drainage system to control the release of drainage water and potentially maintain a shallower water table. Controlled drainage systems offer the potential to conserve soil water in the root zone after crop emergence. Managed drainage can reduce flows thus reducing the loss of dissolved nutrients (nitrogen and phosphorus) from the field. If the timing of rainfall is favorable, controlled drainage creates the potential to store water for drier periods during the growing season. “Subirrigation” is the practice of using the tile system to provide water to the root zone during the dry part of the summer. If a source of irrigation water is available and the drainage system is designed appropriately, water can be introduced into control structures, special inlets, or the sump of a pumped outlet to raise the water table and make water available to the crop.
GRAIN FILLING CONCERNS IN SMALL GRAINS

Most of the spring wheat in the state is now well into the grain filling stage, with some winter wheat approaching maturity. Wheat’s yield potential (spike numbers and potential kernels per spike) is largely fixed prior to heading, and for most of the state, conditions have been favorable for high yield potential development.

It is during the grain filling period, however, that this yield potential is realized. Most of the carbohydrates (85-90%) that fill the developing kernels are produced by the plant’s green tissue, the remainder is translocated from the stems and older leaves. The amount of photosynthate that can be moved to the kernel is dependent on the amount of green tissue actively photosynthesizing and the rate of photosynthesis minus any respiration. Cool temperatures during grain filling, particularly cool night temperatures favor greater availability of photosynthates and therefore higher kernel weights and yield. The above average night temperate during the first two weeks of July may have negatively impacted the yield of this year’s early planted crop. The current weather, however, is favorable towards yield, and will greatly benefit some of the later planted crops.

Another factor that has the potential to limit yields this year is Bacterial Leaf Streak (BLS). In regions of the state that have had wind-driven rains (these conditions favor infection of BLS), this disease has become severe, especially in varieties that are highly susceptible. In some fields that I have visited, there is very little green tissue remaining on the flag leaf (see Figure 1). The amount of yield reduction that this foliar disease will cause depends on factors such as the timing of the infection, and its severity. I have seen some recent information that suggests between 20 and 40% of the carbohydrates moved to the kernels are produced by the tissues in the spike (glumes, awns and kernels themselves). The majority of the photosynthates must arise from the leaves (largely the flag leaf) and stem with an additional 10 to 15% of the carbohydrates being translocated from the stem. Therefore, early infections of BLS that burn most of the flag leaf have the potential of severely reducing grain yield. There is no practical means of controlling BLS in-season, but there is some level of genetic resistance available in a few cultivars. Certainly, if you are experiencing high levels of BLS infection this year and you are using a variety that is susceptible, consider using one with greater resistance in the future.

Figure 1. Bacterial Leaf Streak damage on spring wheat leaves near Fargo

Joel Ransom
Extension Agronomist, Small Grains and Corn
SUNFLOWER RUST

Sunflower rust is favored by frequent dews and moderate to warm temperature, and growers are encouraged to scout for sunflower rust as sunflowers approach bloom. Confection-type sunflowers are particularly sensitive to rust, but oilseeds can be susceptible to the disease as well. Yield and quality losses can be very high if an epidemic develops early in the season.

Signs and Symptoms.

Sunflower rust is commonly first observed near shelter belts, near last year’s sunflower residue or near wild/volunteer sunflowers. Pustules are cinnamon-brown and dusty, often first found on the leaves in the lower canopy (Figure 1). If an epidemic occurs, pustules may be found on stems, petioles and leaves.

Management of Sunflower Rust.

Timing. If rust reaches approximately 1% severity on the upper four fully expanded leaves at or before bloom (R5) a fungicide should be considered (Figure 2-3). At R6 or later (after bloom) fungicide applications have not had an impact on yield in our trials.

Efficacy. DMI fungicides [FRAC 3: Triazole] (tebuconazole, etc..), QoI fungicides [strobilurins: FRAC 11: Strobilurins Headline, Quadris, Aproach) and fungicides containing those modes of actions are among the most effective on rust in our trials.

Figure 1. Dusty cinnamon-brown rust pustules on a sunflower leaf

Figure 2. Approximately 1% rust severity on a fully expanded sunflower leaf
The Value of Wheat Straw

Wheat straw contains some of all essential plant nutrients, but nitrogen (N), phosphorus (P) and potassium (K) are the only nutrients in sufficient amounts to be considered. There is also calcium and magnesium in similar amounts, but all regularly cropped and productive soils in North Dakota have very large amounts of each of these, so they are not considered a value that needs to be considered in the fertilizer value of the wheat straw. Generally, there are about 12 pounds N per ton, 1.5 tons P₂O₅ (phosphate fertilizer equivalent) and 30 pounds K₂O (potassium fertilizer equivalent) in a ton of straw. At present day retail fertilizer estimates, the value of these is:

- N at 40 cents per pound = $4.80/ton
- P₂O₅ at 40 cents per pound = $0.60/ton
- K₂O at 30 cents per pound = $9/ton

Total fertilizer value of wheat straw = $14.40/ton

Eastern growers (Stutsman county and east) have grown soybeans especially, and also corn, for more than 20 years and have depleted their native potassium supply. The new corn potassium recommendations result in a higher soil test
critical level (200 ppm instead of the old 150 ppm recommendation in highly smectitic clay soils) to sustain corn production in drier summers.

However, western growers have very high K tests as a rule. Many western fields have soil test K levels over 400 ppm, and these growers probably would not put a value on the K since they do not consider K in their fertilizer budget, except as a carrier for chloride. Eastern growers have to consider the K value of the straw or experience decline of soil test K requiring fertilization. Failure to do so will result in yield losses in alfalfa, sugar beet and corn production particularly.

SUNFLOWER RUST AND N RATE

There have been reports of sunflower rust in the state. In our N-rate work a few years ago, we noticed that sunflower rust increased with N rate as indicated in the following table. Using the sunflower N rate calculator, instead of the archaic yield-based formula, will help growers reduce their susceptibility to certain diseases and maximize yield and oil content. These data appear in the Agronomy Journal, 2018.

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</tr>
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</tbody>
</table>

Dave Franzen
Extension Soil Specialist
701-799-2565

AROUND THE STATE

NORTH CENTRAL ND

Continued hit and miss showers have been the rule over the last couple weeks - NDAWN observations at several stations are as follows: Minot 0.08”; Rugby 0.01”; Bottineau 0.09”; Rolla 0.84”; Plaza 0.41”; Mohall 0.00”; and Garrison 0.85”. NDSU Extension field days have given me the chance to speak with Growers and talk about fungicides. Many growers have taken the precautions of making a fungicide application in their small grains due to the increased moisture received over the past few weeks.

Grasshoppers continue to be a part of the discussion with area growers with most observations confined to the field edges. Wheat midge continues to be observed in area traps. Fairly low numbers being observed across the northern region of the North Central part of the state with more moderate numbers in the southern part. Please keep in mind, these numbers are not considered an economic threshold, but rather suggest growers should be scouting.

TJ Prochaska
Extension Crop Protection Specialist
NDSU North Central Research Extension Center
NORTHWEST ND
Crop progress at the Williston REC is expected to speed up this week with hotter temperatures predicted than last week. High’s last week were mid 70’s to low 80’s but are predicted to be upper 80’s to 90 in the current 10 day forecast. Winter wheat is medium to hard dough and turning color. Winter wheat harvest will likely begin in the next 2 weeks. Durum and spring wheat are in the milk stages; field pea is full pod and starting to change color; and, canola and flax are mostly finished flowering.
Crop scouting at the WREC has found scab (Fusarium head blight) in durum and spring wheat [see photo]. We won’t have a big picture on prevalence until harvest, but there are strong chances for scab being a serious issue this year based on the cool weather and rain during flowering. A few bleached wheat and durum heads killed by wheat stem sawfly have also been observed on station, but not at high levels.

Clair Keene
Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

NORTHEAST ND
A few small grain fields are starting to turn. Corn is approaching tasseling stage. I have seen corn leaf roll in drier locations.
My IPM scout is observing scab in wheat and barley. Sclerotinia white mold risk models continue to be high. Grasshopper populations have triggered insecticide use. Banded sunflower moth is in the region.
As sunflowers approach flowering, scout for moths in the field or egg masses (link to video to explain how to scout) on the back of the sunflower head. Sunflower bud moth has been found attacking sunflower heads (photo) instead of its usual leaf axil entry point. This change in feeding location is due to sunflower bud moth adults emerging later in the season. This pest may injure a few plants in field but does not reach economic threatening levels. As of Tuesday, we have not found any soybean aphids.

Lesley Lubenow
Extension Cropping Systems Specialist
NDSU Langdon Research Extension Center
SOUTH-CENTRAL/SOUTHEAST ND

Based on NDAWN, the region’s total rainfall May 1 through July 22 ranged from 7.4 inches (Harvey) to 14.5 inches (Linton). During the current month (July 1-22), rainfall ranged from 1.4 inches (Harvey) to 7.6 inches (Linton). The region has adequate to excess soil moisture.

The region’s corn growing degree day units (GDDU) accumulated from May 10 to July 22 range from 995 (Robinson) to 1170 (Oakes). This range is -98 to +49 GDDU, depending on location, compared to the long-term average for the period.

Winter cereals and early seeded barley are at physiological maturity, while spring wheat is in the dough stage. Ergot in rye and scab (Fusarium head blight) can be commonly found in barley and spring wheat (see picture), plus the various leaf diseases including bacterial leaf streak. Small grain lodging is also common in the region. First-half of May planted corn is at VT (tasseling) to R1 (silking) and soybean is beginning pod formation (R3 stage). Dry bean is in the pod- to seed-formation stages (R2-5). Bacterial blight is present on dry bean and white mold (sclerotinia) is an economic threat. Hay harvest continues to be a challenging farm activity.

NDSU Field Days: July 2019
July 30: Tri-county – Wishek area – Carrington REC off-station crop tour. 6:30 PM

SOUTHWEST ND

Storms brought hail and high winds to some in the region last week. Entire fields were lost in the hail and some lodging is visible in places from winds. For those that didn’t get the worst of the storms it brought more moisture and standing water was visible in low spots. Saline seeps could intensify with this moisture; be sure to keep ground covered in sensitive areas throughout the year. Along with moisture comes disease pressure. I noticed some early signs of fusarium head blight with some pink discoloration forming on kernels in the area. It appears that many are also facing issues with black chaff this year. This is caused by a bacteria and the only management we know of is variety selection.

We’ll be hosting a Hemp Production Workshop at the Dickinson Research Extension Center on Tuesday July 30th from 8:30am to about 12:30 (mountain). We’ll meet at the DREC (1041 State Ave, Dickinson) and will work our way out to a variety trial, weather permitting. More information on the workshop can be found online.

Greg Endres
Extension Cropping Systems Specialist
NDSU Carrington Research Extension Center

Ryan Buetow
Extension Cropping Systems Specialist
NDSU Dickinson Research Extension Center
WEATHER FORECAST

The July 24 through July 31, 2019 Weather Summary and Outlook

Temperatures averaged 3° to 6° below average in western North Dakota and 1° to 3° below average in eastern North Dakota into northwestern Minnesota during the past week (Figure 1). The next 7 days are expected to be much warmer, with above average temperatures likely in most locations.

![Temperature Departures from Average from July 18 to July 23, 2019 at Selected NDAWN Stations](image)

*Figure 1. Temperature departures from average from July 18 to July 23, 2019 at selected NDAWN stations*

Most of the rain that fell in the past 7 days occurred late last week and mainly over southern North Dakota into west central Minnesota (Figure 2). Many portions of northern North Dakota and northwestern Minnesota have recorded little if any rain in the past 10 days.
After a brief period of below average temperatures, warmer weather is returning to the northern plains. A trough of low pressure is expected to develop in the Pacific Northwest. This will mean a ridge of high pressure aloft will develop over our region and in turn, warmer temperatures will be pushing north. Although this pattern may break down briefly Sunday into Monday, it will likely reform next week. What this means is we may be in for an extended period with above average temperatures and below average precipitation. It is very common for there to be more evaporation than precipitation from mid-July through early September and it appears that will be the case in the next 10 or more days. The only exceptions look to be the localized areas that may catch the core of the occasional thunderstorms that will form during this period.

My projected growing degree days (GDDs) for the next seven days for Base 50°, 44° and 32° is presented in Figure 3. With warmer temperatures anticipated most locations are expected to receive around 10-15% more GDDs this week than what was recorded during the last seven days.
With warmer and drier conditions expected, plus less topsoil moisture available for evaporation, the number of hours with high relative humidity will be much lower in the next week for most of the area. My projected hours with high RH through July 31 are presented in Figure 4.

**Figure 4. Projected Hours with Relative Humidity above 85% from July 25 through July 31, 2019**

Using May 5 as a planting date, accumulated growing degree days for wheat (base temperature 32°F) is given in Figure 5. You can calculate wheat growing degree days based on your exact planting date(s) here: [https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html](https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html)

**Figure 5. Accumulated Growing Degree Days (°F) (2019–05–06 – 2019–07–23)**
Using May 15 as a planting date, accumulated growing degree days for corn (base temperature 50°) is given in Figure 6. You can calculate corn growing degree days based on your exact planting date(s) here: https://ndawn.ndsu.nodak.edu/corn-growing-degree-days.html

**Figure 6. Accumulated Growing Degree Days for Corn since May 15, 2019**

Using that same May 15 planting date. The departure from last year is given in Figure 7. Since the middle of May most locations have recorded around 200 to 250 less GDDs this year than in 2018 during the same time frame.

**Figure 7. The departure from 2018 GDDs, for Corn (Base 50°) from May 15 through July 23, 2019**
Soybeans also use base 50° like corn, but NDAWN has a special tool for soybeans that based on your planting date and cultivar can estimate maturity dates based on average temperatures, as well as give you GDDs based on your planting date(s) you set. That tool can be found here: https://ndawn.ndsu.nodak.edu/soybean-growing-degree-days.html

Daryl Ritchison
Meteorologist
Director of the North Dakota Agricultural Weather Network