North Dakota State University
CROP & PEST REPORT
NDSU EXTENSION

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entomology

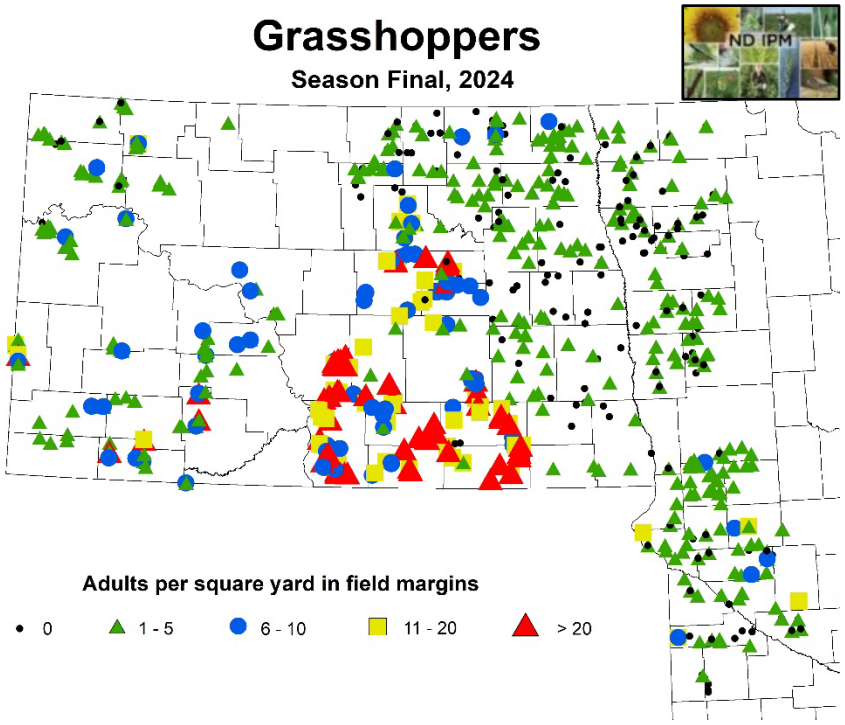
2024 IPM CROP SURVEY – WHEAT & BARLEY INSECT PESTS

The IPM (Integrated Pest Management) Crop Survey helps ND farmers, crop consultants, and ag audiences stay up-to-date on important diseases and insect pests of wheat and barley grown in North Dakota. Eight IPM scouts and insect trappers operated out of the Dickinson Research Extension Center, the North Central Research Extension Center (Minot), the Carrington Research Extension Center, the Langdon Research Extension Center, the Williston Research Extension Center and the Fargo Agricultural Experiment Station. The 2024 NDSU IPM scouts and insect trappers:

- **Shelby Dietz**, central and south-central counties, working out of Carrington REC with Greg Endres
- **Frederick (Eddy) Nortje**, southwest and west central counties, working out of Dickinson REC with Victor Gomes
- **Chris Asmundson (insect trapper, IPM scout position vacant)**, north central counties, working out of NCREC in Minot with Shana Forster
- **Scott Roseth and Samantha Turnquist**, northwest counties, working out of Williston REC with Charlie Lim
- **Tommy Crompton**, southeast and east central counties, working out of NDSU campus, Fargo with Janet Knodel, Patrick Beauzay, Andrew Friskop, Wade Webster and Sam Markell
- **McKenna Schneider and Natalie Eversvik**, northeast counties, working out of Langdon REC with Anitha Chirumamilla and Scott Knoke (Benson County Extension Office).

NDSU IPM field scouts surveyed a total of 534 wheat fields (winter wheat, hard red spring wheat, durum wheat) and 60 barley fields for 18 diseases and 6 insect pests in North Dakota. The survey started on June 1st and continued through August 13th. Crops were surveyed from the 2-leaf stage (seedling) through ripening stages. IPM survey data/maps provided near real-time pest information to North Dakota farmers and others in agriculture to assist with scouting and pest management decision making. Pest maps from the 2024 IPM Survey in North Dakota were uploaded weekly onto the NDSU IPM website. Some of the insect pest highlights for wheat and barley are summarized below for North Dakota only.

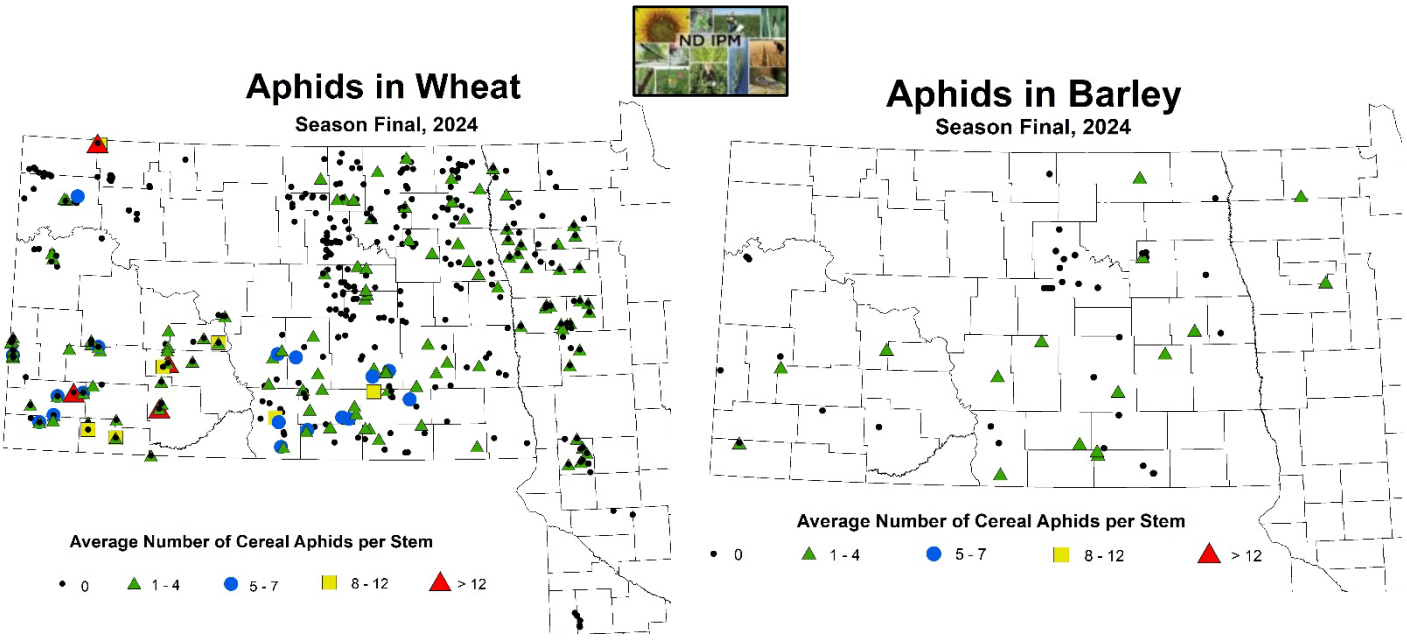
Grasshoppers – Grasshoppers were surveyed for in all crops including wheat, barley, soybeans and sunflowers. Adult grasshoppers were observed in 83% of the fields surveyed. This shows slightly higher prevalence of grasshoppers in 2024 compared to the last year, 68% in 2023, but lower than the previous drought years: 90% in 2022, 91% in 2021 and 2020, and 86% in 2019. The number of adult grasshoppers per 4 sweeps (1 yd^2) ranged from 0 to 76. The highest densities of grasshoppers were observed in south central and southwestern North Dakota.



Although the drought area was reduced due to wet June through mid-July in 2024, grasshopper egg load and populations continued to be moderate to high in past hot spots, especially in western North Dakota. Defoliation was common on field edges later in the summer.

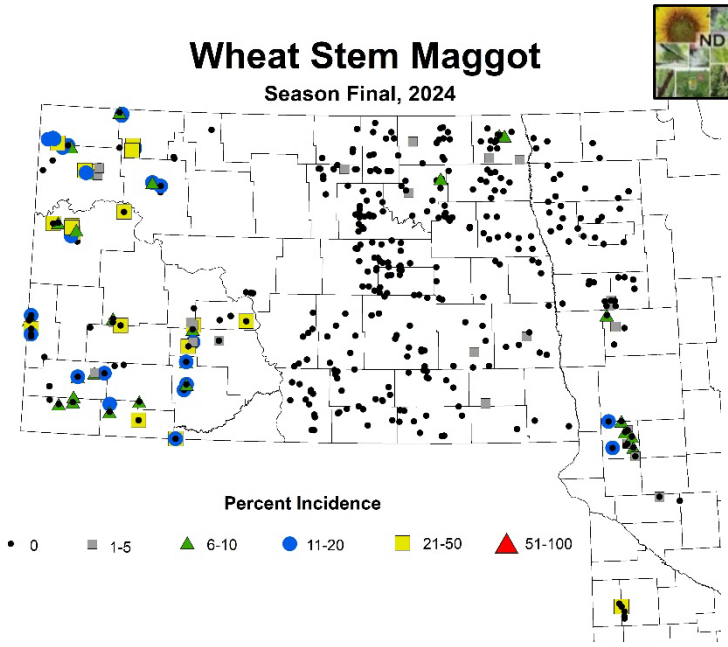
Insect Pests of Small Grains:

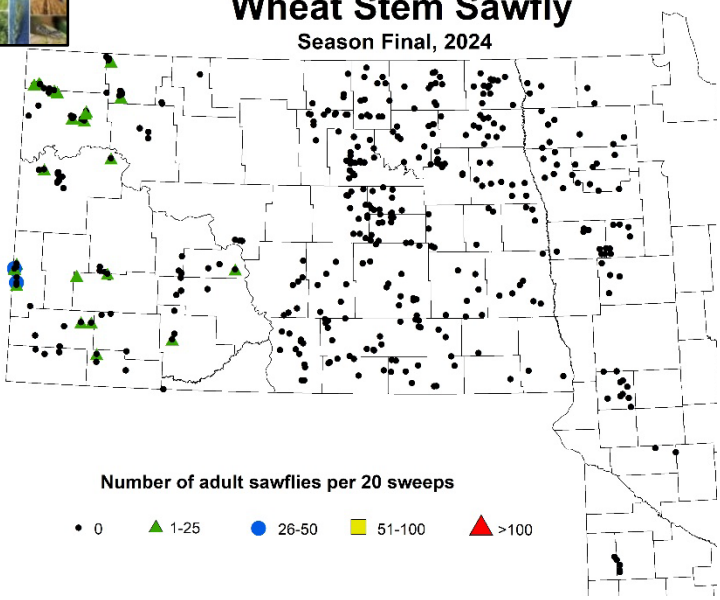
Grain aphids were observed in 29% of the wheat fields and 21% of the barley fields surveyed in 2024, slightly higher incidence than 2023. Grain aphids were first detected in mid-June with highest populations in mid to late July in the south central, south west and north west areas of the state. In wheat, the average number of aphids per stem ranged from 1 to 21. In barley, average number of aphids per stem was lower (ranged from 1 to 4) compared to wheat. Wheat and barley fields that reached economic threshold are shown in yellow squares and red triangles on maps.



Wheat stem maggot was observed in 17% of wheat fields surveyed in ND from late June through early August, and damaged white heads ranged from 1 to 36% of plants sampled. In 2024, wheat fields with ≥20% damaged heads were observed in the northwest - Burke, Divide, McKenzie, Williams; southwest - Adams, Golden Valley, Morton, Sioux, Stark; and west central - Mercer and Oliver counties. Populations of wheat stem maggot were similar to 2023.

Wheat stem sawfly was collected with sweep nets in 5% of the wheat fields surveyed from late June through mid-July in 2024. Numbers of adult sawflies per 20 sweeps ranged from 1 to 44 adults. Wheat stem sawfly was most common in the northwest (Burke, Divide, McKenzie, Williams counties), and southwest (Golden Valley, Hettinger, Morton, Sioux, Stark counties); and west central (Oliver County).

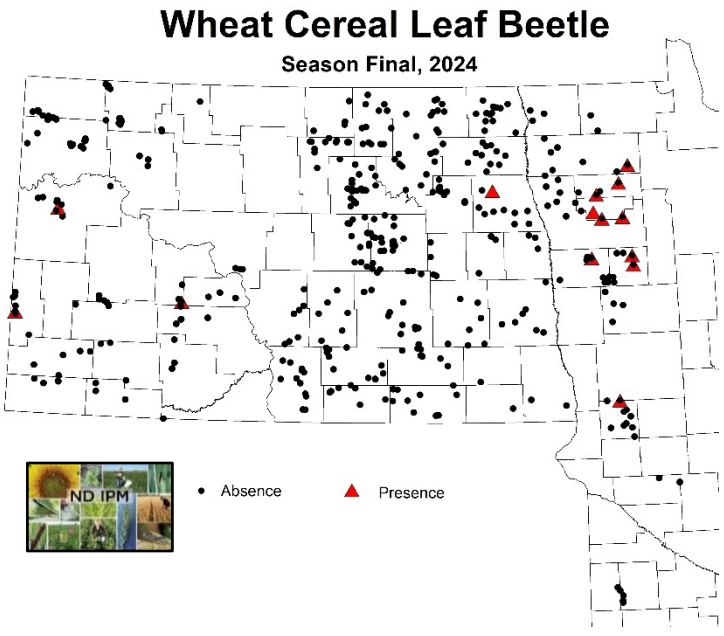




Cereal leaf beetle was detected in wheat fields in three new counties of North Dakota: northeast – Grand Forks; and southwest – Golden Valley and Mercer. Incidence of stems infested with cereal leaf beetle was low, ranging from 1 to 6%. No new detections were observed in 60 barley fields surveyed in 2024.

Past counties that are known to have cereal leaf beetle in North Dakota include: Burke, Divide, McKenzie, Mountrail and Williams in northwest; Renville, McHenry and Ward in north central; and Cavalier and Nelson in northeast.

Barley thrips were not observed in barley fields surveyed in North Dakota in 2024, probably due to rainfall levels.

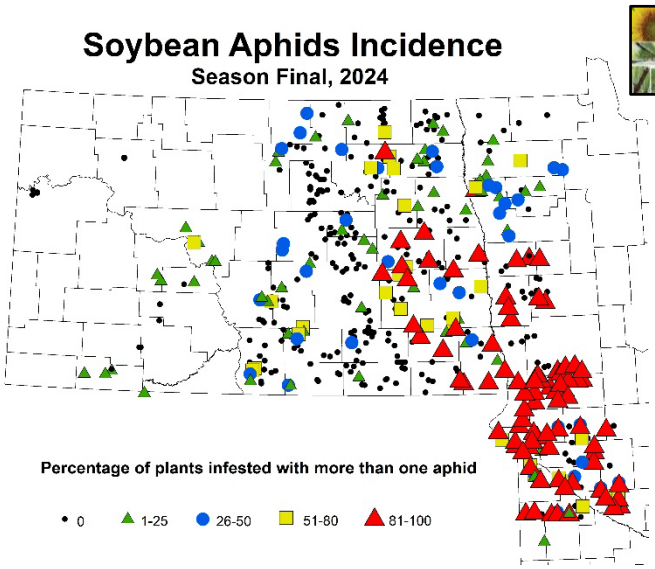


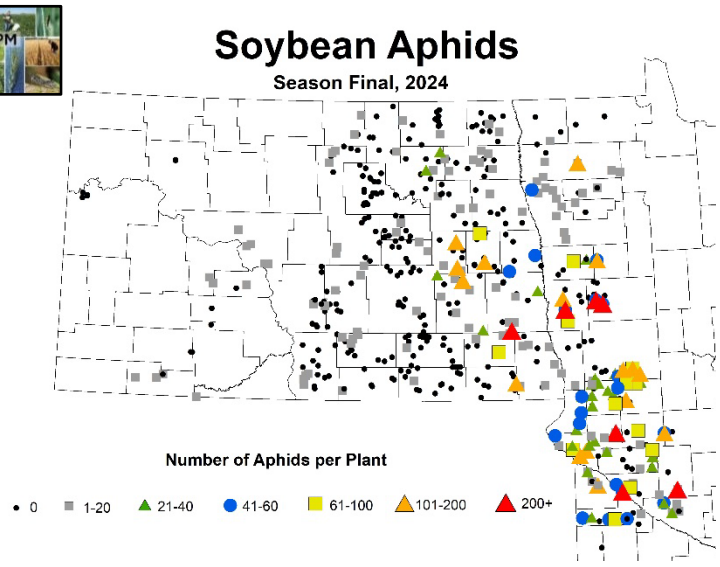
2024 IPM CROP SURVEY- SOYBEAN AND SUNFLOWER INSECT PESTS

NDSU IPM scouts surveyed a total of 456 soybean fields and 90 sunflower fields in North Dakota during 2024. The survey was initiated in early June and continued through August 13. Crops were surveyed from the 2-leaf stage through R7 growth stage in soybeans and R5.9 growth stage in sunflowers. Some of the insect pest highlights for soybean and sunflower are summarized below for North Dakota only.

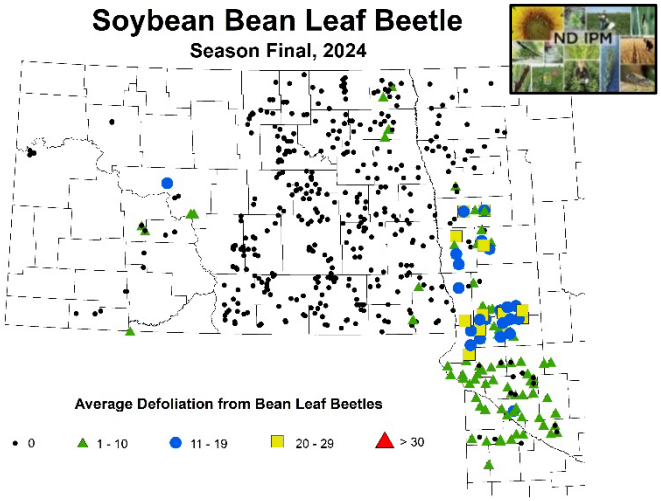
Soybean Insect Pests:

Soybean aphids – Remember, the four-year record of zero to low densities of soybean aphids from 2019 to 2022? Just when we thought soybean aphids were gone, we observed soybean aphid in about 22% of the soybean fields surveyed in 2024, an increase from 12% in 2023. Soybean aphids were observed from early July through mid-August, mainly in the Red River Valley area of North Dakota and Minnesota. The percent of plants infested with soybean aphids in fields had a range from 1 to 100% of plants infested depending on location. The average number of aphids per plant was 30 aphids per plant and ranged from 1 to 385 aphids per plant. Most of the positive fields were located in the eastern part of North Dakota. Among the fields surveyed, soybean aphids reached the economic threshold (E.T.) level in Barnes, Cass, Griggs and Steele counties (average of 250 aphids per plant, 80% of plants infested with one or more aphids and increasing population levels). Pyrethroid resistant soybean aphids were reported in Cass County and also further west in McIntosh County.





Bean leaf beetles continue to spread further west and north in North Dakota. Beetles were detected in sweep net samples and by defoliation estimates in soybean. Defoliation was observed in only 4% of the fields scouted and ranged from 1 to 15% defoliation. The second generation of adult bean leaf beetles occurred in August. It was present in southeastern North Dakota, but also was found in northeast, west central and southwest North Dakota. Bean leaf beetle was not present at economic levels in ND soybean fields surveyed in 2024.



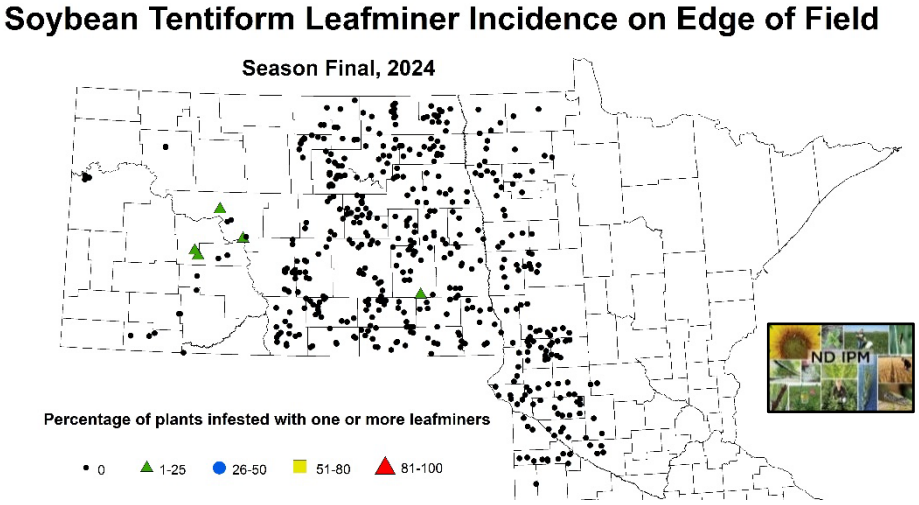
Spider mites were not a problem in 2024 in North Dakota and observed in only one soybean field.

No news records of **soybean gall midge, *Resseliella maxima*,** were detected in North Dakota in 2024, same as 2023. So far, the only positive detection is in Sargent County near Gwinner in 2022. A total of 456 fields in 37 counties were scouted and found to be negative for soybean gall midge. Good news for the North Dakota soybean growers!

Soybean tentiform leafminer (*Macrosaccus morrisella*), a potential new insect pest of soybean, was observed in four new counties (Barnes, McLean, Mercer and Oliver) with low prevalence of 1 to 10% on field edges. Last year, it was observed in Cass, Griggs, Ransom, Sargent and Trail counties.

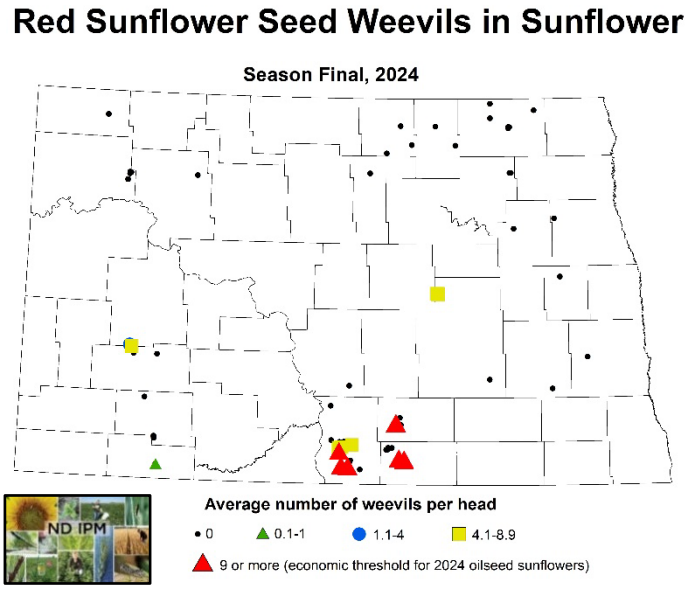
This insect was first found on soybeans in Minnesota in 2022. Larvae create tentlike leaf mines in foliage causing defoliation. Little is known about its biology and pest management. So far, this insect has not achieved a high enough population to impact soybean yield in North Dakota.

Leaf mines caused by soybean tentiform leafminer. (Robert Koch, UMN)

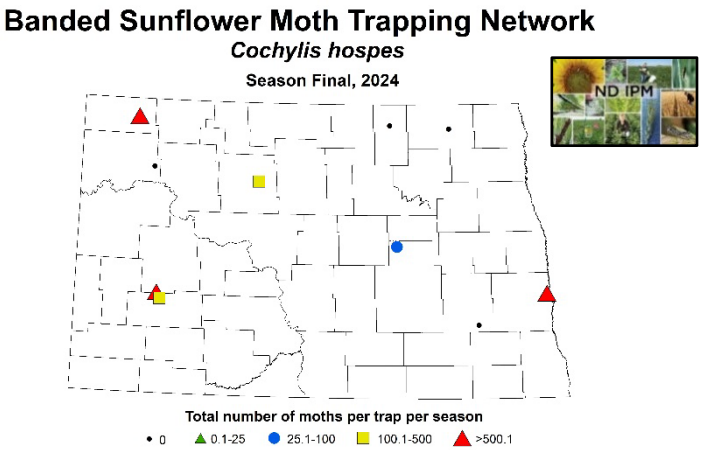


Sunflower Insect Pests:

Red sunflower seed weevils were observed from R3 through flowering from early to mid-August. The average number of weevils per head ranged from 1 to 25 weevils per head with 71% of the weevils found in the field edge and 29% within field. In 2024, the E.T. for red sunflower seed weevils was 9 to 12 weevils per head for oilseed sunflowers depending on market price, insecticide + application costs and plant populations. Approximately 1% of the fields surveyed were above the E.T. and these fields required an insecticide application. The highest populations were located in south central and south west areas of North Dakota.



Banded sunflower moth was monitored for using winged pheromone traps. Moths were collected at half of the 11 trap sites in 10 counties throughout the sunflower acreage in ND. The first moth was trapped mid-July and peak moth catch occurred in late July into early August during flowering. Traps that captured more than 500 banded sunflower moths per trap per season were located in Cass, Divide, and Dunn counties. A total of 3,094 banded sunflower moths were captured among all trap sites.



Sunflower moth was collected at nine of the 11 trap sites and a total of 67 moths for all trap sites per season. Williams County had the highest total of moths captured per trap per season at 32 for the whole trapping season. Sunflower moth migrates into ND and was first detected during early July. Peak catch occurred during late July through mid-August during peak flowering. The Economic Threshold for trapping is when the numbers of sunflower moths is ≥ 25 moths per trap per week, but no trap site reached this level in 2024.

Acknowledgments: Sincere thanks to the hard-working field scouts and insect trappers! We also appreciate the help of Darla Bakko and Barb Nilles, NDSU Dept. of Plant Pathology, for book keeping and data compilation, and Dr. Honggang Bu, NDSU Dept. of Soil Science, for ArcMap programming and webwork.

This survey is supported by the Crop Protection and Pest Management Program - Extension Implementation Program, award number 2021-70006-35330 from the USDA National Institute of Food and Agriculture, and the North Dakota Department of Agriculture CAPS Program.

IPM Scout, Frederick "Eddy" Nortje, getting ready to head out scouting crops in southwest ND! (Victor Gomes, DREC)

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plant pathology

2024 CORN DISEASE UPDATE

The Cereal Crop Extension Pathology program has been out in the corn fields conducting a corn disease survey. This effort, along with conversations with growers, agronomists and crop consultants has given us a good perspective on the prevalence of corn diseases at this point in the growing season.

Common Rust

The most common disease identified in corn fields has been common rust (Figure 1) and was found in 94% of the fields the past two weeks. As a reminder, the common rust pathogen does not overwinter in North Dakota and is dependent on southerly winds to carry spores into our state. There have been higher than average rust reports in the Central Great Plains and this has contributed to higher prevalence levels of common rust in North Dakota. The good news is the disease is not considered economic in North Dakota. Some of the reasons why include the availability of resistance in northern corn hybrids and rust severity levels are unable to reach economic levels on field corn.

One important reminder pertaining to the common rust pathogen is that telia (overwintering stage) can look similar to tar spot. Telia are often found on the oldest corn leaves, pustules will appear black, and some telia will be covered by gray leaf epidermis giving it a “shiny” appearance (Figure 2). As a reminder, we have not identified tar spot in North Dakota.

Figure 1. Common rust pustules on corn leaves. Notice brick red color of spores and elongated pustules. The image on the left is a corn hybrid displaying a resistance response to common rust.

Figure 2. Telia of the common rust pathogen will be black, be irregular in shape, and may look gray and "shiny" due to the detached leaf epidermis covering the epidermis (Photo Credit Treyton Barnick – Centrol).

Southern Rust

We confirmed southern rust (Figure 3) in several south eastern counties last week. Southern rust is the more concerning type of corn rust as it can significantly reduce yield when it appears early in the growing season. Fortunately, a majority of corn crop is advanced enough where southern rust will not be a yield limiting factor. Like common rust, southern rust does not overwinter in the state and is blown in from southern US states.

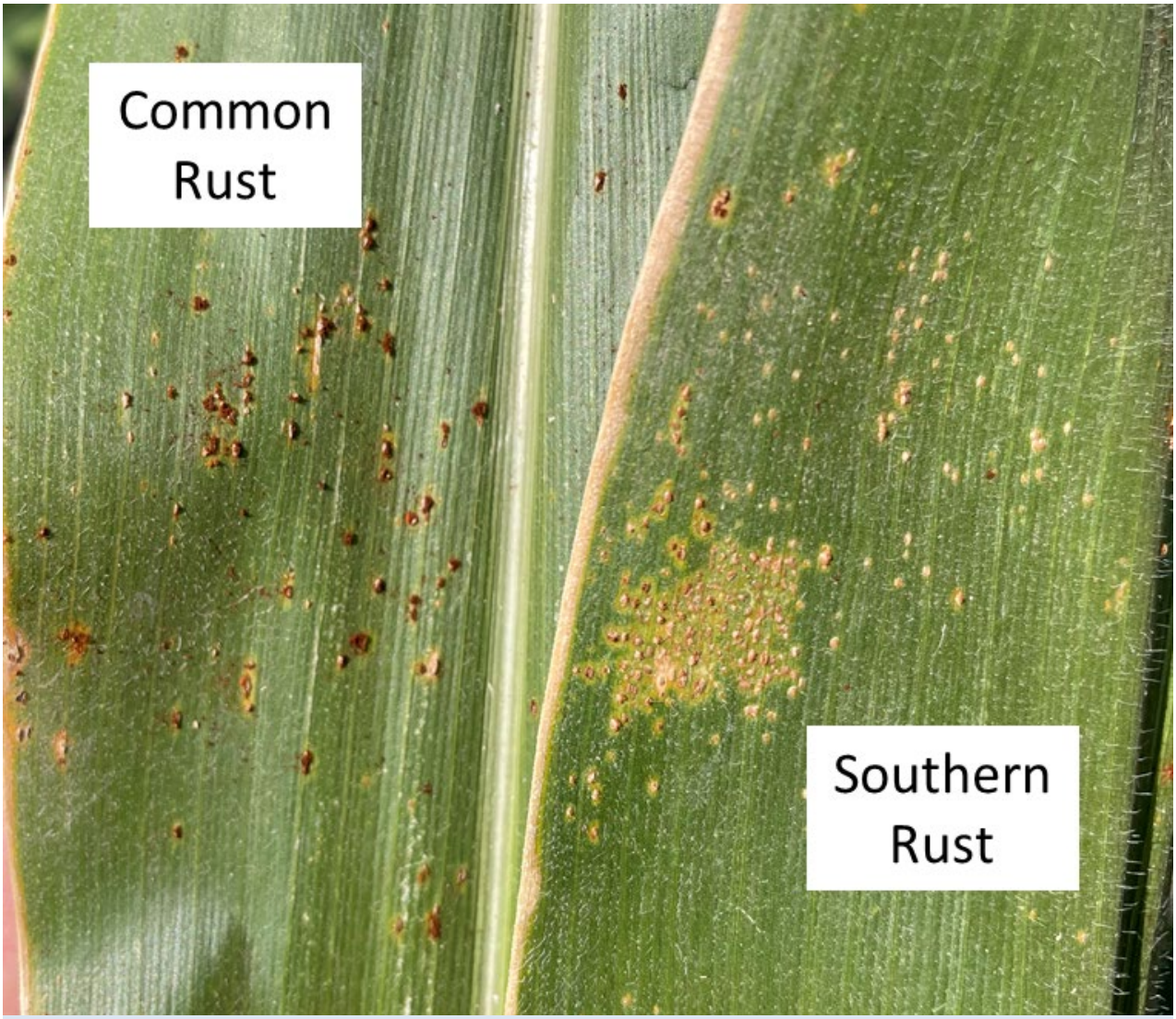

Figure 3. Corn leaves showing the difference between common rust and southern rust. Southern rust pustules are often more densely cluttered, orange in color, smaller, and more circular when compared to common rust.

Northern Corn Leaf Blight

Northern corn leaf blight (NCLB) was identified in 36% of the fields and at low incidence and severity (Figure 4). This is a residue borne disease that develops in cool and wet weather. This is the highest prevalence of NCLB in North Dakota that we have seen in the past 10 years, but the low incidence within fields suggests management was not necessary this year.

Figure 4. Typical symptoms for northern corn leaf blight. Notice cigar shaped lesions with a tan center.

Gabe Dusek
Graduate Research Assistant NDSU Plant Pathology

Andrew Friskop
Extension Plant Pathology, Cereal Crops

SMALL GRAIN DISEASES – IPM SURVEY SUMMARY

The cool and wet weather conditions throughout May and early June provided the foundation for the development of diseases in small grains. However, disease levels remained relatively low. During the last week of June and into early July, relative humidity levels increased and prolonged dew periods became more frequent. The combination of these two environmental factors increased disease prevalence in small grains and also increased Fusarium head blight risk.

Early Season Foliar Diseases (prior to flag leaf)

Very low levels of diseases were documented in wheat and barley fields in the early part of the growing season. The most commonly observed disease in wheat was tan spot and was identified in 23% of the fields, but at low severity (<3%). The other foliar diseases reported were stripe rust (2% of the fields) and bacterial leaf streak (1% of the fields. In barley, no early season foliar diseases were reported.

Late Season Foliar Diseases (flag leaf and beyond)

Higher levels of wheat disease were reported in fields that were at the growth stages of flag leaf and beyond. The figure below summarizes the percentage of fields where a foliar disease was reported. Tan spot reports occurred across much of the state, stripe rust reports were mainly from the western third of the state, and bacterial leaf streak reports were predominately from the eastern third of the state. For barley, the most commonly reported foliar diseases were spot blotch (8% of the fields) and net blotch (6% of the fields).

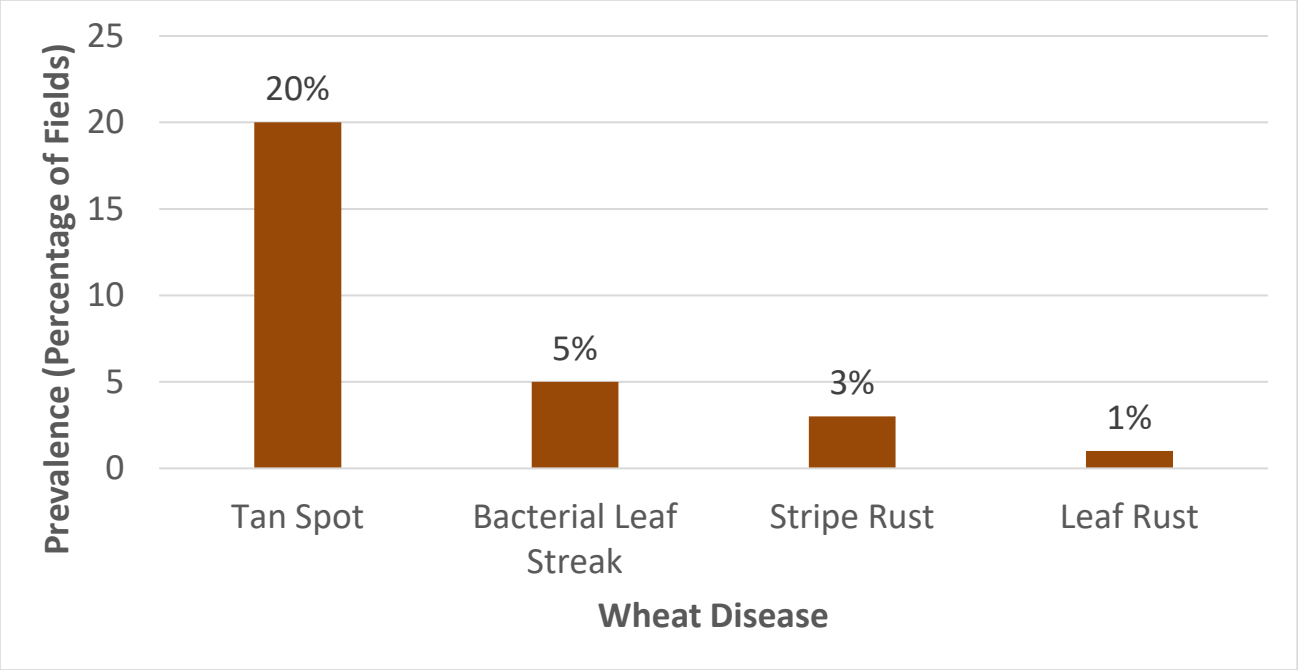

Figure 1. Prevalence (percentage of fields where a disease was observed) of late season foliar wheat diseases in North Dakota.

Fusarium Head Blight

Fusarium head blight risk was moderate to high for most areas of the state beginning the in late June and throughout most of July. Scouts reported Fusarium head blight in 25% of the wheat fields this year with an average disease severity of 10% (1-2 spikelets being infected). In barley, scouts reported Fusarium head blight in 8% of the fields.

Andrew Friskop
Extension Plant Pathology, Cereal Crops

2024 SOYBEAN GROWING SEASON: THE HAY IS IN THE BARN

The 2024 soybean growing season was challenging, but as we get nearer to harvest it is looking promising. Throughout much of the season, we experienced significant rainfall, causing many farmers to plant later than ideal. This led to a wide range of growth stages across the Northern Great Plains at any given time. In addition to the moisture, lower than average temperatures created ideal conditions for the development of several soybean diseases.

Early in the season, numerous fields were flooded or had standing water, which contributed to the widespread development of seedling diseases such as *Pythium*, *Phytophthora*, and *Rhizoctonia*. This emphasized the critical importance of using appropriate seed treatments. In areas of Western North Dakota where seed treatments are underutilized, these seedling diseases hit particularly hard. As the crop advanced to later vegetative and early reproductive stages, growers became concerned about white mold and whether preventative measures were necessary. Despite the extended periods of rain and cool temperatures which are highly conducive for white mold development,

canopy closure did not occur until after the R3 growth stage in many areas. As a result, the white mold fungus (*Sclerotinia sclerotiorum*) was unable to efficiently produce apothecia (mushrooms), which serve as the inoculum source for infection. By the R5/R6 growth stages, white mold had not developed to the degree anticipated, likely due to the delayed canopy closure across the state.

In early August, several foliar diseases began to emerge, sparking increased attention. Frogeye leaf spot was first detected in south-central North Dakota, with some soybean varieties proving highly susceptible, while others showed greater resistance. In the central region, isolated reports of Septoria brown spot appeared at higher-than-normal levels. Cercospora leaf blight also developed later in the season, with some fields exhibiting severe symptoms (Figure 1). Although these diseases have not historically been of major concern for soybean growers in North Dakota, this season will likely lead to a greater production of inoculum, which will be present going into the 2025 growing season.

Figure 1. Cercospora leaf blight on soybean leaves in Central North Dakota. (Credit: Jeff Stachler)

By mid- to late August, sudden death syndrome (SDS) began appearing in the southeastern corner of North Dakota, with multiple counties reporting suspected epidemics. The emergence of SDS in the state is a significant concern and should be closely monitored in fields that are still green. These fields should be targeted for active management to reduce disease pressure in future seasons.
Despite the challenges posed by various diseases during the 2024 season, much of the state's soybean crop appears promising. Here's to hoping for a warm fall with plenty of growing degree days left to help us finish the season strong!

SCN END OF SEASON CONSIDERATIONS

As a follow-up to the previous Crop and Pest Report on the biology of soybean cyst nematode (SCN), it's crucial to emphasize the role of soil sampling in effectively managing this persistent pest. SCN remains the number one yield-robbing threat to soybeans in North Dakota, with significant infestations often going unnoticed until yield losses are severe. Soil sampling provides a vital early detection tool, allowing farmers to manage SCN populations before they reach economically damaging levels.

Why Soil Sampling is Essential

SCN is a silent and often invisible pest. It can cause severe damage to soybean plants even before any visible symptoms appear. By the time farmers notice stunted growth, yellowing leaves, or reduced pod set, SCN populations have often reached levels that can lead to yield losses of up to 30% or more. Soil sampling is the only reliable method to detect SCN before visible symptoms appear and crop losses are significant.

Regular soil testing allows farmers to track SCN population levels in their fields, especially as the nematode continues to spread across North Dakota. Recent data from the NDSU SCN Sampling Program shows a growing number of positive samples, even in regions that have historically seen little SCN pressure.

The SCN Sampling Process

Soil sampling for SCN is straightforward and provides farmers with critical information about the nematode's presence and population density. There are a few sampling strategies depending on your goal. If you know your field has SCN, soil sampling can help evaluate how well your current management practices are working by measuring egg levels in the

soil. To do this, take soil cores from similar areas of the field and group the samples. If you're sampling to determine whether SCN is present, focus on areas where SCN is most likely to be introduced, such as field entrances, along shelter belts, and in frequently flooded spots (Figure 1).

Certain areas within the field should be considered suspicious for SCN:

- High pH spots (SCN thrives in high pH soils).
- Areas with unexplained low yields (where plants look healthy but perform poorly).
- Areas that turned yellow in August (heavy SCN pressure may cause stunted or yellow plants, especially during hot and dry conditions later in the season).

Figure 1. Sampling strategies that can be used for SCN sampling. (Credit: SCN Coalition)

Testing for SCN eggs in the soil can help farmers make informed decisions on:

- **Crop rotation**: Rotating with non-host crops is one of the most effective strategies for managing soybean cyst nematode (SCN) populations. By rotating soybeans with non-host crops like corn or wheat, farmers can significantly reduce SCN reproduction and lower soil egg levels, which helps protect future soybean yields. However, it's important to note that certain crops, such as dry beans, can also serve as a host for SCN, potentially allowing the SCN populations to persist even in years when soybeans are not grown.

- **Resistant varieties**: Utilizing SCN-resistant soybean varieties is a key component of managing SCN populations. The two most common sources of resistance are PI88788 and Peking, both of which help reduce SCN reproduction and limit yield losses. However, over time, SCN populations can adapt to resistance genes, particularly those from PI88788, which is widely used. To maximize effectiveness, farmers should rotate between different resistant varieties, even if they use the same source of resistance. This practice helps slow down the nematode's ability to overcome resistance and prolongs the benefits of these varieties in SCN management strategies.

- **Integrated management strategies**: Seed treatments play a crucial role in managing SCN as part of an integrated pest management (IPM) strategy. These treatments, often containing nematicides, provide early-season protection against SCN by reducing nematode activity around the roots during early stages of soybean development. However, seed treatments alone are not enough to control SCN in the long term. Incorporating them into an IPM approach, which includes crop rotation, resistant varieties, and regular soil sampling, helps create a multi-layered defense against SCN. By combining these practices, farmers can minimize the risk of SCN adapting to any single management tactic and protect their soybean yields more effectively.

Soil sampling for SCN is a critical management tool that all soybean farmers should prioritize. Early detection through regular sampling allows farmers to implement timely and effective control measures, preserving yield and profitability. With SCN continuing to spread across North Dakota, understanding its presence in your fields is more important than ever. Be sure to take advantage of the SCN Sampling Program to protect your soybean production.

For more information on how to collect samples or to request sampling bags, contact your local county Extension agent or visit the NDSU SCN Sampling Program webpage.

Wade Webster
Extension Plant Pathology, Soybeans

plant science

WHY IRON DEFICIENCY CHLOROSIS (IDC) WAS TOUGHER THIS SEASON?

This year was especially hard on IDC, we even saw dry beans showing symptoms even though this specie is more tolerant! If you were wondering why, here are some explanations.

Iron is typically in a low solubility form in the soil (Fe3+), and cannot be absorbed by plants. However, soybean plants have a strategy for iron uptake. The roots of soybeans make the soil around them more acidic and release enzymes that change the iron in the soil to a more soluble form (reducing Fe3+ to Fe++), making it accessible to the plant. This strategy is restrained when there are carbonates (CO3-2-) in the soil (Figure 1). As the soil becomes wetter, the amount of dissolved carbonates increases, producing more bicarbonate that neutralizes the soil acidity, preventing the plant from absorbing iron. This is the reason why wet and cool growing seasons can lead to a higher incidence of IDC (like this season!).

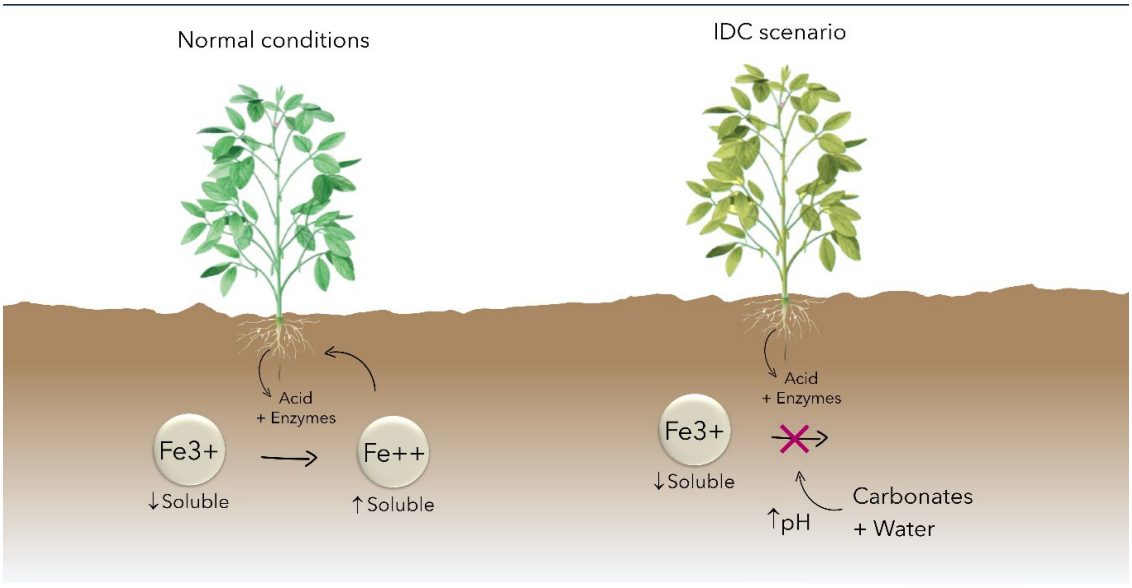

Figure 1: Diagram showing the soil process in a normal vs an IDC condition. Soybean illustration from UNL Extension.

So... what can we do? (Figure 2)

Choosing a **tolerant variety** is the best way to address IDC. If you have a field with a history of IDC, select the most tolerant variety available. IDC scoring methods may vary among companies, so it is best to consult university IDC variety trials. While there are other management strategies, none can compensate for choosing a susceptible variety.
Check the NDSU IDC variety trials - Variety Trial Results (ndsu.edu).

Secondly, **applying ortho-ortho-EDDHA Fe chelate** with water in the furrow at seeding has been shown to reduce IDC. The chelate delivers iron to the plant root early in the season but cannot compensate for choosing a susceptible variety over a tolerant one.

Lastly, **higher soybean seeding rates** or wider row spacing while keeping plant populations constant (denser plants in the row) have been found to decrease the severity of IDC. However, the impact of increasing the seeding rate is relatively minimal and varies across different environments. The decrease in IDC with higher seeding density might be due to reduced soil moisture beneath the rows or greater acidity in the root zone, which promotes the activity of iron-reducing compounds secreted by soybean roots.

Do you want to know more?

Check this guide Soybean Soil Fertility | NDSU Agriculture

Figure 2: List of the management options. Icons from Flaticon.

Ana Carcedo
Extension Broadleaf Agronomist

soils

2024-FALL SOIL HEALTH WORK

It is that time of the year again. Small grain harvest is at its peak, some producers are tilling (harrowing, cultivating etc.) their harvested fields and some may want to plant cover crops for different reasons. Here are some the practices that can help producers achieve their soil health objectives.

Fall-2024 Tillage

For most crops, fall tillage may not be necessary for getting a good seedbed and planting timely next spring. Often in the eastern and central parts of North Dakota, producers have been wary of a wet spring (recent example could be 2024) resulting in saturated and cooler soils. However, if needed, soils can be tilled in the spring for quick drying and fall-tillage can be totally avoided. It will save money, equipment depreciation and will lead to less soil disturbance. Getting a good seedbed and good seed-to-soil contact can also be achieved on wheat, soybean, and canola stubble fields without fall or in most cases spring-tillage. Research carried out by NDSU Extension at a farm in Grand Forks County, indicated no significant yield differences in crops planted following soybeans and pinto beans, regardless of tillage or no-till practices. By leaving the soil following bean crops undisturbed, research indicates minimal yield impacts while also helping to prevent the damaging erosion we have seen all too often in recent years—It will not produce perfect results, but it will still be a step in the right direction.

Planting new Cover Crops

General killing frost dates in most parts of North Dakota range from September 21 to October 10. Most years, cover crop mixes planted at the end of August or early September will only get three to five weeks to grow, which is not enough to produce meaningful growth. Under most circumstances, letting the volunteers grow may be a better option. This will save seed and planting expenses and will help cover the soils. Granted, volunteers mostly will not add plant diversity, however, it can be the "free cover crop". In addition, in case of a prolonged fall, volunteers may produce a decent amount of above and below the ground biomass. In planting a new cover crop, also consider plant, insect, and disease presence in that field. Then, your options for controlling those pests if they persist in conjunction with the cover crop being selected.

A cover crop mix (left) planted on September 4, 2017, another (center) at the end of July, 2017 and a volunteer wheat growth (right) on November 4, 2021.

Planting Green Next Spring

If your next crop is soybean and planting green is the objective, winter cereal rye can be planted at a seeding rate of 40 to 60 lbs./acre if you're drilling. If broadcasting, consider increasing the seeding rate by 25% for 50 to 75 lbs./acre. If spring is wet, soybeans can be planted green in the rye and later rye can be terminated before it will compete with soybeans for

water, nutrients, and sunlight. If spring is dry, rye could be terminated 12 to 14 days before planting soybeans. A study carried out by researchers at the Carrington REC, indicated a rye cover crop planted prior to dry beans is also a viable option for preventing erosion and building soil health; however it is recommended that the cover crop be terminated 16 days prior to dry bean planting to mitigate yield impacts (https://www.ndsu.edu/agriculture/sites/default/files/2022-03/a2050.pdf). Another option for planting green is to mechanically terminate cover crops with a roller crimper or chain. This method is more suitable for high biomass cover crops and can be done after planting when soybeans are 3 to 4 inches tall (V2-V3). These options bring flexibility for producers.

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around the state

AROUND THE STATE
NORTHEAST ND

Small grain harvesting is winding up in many regions with farmers trying to finish off the last few acres. Dry bean fields are ready for harvest while many soybean fields are still green. Approximately 25% of canola has been harvested. Late planted fields are turning color and being desiccated. Corn is looking good and majority of the fields are at dent stage. Sunflowers are dropping ray petals.

Wheat harvest in Cavalier County. Photo: Anitha Chirumamilla, LREC

Corn at dent stage in Ramsey County. Photo: Anitha Chirumamilla, LREC

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SOUTH-CENTRAL/SOUTHEAST ND

Over half of the region received greater than 0.8 inch of rainfall in the past two weeks, while other areas are getting quite dry! Rainfall in the region the past two weeks ranged from 0.01 inch near Edgley in LaMoure County (this area is getting really dry) to 2.57 inches near Jamestown in Stutsman County with an approximate average for the region of 0.84 inch. Locations in Barnes, Burleigh, Cass, Foster, Griggs, Steele, Traill, and Wells Counties received greater than 0.8 inch of rainfall over the past two weeks! All of the region received less than 0.04 inch of rainfall in the past week! Crops are suffering from lack of rainfall in much of the region including places such as Griggs County that received good rainfall in August! In Griggs County, we had the highest average relative humidity for August since the Cooperstown NDAWN station was installed in late 2014! This is one reason for the delayed hard red spring wheat harvest.

With the drier weather, hard red spring wheat harvest is moving along quite nicely, however the northern half of the region still has hard red spring wheat to be harvested, mostly due to late planting, but also due to the lack of days to harvest and the speed of harvesting due to lodged wheat and lots of biomass going through the combine. Wheat yields and quality continue to be highly variable across the region! Wheat yields are ranging from 40 to over 100 bushels per acre across the region with farm averages from 50 to 90+ bushels per acre. Protein levels are somewhat variable across the region, however most hard red spring wheat is between 13 and 15% in Griggs County. Vomitoxin (DON) levels have remained under 4 parts per million in most of the region, which is great news. Falling numbers is the biggest concern in the region with falling numbers ranging from 50 to 400+ in the region. In Griggs County, about 50% of the hard red spring wheat has falling numbers below 300!

Canola harvest is finished farther south in the region and beginning in the mid and upper sections of the region.

Corn looks quite good over most of the region unless excessive water and hail damaged it or lack of rain later in the season has affected it. Corn silage harvest has begun in early planted corn in the southern area of the region. A slight majority of the corn in the central part of the region is at the mid dent (R5) stage with corn in the southern parts of the region approaching black layer. As of September 10th, corn growing degree days (GDD's) since May 1st are ranging from 1864 at Harvey in Wells County, which is 207 GDD's greater than two weeks ago, but 31, 129, and 273 GDD's below the normal, the 5-year average, and 2023, respectively to 2160 GDD's at Mooreton in Richland County which is 225 GDD's greater than two weeks ago, but 17, 94, and 252 GDD's below the normal, 5-year average and 2023, respectively! According to U2U Corn GDD tool (https://hprcc.unl.edu/agroclimate/gdd.php), an 80-day corn hybrid planted on May 15th in Harvey should reach physiological maturity (black layer) on September 22nd, well before a freeze and a 90-day corn hybrid planted on May 15th in near Mooreton should reach black layer on September 27th, again well before a freeze. It looks like most corn will reach physiological maturity in the region this year based upon the long-range forecast and will even be drier to harvest than I had expected. The most common corn disease in the region at the moment is leaf rust which is present in nearly every field, but at very low levels.

Soybean condition is extremely variable across the region due to too much water early, too little water in some areas later in the season, and due to diseases. If these issues are not present, yields look to be outstanding in much of the region. Soybeans in the region are ranging from R5 (beginning seed fill in one of the upper four nodes of fully expanded leaves) stage to R7 (at least one brown pod in one of the upper four nodes of fully expanded leaves) stage with most soybeans at the R6 (full sized seeds in the pods in one of the upper four nodes of fully expanded leaves) stage. Leaf drop is occurring in some fields in the region with some soybeans in the southern region closer to R8 (all pods brown). Nearly every soybean disease can be found in soybean fields across the region! Frogeye leaf spot is bad in the south-central part of the region and can be found sporadically in most fields in the eastern half of the region. Sudden Death Syndrome (SDS) is very prevalent from Richland through Traill Counties, but can be found in some fields through Foster County. Fusarium wilt may be the most prevalent soybean disease in the Griggs County area. Other soybean diseases present include Phytophthora root rot, white mold, Septoria brown spot, Cercospora leaf blight, SCN, stem canker, brown stem rot, and some others. Even late season potassium and IDC are showing up in soybean field. Please scout all soybean fields in order to plant more defensive soybean varieties next year! Please contact your local NDSU Extension Agent to participate in the free SCN testing program! Kochia and waterhemp are the most prevalent weeds in soybean fields at this time of the year with farmers reporting serious issues in the southern part of the region.

Dry bean harvest has begun in the region. Dry beans will certainly reach maturity. There are several dry bean diseases in fields with white mold probably the most prevalent. I did find a fusarium species (according to Sam Markell) killing dry beans prematurely in Griggs County. Weeds continue to come out over the top of dry bean canopies in many or most fields.

Most sunflowers have completed flowering. Sunflower condition is highly variable this year compared to the last two years at least in the eastern part of the region.

Average stage of corn in Griggs County (early R5).

Severe corn leaf rust in Griggs County.

Late-season iron deficiency chlorosis in soybean in Griggs County.

Area of Fusarium wilt in soybean in Griggs County.

Leaf drop occurring in soybeans. Photo by Lacy Christopher in Richland County.

Waterhemp surviving glyphosate plus dicamba!

Jeff Stachler
Griggs County Extension Agent

weather

WEATHER FORECAST

The September 12 to September 18, 2024 Weather Summary and Outlook

Easily the most asked question of me is when will we see the first freeze of the season. In my last Crop and Pest Report I mentioned we may record some 30s just after that forecast period which ended on September 5. Figure 1 shows the low temperatures from September 7. Many NDAWN stations recorded lows in the 30s on both September 6 and 7. Although no stations hit 32°, we came close in many areas with frost being reported. I mention this because at the moment, it does not appear we will be threatened by another freeze until the end of September. That would mean an average or later than average first freeze this year. If true, that would be great news for especially the corn crop.

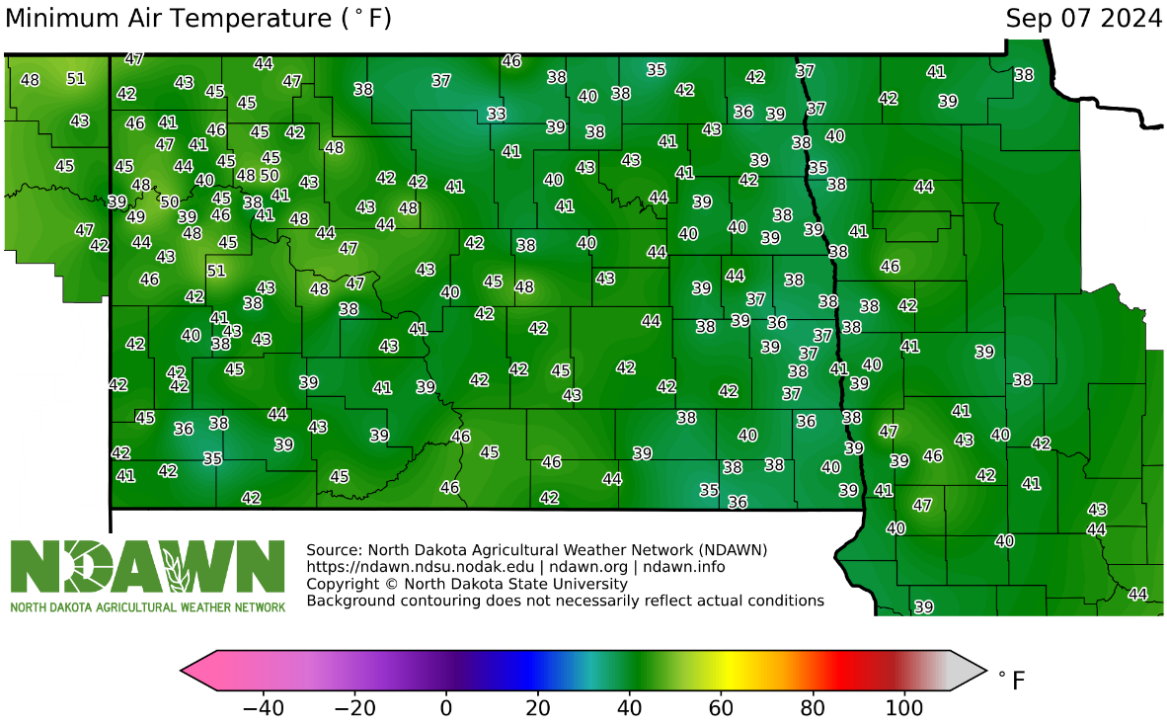

Figure 1. Minimum Temperatures Recorded on September 7, 2024 at NDAWN stations.

With a lack of freezing temperature potential, it will come as no surprise that temperatures are expected to be above average not only during the next week, but probably beyond that as well. Figure 2 is the 8 to 14 day forecast valid for the September 18 through 24, 2024 period which continues to hint at above average temperatures continuing for perhaps as long as two more weeks.

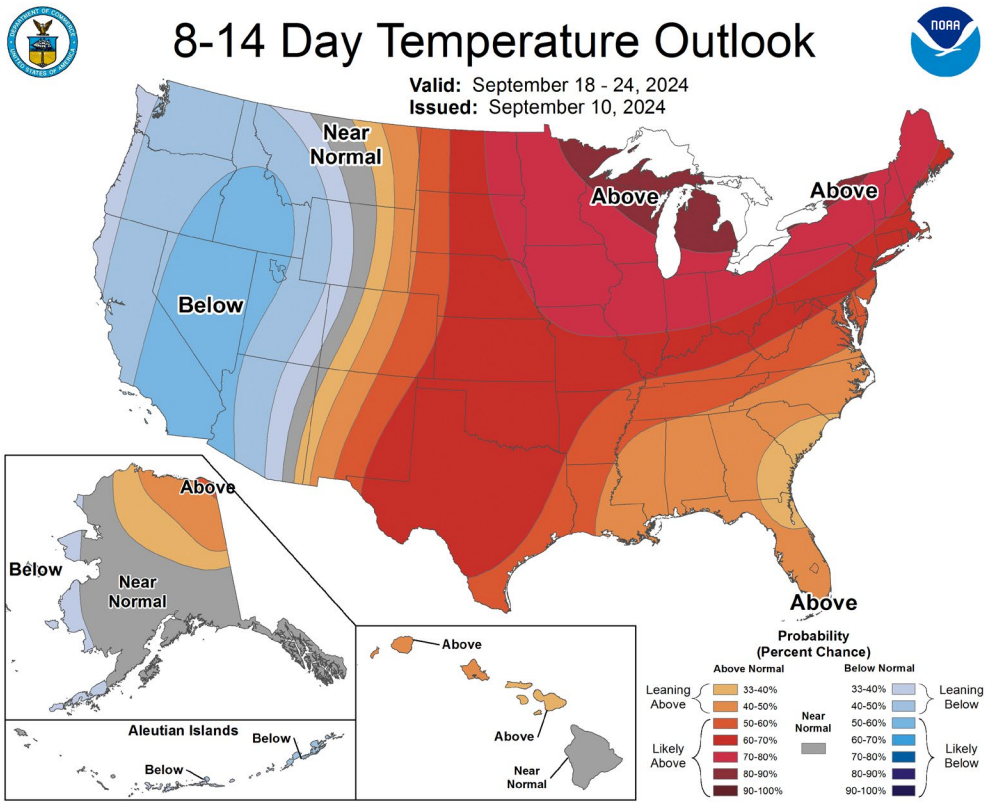

Figure 2. The 8 to 14 Day Temperature Outlook from the Climate Prediction Center (NOAA).

Figure 3 below depicts the forecasted growing degree days (GDDs) base 50° (corn and soybeans) for this forecast period. With temperatures expected to be well above average, GDDs will be at a level rarely observed this time of year, especially in esatern North Dakota and northwestern Minnesota.

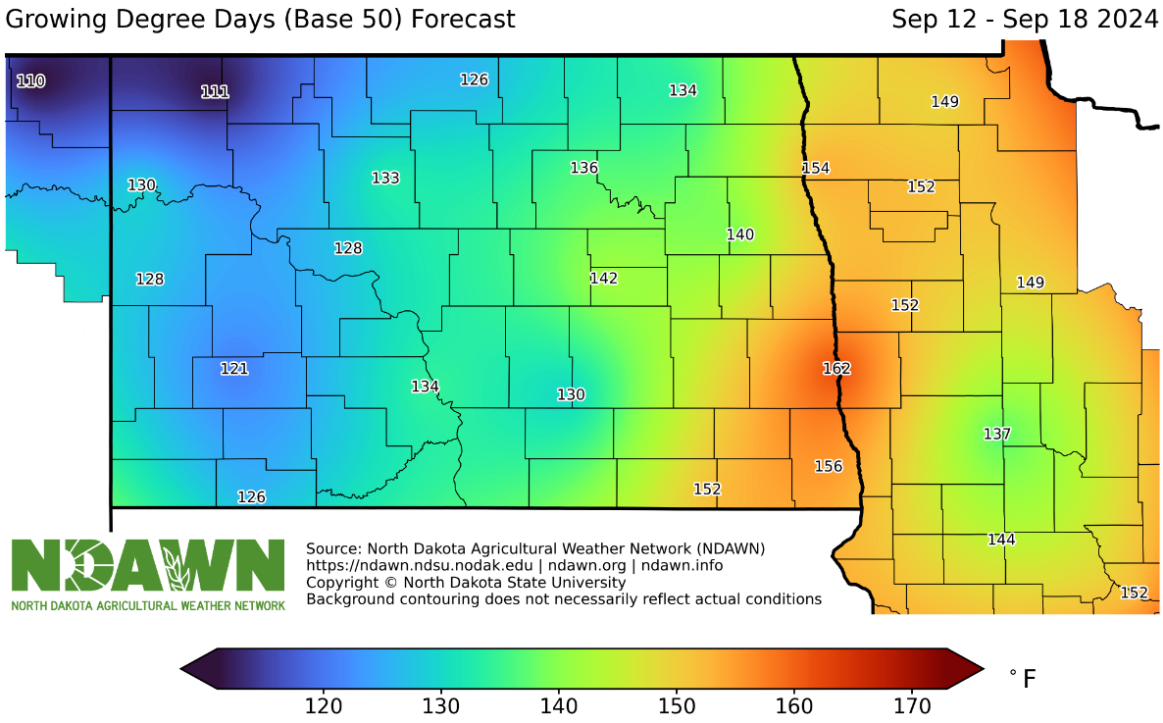

Figure 3. Estimated Growing Degree Days Base 50° for the Period of September 12 to September 18, 2024.

Using May 10 as a planting date, the accumulated growing degree days for corn (base temperature 50°) is given in Figure 4. 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.

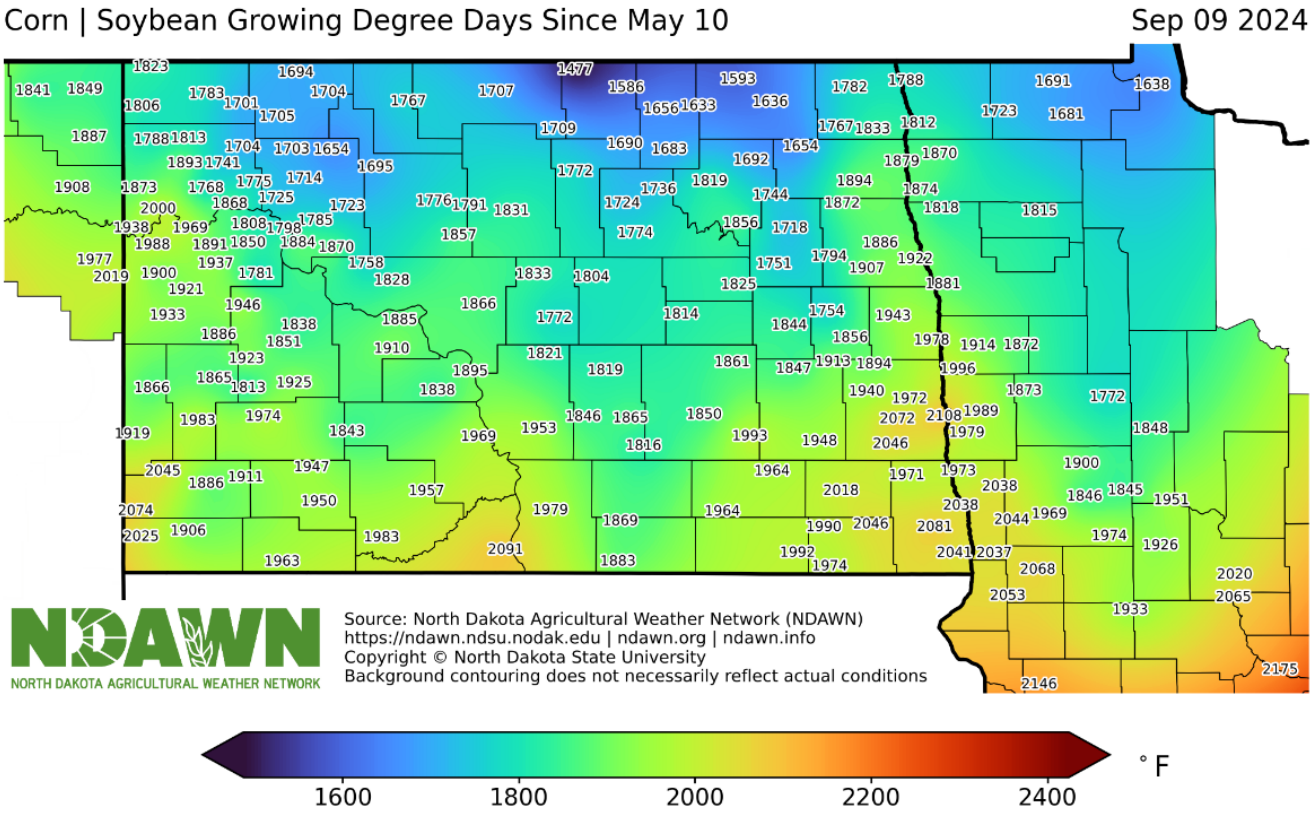

Figure 4. Corn Growing Degree Days (Base 50°) for the period of May 10 through September 9, 2024

Growing Degree Days for other crops can be found on the main website, https://ndawn.ndsu.nodak.edu/ under the "applications" menu, or on our mobile compliant website, https://ndawn.info/agriculture_gdd.html.

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