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2024 NDSU ANNUAL FIELD DAYS

The North Dakota State University Research Extension Centers' annual field days show N.D. Agricultural Experiment Station research in action. The events take place at the Research Extension Center sites across the state and feature speakers, presentations and tours covering a diverse array of topics. The field days are open to the public.

2024 NDSU Research Extension Center Annual Field Days

July 8 – [Central Grasslands Research Extension Center](#)

July 9 – [Dickinson Research Extension Center](#) – morning agronomy tour

July 9 – [Hettinger Research Extension Center](#) – late afternoon

July 10 – [Dickinson Research Extension Center](#) – morning livestock tour

July 10 – [Williston Research Extension Center](#) – late afternoon agronomy/horticulture tour

July 11 – [Williston Research Extension Center](#) – morning irrigation tour

July 15 – [Agronomy Seed Farm](#) – late afternoon tour

July 16 – [Carrington Research Extension Center](#) – morning and afternoon tours

July 17 – [North Central Research Extension Center](#) – morning tour

July 18 – [Langdon Research Extension Center](#) – morning tour



WHEAT MIDGE DEGREE DAY UPDATE

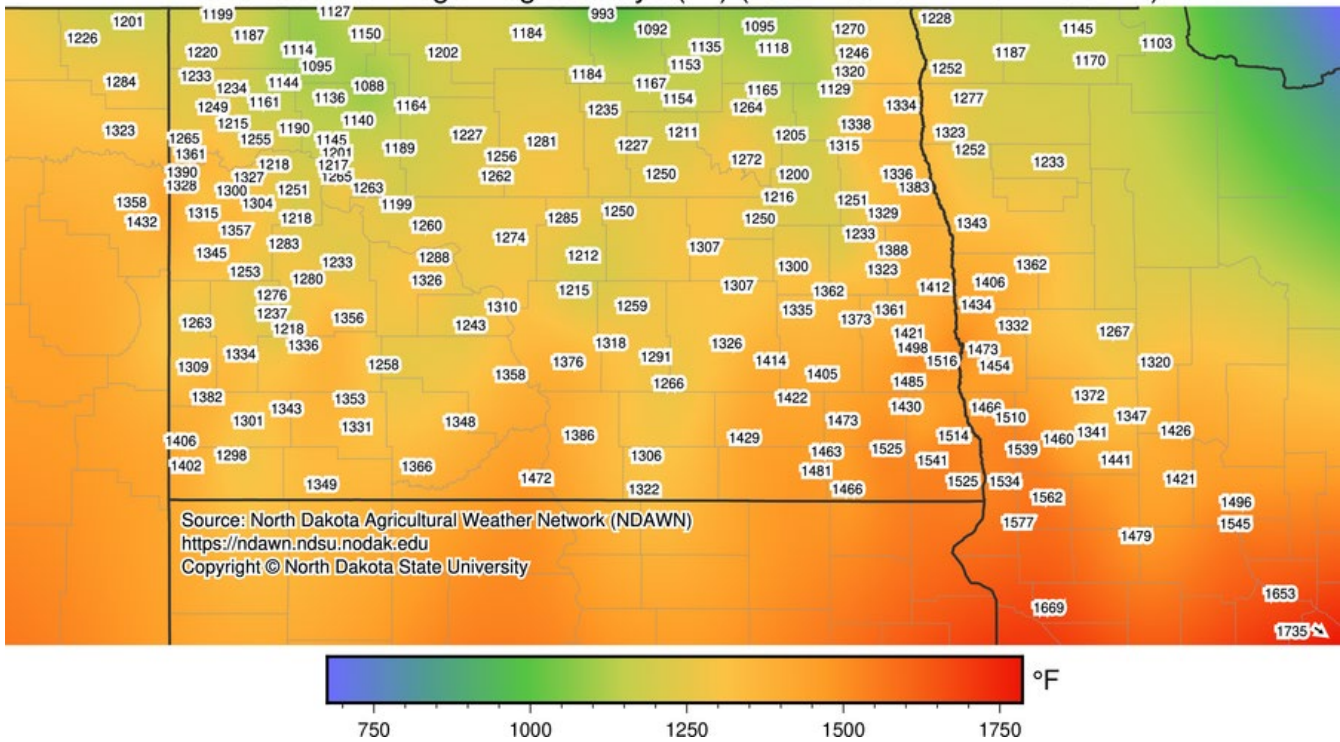


The updated accumulated degrees days for wheat midge shows that the male wheat midge continues to emerge in the northern tier of North Dakota.

Recent IPM pheromone trapping for wheat midge found low numbers, <10 midge males per trap per week in NE and NW areas of North Dakota.

DD	Biological Event
450	The midge breaks the larval cocoon and moves close to soil surface to form the pupal cocoon
1100	Males emerge
1300	10% of the females will have emerged
1475	About 50% of the females will have emerged
1600	About 90% of the females will have emerged

Accumulated Midge Degree Days (°F) (2024-03-01 – 2024-06-24)



Producers can confirm whether their wheat crop is at risk to wheat midge and whether you need to scout by using the degree-day model for wheat midge. Producers can access the [wheat midge degree-day model](https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html) on the North Dakota Agricultural Weather Network (NDAWN) website at <https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html>

Select your nearest NDAWN station and enter your wheat planting date. The output indicates the expected growth stage of the wheat and whether the crop is susceptible to midge infestation, as well as the timing and percent of wheat midge emerged.

If your wheat is heading to early flowering and at risk, scouting for wheat midge is important to confirm that populations are below the economic threshold level.

Crop	Economic Threshold
Spring wheat	1 or more midge per 4 - 5 heads
Durum wheat	1 or more midge per 7 - 8 heads

Scouting for the orange adult flies should be conducted at night when temperatures are greater than 59 F and the winds are less than 6 mph. Use a flashlight and slowly scan the heads of wheat plants for wheat midge adults, counting the number of flies per head.

LEAFY SPURGE FLEA BEETLE UPDATE



Aphthona flava flea beetles
(USDA-ARS, bugwood.org)

Just a short update on accumulated growing degree days (AGDD) for scouting and collecting leafy spurge flea beetles (LSFB) that uses the sunflower AGDD (base 44 F).

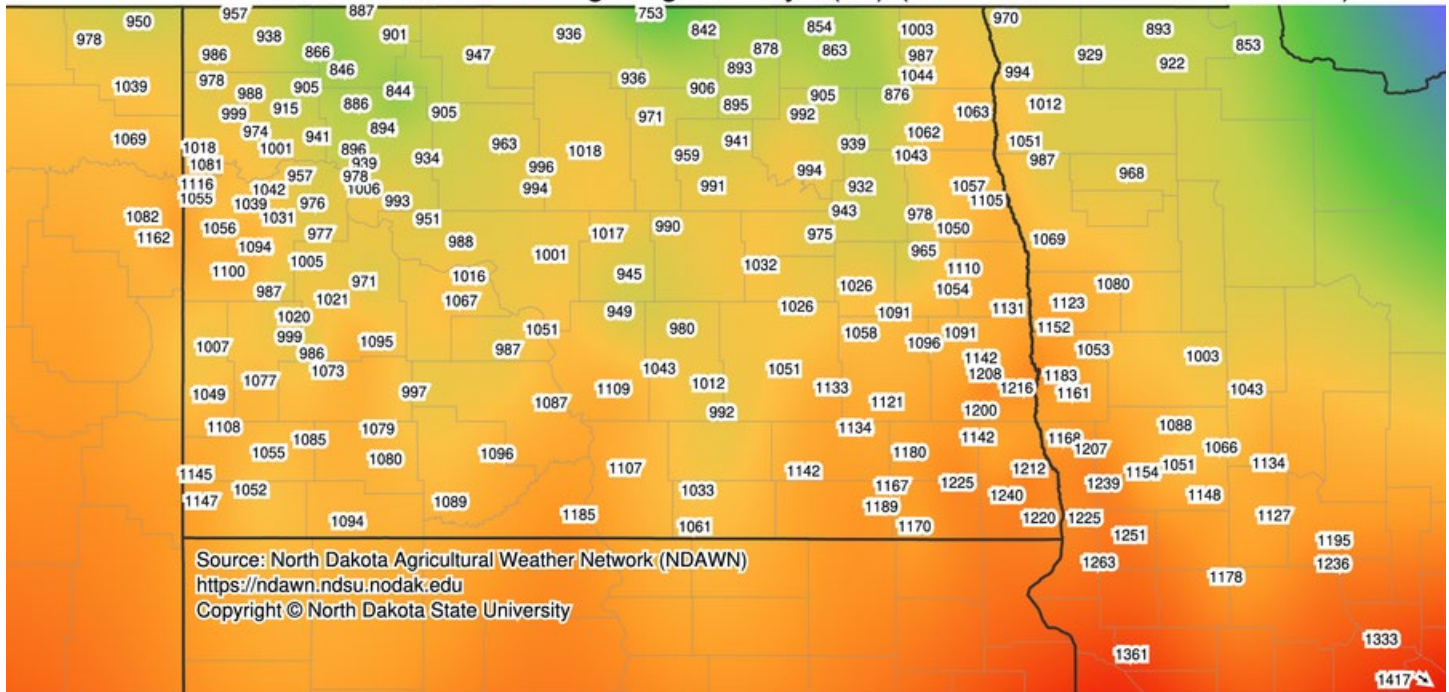
AGDD	Biological Event
1,000	Begin scouting for LSFB
1,200	Begin collecting for LSFB
1,600	End collecting for LSFB
>1600	LSFB begin to lay eggs and should not be moved or collected

NDAWN weather stations indicate that the AGDD are between 753

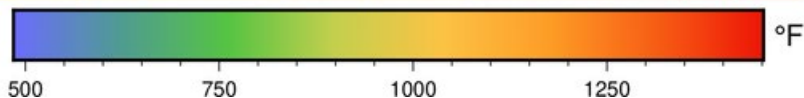
AGDD in northern areas to 1225 AGDD in southern areas of North Dakota. So, sweep net collecting could start for LSFB in the far southeastern counties of North Dakota.

Remember to use the [sunflower degree days/growth stage application](#) on NDAWN website. Select 'Map' and then enter "2024-03-01" for the planting date and select "degree day" for map type. See map below.

Sunflower Accumulated Growing Degree Days (°F) (2024-03-02 – 2024-06-24)



Source: North Dakota Agricultural Weather Network (NDAWN)
<https://ndawn.ndsu.nodak.edu>
 Copyright © North Dakota State University

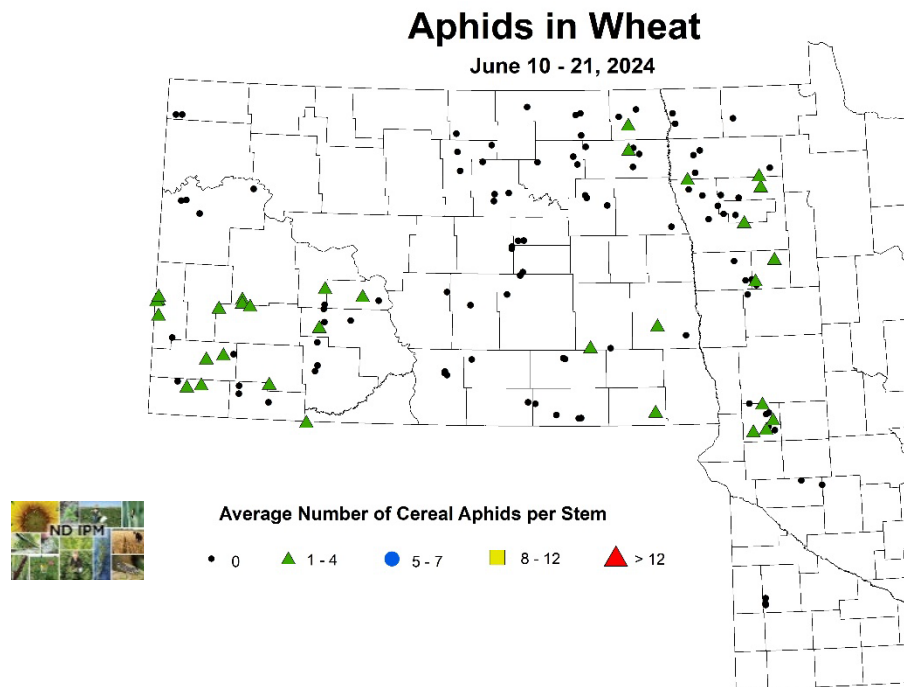


IPM INSECT UPDATE

The IPM scouts and insect trappers have been busy surveying fields for insect pests. Results show that insect pest populations are generally low in the state so far. Good news! Here's some insect reports on what to scout for now.

Wheat:

- **Cereal aphids** continue to be observed at low levels ranging from an average of 1-3 aphids per stem in the northeast, north central and southwest area of North Dakota. About 25% of the wheat and barley fields scouted had cereal aphids present over the last two weeks.



- **Wheat stem sawfly** has emerged this past week. Low numbers were collected in sweep nets in southwest area including McKenzie and Stark counties. It typically emerges mid-June to early July. Remember, the best pest management strategy for wheat stem sawfly is host plant resistance or solid-stemmed varieties and conserving the natural enemies. Insecticides have been tested as seed treatments and foliar insecticides in the past and do NOT provide control wheat stem sawfly, since most of its life cycle is inside the stem as larva and protected.

Soybean:

- **Soybean aphids** were observed at low levels in Richland County in the southeast, and Pierce and Nelson counties in the northeast. Incidence of soybean aphids ranged from 2-16% and an average of only 1 soybean aphid per plant.



Soybean aphid nymphs, adult and casted white skin on left and adult soybean aphid on right (Courtesy of Patrick Beauzay, NDSU)

- **Bean leaf beetles** also have been observed causing low defoliation, <5%, in soybeans in Richland County and McLean County near Washburn-Underwood. This beetle is yellow to reddish-brown, black triangle behind the prothorax and 4 black spots and a black border on the wing covers. Adults emerge from overwintering, moving into bean fields as the seedlings emerge. Treatment thresholds is based on defoliation are 30 percent defoliation during vegetative (V) stages, 20 percent defoliation from beginning bloom (R1) to beginning seed (R5) and 10 percent defoliation during full seed (R6).

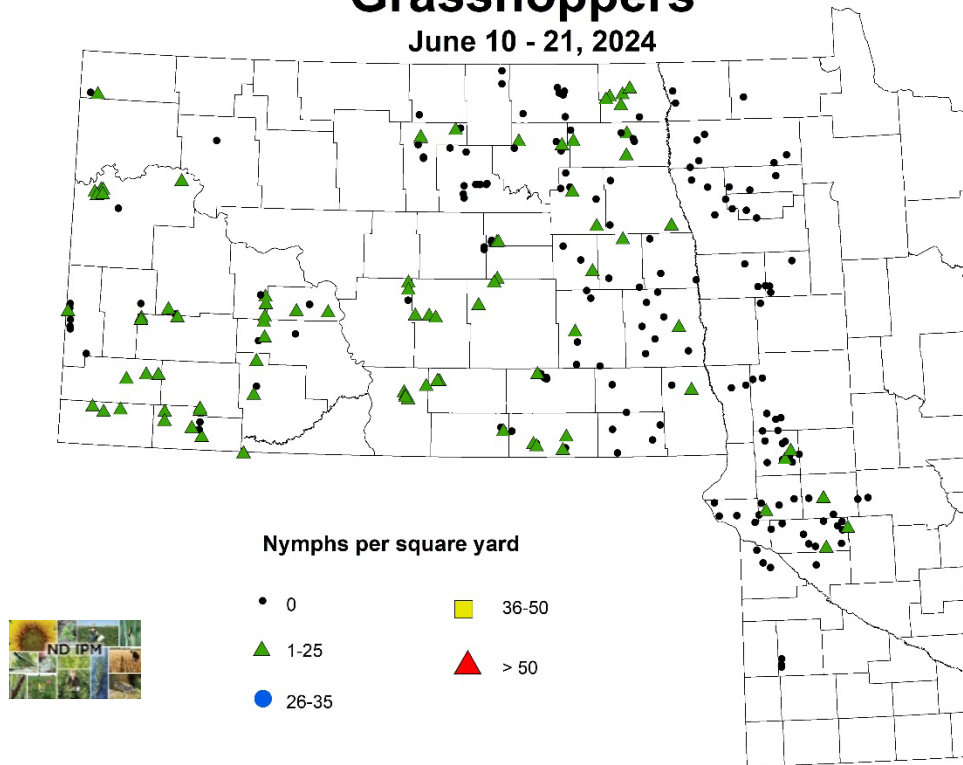


Bean leaf beetle yellow and red color forms (Courtesy of James Kalisch, UNE-Lincoln)

Grasshoppers had been recorded from 54% of fields scouted in wheat, barley, sunflower and soybean last week. However, grasshopper nymph densities were low in field margins, only 1-11 nymphs per square yard, probably due to the unfavorable cool and wet weather. The grasshopper nymph economic threshold is **>50 nymphs per square yard on field margins and >30 nymphs per square yard in field**. See IPM map below.

Grasshoppers

June 10 - 21, 2024



[Janet J. Knodel](#)
Extension Entomologist

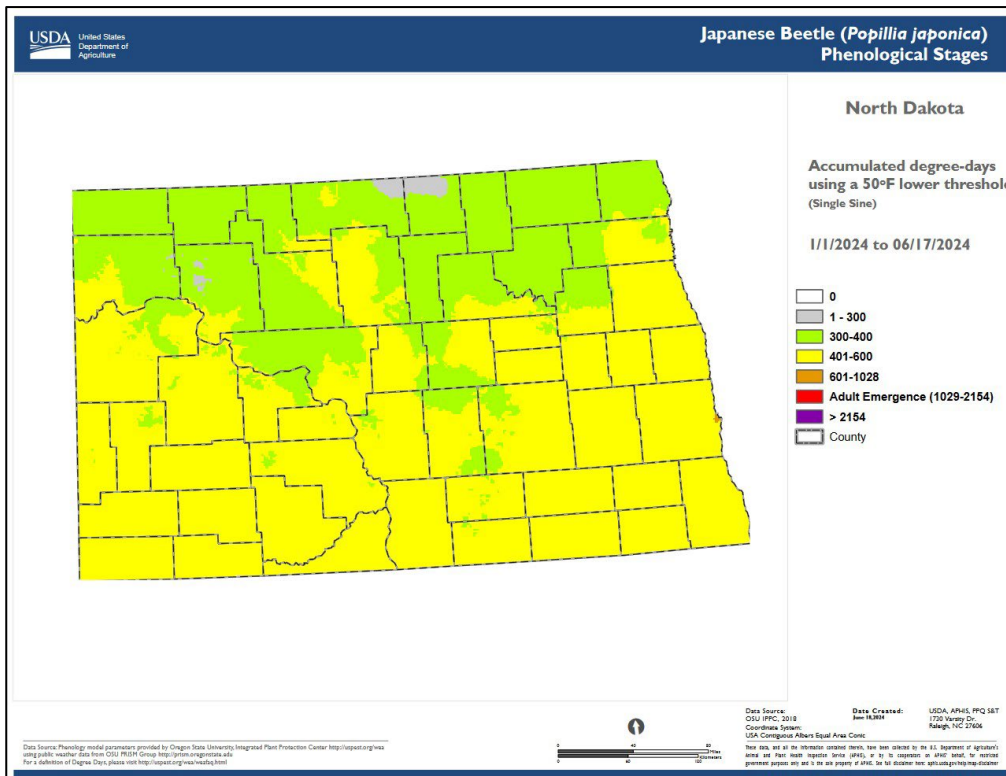
JAPANESE BEETLE MONITORING IN NORTH DAKOTA

North Dakota Department of Agriculture (NDDA) has been monitoring for Japanese beetles (*Popilla japonica*) since the early 1960s. Until 2012, no beetles were detected in the state. Since 2012, however, our traps have caught beetles every year. Over the past 10 years, there have been three incidences of interceptions likely being attributed to infested nursery stock from suppliers in eastern states. In 2023, we experienced our highest beetle catch with a total of 8,453 beetles caught in 533 traps placed statewide. Unfortunately, 8,207 of those beetles were caught in Grand Forks County alone. The remaining 3% of beetles were spread throughout the state. While the specific reason for the significant numbers remains unclear, perfect environmental conditions and significant movement of nursery stock appear to be likely.



Japanese beetle (left) and trap (right, courtesy of Charles Elhard, NDDA)

For those who aren't aware, Japanese beetles (JB) are native to Japan and now occurs in most of the eastern part of the United States with populations in a few other states – some under active eradication. JB is mainly a pest of horticultural crops especially lindens, elms, crabapples, roses, raspberries, and many other ornamentals. JB larva can cause significant damage to turf and golf courses when high populations occur. In areas where JB has naturalized, some reports of economic damage in corn and soybeans have been noted in neighboring states like Minnesota and Iowa.



NDDA will continue to monitor and track any new populations. We are on track for placing around 800 traps in 2024 statewide, with a strong focus on the Grand Forks area, importing nurseries, and other high-risk locations or where JB has historically appeared. Monitoring JB emergence using accumulated degree-days using a 50°F base temperature, and adult emergence begins when approximately 1029 growing degrees have been met. This is usually the first or second week of July.

[Charles Elhard](#)
 Plant Protection Officer
 ND Department of Agriculture



FUSARIUM HEAD BLIGHT RISK AND FUNGICIDE QUESTIONS

Fusarium head blight (scab) risk has increased for susceptible varieties across most areas of North Dakota. However, the risk on moderately resistant varieties (FHB score of 3-4) remains low. Higher humidity this week, with prolonged dews, and rain will continue to keep scab risk elevated into the first week of July. Growth stage reports in wheat and durum vary with some fields at jointing and others at early anthesis. Most barley appears to be at flag leaf or entering the early stages of heading. As a reminder, the best time to make a fungicide application in hard red spring wheat and durum is when a majority of the main spikes are at early flowering and up to seven days later. For barley, the best time is when a majority of the main spikes are fully headed and up to seven days later. Please refer to last week's Crop and Pest Report for images depicting growth stages.

The most popular fungicide question I have received this past week is "Can I get better disease control if I spray a fungicide twice for scab?" In 2022 and 2023, during our research efforts with USWBSI funding, we explored the efficacy of applying a fungicide twice to manage scab. This included applying a fungicide at early-flowering and making a second application with a different fungicide 3 to 7 days later. These trials were conducted on a susceptible hard red spring wheat, durum or barley variety and at multiple locations across in North Dakota. Below are summary tables of research on hard red spring wheat (Table 1) and barley (table 2). Durum tables were not generated as disease pressure was very low in these trials. The data suggests that applying a fungicide twice for scab will generally result in lower scab levels and lower deoxynivalenol (DON). However, notice that a single well-timed fungicide application performed similarly to the two fungicide application treatments.

Table 1. Summary data for USWBSI trials conducted on hard red spring wheat in 2022 and 2023.

<u>Fungicide</u>	<u>Timing</u>	<u>Rate</u>	<u>FHB Severity</u>	<u>DON (ppm)</u>
Non-treated Control	NA	NA	15.2 a	2.7 a
Miravis Ace	Early-anthesis	13.7 oz/A	2.0 bc	1.1 b
Prosaro	Early-anthesis	6.5 oz/A	5.8 b	1.1 b
Prosaro Pro	Early-anthesis	10.3 oz/A	3.8 bc	0.7 bcd
Sphaerex	Early-anthesis	7.3 oz/A	2.9 bc	0.8 bc
Sphaerex	3 to 7 days after early-anthesis	7.3 oz/A	3.4 bc	0.5 cd
Miravis Ace followed by Prosaro Pro	Early-anthesis 3 to 7 days later	13.7 oz/A 10.3 oz/A	1.4 c	0.4 cd
Miravis Ace followed by Sphaerex	Early-anthesis 3 to 7 days later	13.7 oz/A 7.3 oz/A	0.8 c	0.4 cd
Miravis Ace followed by Tebuconazole	Early-anthesis 3 to 7 days later	13.7 oz/A 4 oz/A	1.8 bc	0.8 bcd

*Values with same letter are not statistically different.

Table 2. Summary data for USWBSI trials conducted on spring barley in 2022 and 2023.

<u>Fungicide</u>	<u>Timing</u>	<u>Rate</u>	<u>FHB Severity</u>	<u>DON (ppm)</u>
Non-treated Control	NA	NA	2.8 a	2.0 a
Miravis Ace	Full-head	13.7 oz/A	1.1 d	1.0 abc
Prosaro	Full-head	6.5 oz/A	1.7 b	1.3 ab
Prosaro Pro	Full-head	10.3 oz/A	1.3 bcd	0.8 bc
Sphaerex	Full-head	7.3 oz/A	1.5 bc	0.6 bc
Sphaerex	3 to 7 days after full head	7.3 oz/A	1.2 cd	0.6 bc
Miravis Ace followed by Prosaro Pro	Full-head 3 to 7 days later	13.7 oz/A 10.3 oz/A	1.1 cd	0.2 c
Miravis Ace followed by Sphaerex	Full-head 3 to 7 days later	13.7 oz/A 7.3 oz/A	1.0 d	0.2 c
Miravis Ace followed by Tebuconazole	Early-anthesis 3 to 7 days later	13.7 oz/A 4 oz/A	0.9 d	0.7 bc

*Values with same letter are not statistically different.

DISEASE OBSERVATIONS IN A WINTER WHEAT VARIETY PERFORMANCE TRIAL



Figure 1. Images of diseases in winter wheat variety trial. Bacterial leaf streak (top left), stripe rust (top right), stem rust (bottom left), and tan spot (bottom right).

I had the opportunity this week to visit a winter wheat variety performance trial at the Agronomy Seed Farm in Casselton. These trials are not sprayed with fungicides, so it provides a great opportunity to evaluate genetic resistance to natural disease pressure. I was able to find stripe rust, stem rust, tan spot and bacterial leaf streak (Figure 1). There were several pockets of intense stripe rust in susceptible varieties (ie: Jerry). Stem rust was only found in one variety (Keldin) and is the first report of this disease for the 2024 growing season. Bacterial leaf streak and tan spot were found in several varieties and at varying levels in the trial. I will be monitoring the trial to see if disease intensifies next week.

[Andrew Friskop](#)

Extension Plant Pathology, Cereal Crops

CERCOSPORA LEAF SPOT MANAGEMENT IN SUGARBEET

As temperatures start to heat up in the Red River Valley and sugarbeet-growing regions of North Dakota and Minnesota, there is an increased risk of Cercospora leaf spot (CLS) in sugarbeet. CLS is caused by a fungus, *Cercospora beticola*, and overwinters in sugarbeet residue and other weed and plant debris. Crop rotation, the use of Cercospora-tolerant varieties, and residue management can help to reduce CLS pressure in following years. During the growing season, timely and strategic fungicide applications are required to successfully manage CLS. Like other fungal diseases, the proper time for control is before symptom development. For CLS on sugarbeet, optimal fungicide applications are made before leaf spots are observed. Early fungicide applications are associated with greater yields (including tonnage, percent sugar, and recoverable sucrose per acre). How early? NDSU, University of Minnesota, and sugarbeet cooperative research has shown advantages to making an application prior to or just at row closure (Figure 1).

Briefly, there are a few factors that greatly increase the risk of CLS development in sugarbeet:

- 1) Warm temperatures (75°F to 90°F daytime temperatures)
- 2) Moisture (periods of rain, dew, or even high relative humidity)
- 3) Row closure (canopy with increased leaf wetness and humidity)

This year, the period leading up to row closure in many fields is coinciding with increased temperatures and moisture. Checking the [NDAWN Sugarbeet Cercospora](#) Daily Infection Value (DIV) tool can also support effective application timing (Figure 2). DIVs can help inform how early to start fungicide applications. DIVs of 7 or more indicate high risk. The second fungicide applications may be made at a relatively short window compared to the rest of the season, especially if CR+ sugarbeets are used (the first interval should remain short, even with CR+ varieties). Subsequent fungicide applications may be made on a regular schedule, factoring in DIVs and rainfall.

Fungicides should be tank-mixed to improve control of CLS, especially given previous years' detection of *C. beticola* with reduced sensitivity to demethylation inhibitor (DMI) fungicides. EBDC alone can be acceptable as the first fungicide application if made early (such as before row closure and when followed up by EBDC + DMI within 10-12 days or less). EBDC products are effective tank mix partners for DMI and tin fungicides. Quinone outside inhibitor (QoI) and succinate dehydrogenase inhibitor (SDHI) products are not considered effective tank mix partners.



Figure 1. A sugarbeet field prior to row closure. Leaves are just beginning to touch across rows.

Sugarbeet Cercospora 2-Day Infection Value Summary

Cercospora Risks: Slight (0-3) Moderate (4-6) Severe (7-14)

Date	Ada	Casselton	Cavalier	Foxhome	Glyndon	Hillsboro	Prosper	Rothsay	St. Thomas	Wahpeton
2024-06-15	0	0	0	0	0	0	0	0	1	0
2024-06-16	3	3	2	3	3	3	3	3	4	3
2024-06-17	3	3	2	3	3	3	3	3	3	3
2024-06-18	0	0	0	3	0	0	0	2	0	3
2024-06-19	0	0	0	3	0	0	0	2	0	3
2024-06-20	0	0	0	0	0	0	0	0	0	0
2024-06-21	0	0	0	1	0	0	0	0	0	1
2024-06-22	4	5	0	5	4	4	4	5	0	6
2024-06-23	4	8	0	8	7	4	4	9	0	9
2024-06-24	0	4	0	5	4	2	1	4	0	4

Figure 2. NDAWN Sugarbeet Cercospora summary showing examples of daily infection values (DIV) at select locations. Corresponding slight, moderate, and severe risk is indicated. Higher DIVs result from days with increased duration of high relative humidity and higher average daily temperatures.

[Eric Branch](#)

Extension Sugarbeet Pathology



POTATO TUBER GROWTH CRACKS

Tuber cracking is an external or surface disorder. It is noninfectious or often termed a physiological disorder, meaning it does not spread to other tubers. Cracking of potato tubers can cause concern because this can make tubers unmarketable. Tuber growth cracks are caused when the internal core tissue grows faster than the surface tissue or periderm when tubers are enlarging. This often occurs when relatively poor growing conditions are rapidly followed by relatively good growing conditions, such as a period of low soil moisture followed by excessive irrigation or rainfall, causing rapid changes in tuber turgidity and growth rate. In wet springs, it has been common to see growth cracks in young tubers, and it might be caused by great growing conditions with tubers growing fast causing the core tissue to grow faster than the surface tissue. Environmental changes are the most common cause of tuber cracking; however, herbicides and pathogens have can cause growth cracking as well.

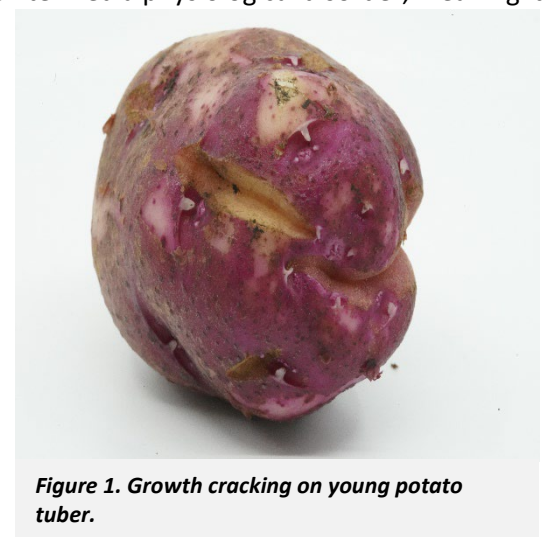


Figure 1. Growth cracking on young potato tuber.

[Andy Robinson](#)

NDSU/U of M Extension Potato Agronomist



PLANT ANALYSIS TO BETTER DIAGNOSE CROP NUTRIENT DEFICIENCIES

Crop nutrient deficiency symptoms help to narrow down possible nutrient problems. Unfortunately, its use as a definite diagnosis is not a wise decision. To obtain plant samples that are useful in diagnosis, take a composite sample of the recommended plant part in a 'good' area and a 'bad' area. The comparison of the two areas will provide a much better diagnosis than the 'bad' area alone. Plant analysis tables of values should not be taken as absolutes. It is not unknown for the constructors of table values to 'guess' at a nutrient critical value based on literature from far away. Also, you will note that there is a wide range of values provided in each category. Also, there is varietal differences in uptake in many nutrients. Therefore, the comparison of good vs bad is your best option.

Finally, gently washing the plant parts in distilled water, gently patting them dry on a paper towel, and whisking them away to a lab for analysis will enable a more accurate iron analysis. Also, putting wet samples in a bag and sending them snail-mail is a good recipe for making silage, but not useful in getting accurate sample results. NDSU does not have a commercial plant analysis laboratory. The largest facility I know of in the state is Agvise Laboratories, Northwood, ND.

The following are recommended plant parts to sample by growth stage:

Alfalfa- All growth stages, collect upper 6 inches of plant on taller plants, and the top half of the plant if less than 8 inches tall from 20 plants taken in each area of interest.

Canola- Seedling to rosette- cut off plants ½ inch above the soil surface, collect 20 plants; from bolting to pod development collect 5th leaf from the top without the petiole from 15 plants.

Potato- For a complete analysis, submit 4th leaf from top including petiole and leaflets from 20 plants. If sampling for petiole nitrate, petiole phosphate, collect petioles, by pulling off leaflets from 30 plants.

Grains and Grasses- Seedling to tillering- collect whole plants, cut ½ inch above soil surface from 50 plants; boot to heading collect most recent fully developed leaf, or the flag leaf from 50 plants.

Soybean and dry bean 1-3 trifoliates, collect whole plants cut 1 inch above soil surface from 25 plants; early bloom to pod development collect most recent fully expanded trifoliolate with petiole from 25 plants.

Corn- less than 12 inches tall, collect whole plants cut ½ above soil surface from 10 plants; 12 inches tall to tassel collect most recent fully developed leaf cut at the stalk from 10 plants; tassel to pollination collect ear leaf cut at the stalk from 10 plants.

Sugarbeet- all growth stages collect most recent fully developed leaf from 25 samples. If sampling the petiole for nitrate analysis only, follow the directions as for leaf samples, but keep only the petiole from the leaf.

If you anticipate a future need for plant sampling, ordering bags now for use later will save time later.

[Dave Franzen](#)

Extension Soil Specialist

701-799-2565

Extension Soil Health Specialist



MIXING GLYPHOSATE FOR WEED CONTROL WITH FUNGICIDES FOR CERCOSPORA LEAF SPOT CONTROL

End of June is that part of sugarbeet production when rows close and activity transitions from weed control to control of Cercospora leaf spot. 2024 is no different from other seasons. Producers wish to make one final glyphosate application to complete common lambsquarters control. Likewise, warm and high humidity environmental conditions are ideal for Cercospora leaf spot development. A common question is mixing glyphosate for weed control with a foliar fungicide. That is, two spray jobs with one sprayer pass.

Extension Specialists encourage growers to separate glyphosate and Cercospora leaf spot applications. Why? We have concerns about physical compatibility and/or mechanical compatibility. Physical compatibility is the fitness for two distinctly different products to be combined in a tank-mixture. For example, some researchers have reported tin fungicides are more phytotoxic when mixed with Roundup PowerMax3. Will a similar reaction occur with other foliar fungicides when mixed with glyphosate?

Mechanical compatibility relates to spray quality ensuring both active ingredients will be properly applied to maximize efficacy. For example, nozzle selection and resultant water carrier volume and droplet spectrum for common lambsquarters control with glyphosate requires a different set of parameters from control of Cercospora leaf spot. Optimize rather than compromise both spray jobs.

[Tom Peters](#)

Extension Sugarbeet Agronomist
NDSU & U of MN



WATCH DELTA T VALUES FOR SPRAYING

Delta T describes the evaporative capacity of the ambient air – the higher the value, the drier the air and the greater its evaporative capacity. When Delta T values exceed 14 °F, excessive spray droplet desiccation and spray deposit evaporation may result in reduced herbicide efficacy. Impacts will be most noticeable when using Fine or Medium spray qualities, and glufosinate (Liberty) is the active ingredient most likely to be negatively impacted by elevated Delta T.

Windy conditions and excessive soil moisture have clearly been the most problematic weather conditions thus far in the postemergence spraying season. Even so, be aware of Delta T values and their impacts on spraying, as elevated Delta T values can occur despite our recent spate of wet weather.

The NDSU Weed Management Guide and its online supplement offer guidelines for adapting spraying to Delta T (Figure 1). Figure 2 summarizes my interpretation of a conversation with a Devils Lake-based crop consultant on his observations of dry air impacts on Liberty efficacy.

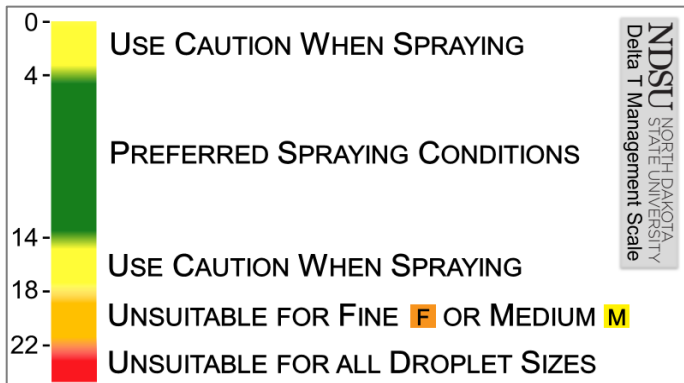


Figure 1. Summary of herbicide spraying recommendations in response to Delta T values. Adapted from the NDSU Weed Management Guide online supplement.

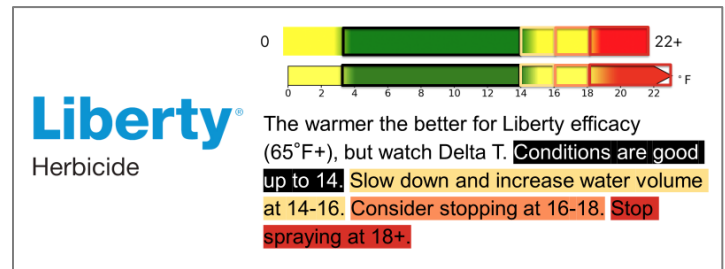


Figure 2. Summary of recommendations for responding to Delta T when spraying Liberty, from my conversation with a crop consultant in the Devils Lake area. Any inaccuracies or misconceptions in these summary materials are my own.

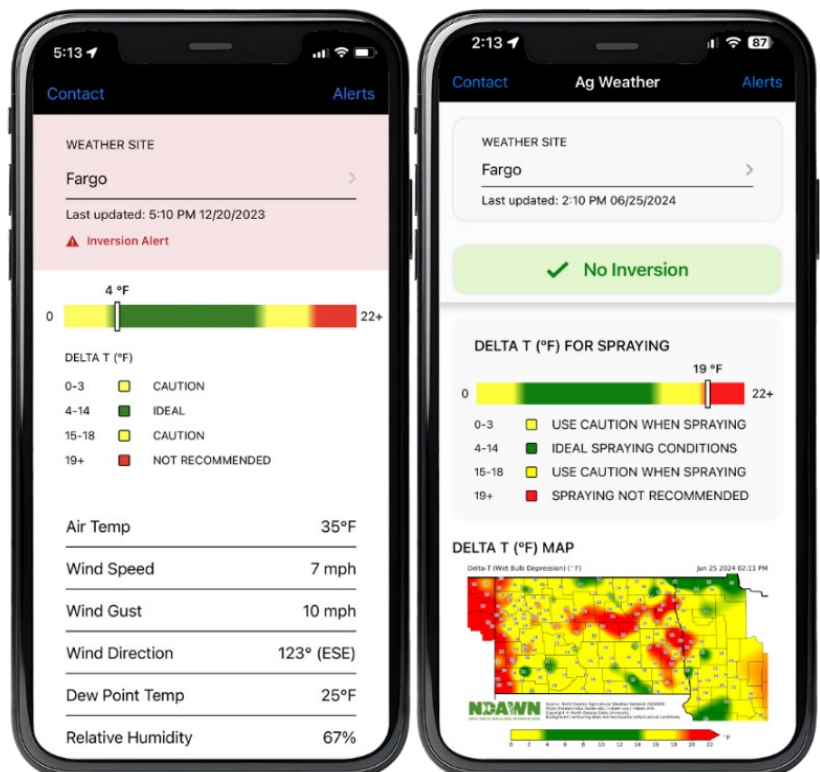
Analyses of 2020-2022 NDAWN data from 8 locations across ND indicate that elevated Delta T conditions are most likely to occur in the afternoon and along with breezy conditions. While weighing the pros and cons of continuing to spray in these marginal conditions, I encourage you to also consider the impacts of elevated Delta T on herbicide efficacy.

NDAWN INVERSION APP UPDATE

The NDAWN Inversion app is a fantastic resource for pesticide applicators. In addition to temperature inversion alerts, the app provides relevant wind, temperature, and Delta T readings.

A recent update improves the functionality of the app by incorporating four weather maps, each displaying values across the NDAWN network: Delta T, wind speed and gust, two-day precipitation, and current temperature. Tapping on a map allows the user to pinch (zoom) and swipe (pan) for improved readability. These maps greatly facilitate the checking of weather conditions across multiple geographic locations

Kudos to the NDAWN team for these functionality updates!



Comparison of old (left) and new (right) interfaces for the NDAWN Inversion App. Note that the screenshots are from different dates. Phone frame courtesy of vector_corp on Freepik.

[Rob Proulx](#)

Agriculture Technology Systems Specialist



around the state

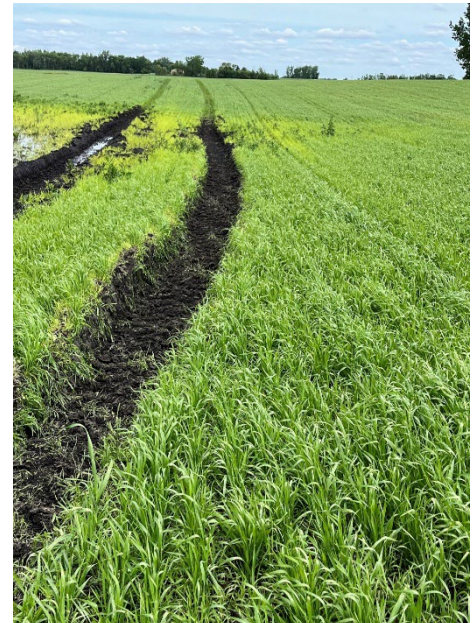
NORTHEAST ND

It was quite a good week for the region. We had a good balance of hot days helping with the degree days for the crop growth and then a shot of rain on Monday. For some areas, that rain was not needed. Farmers were seeding late but we will still have some PP acres in the region.

Crops are growing fast using the heat and the moisture. Small grains are reaching heading stage and depending upon the disease risk, farmers will soon be considering fungicide sprayings. Corn is looking excellent except in the low and high spots. Corn stages are ranging from V3 to V5. Most of the field are recovering from the yellowing that was caused due to excess moisture.

Soybeans and dry beans are looking good in general. IDC and Phytophthora are finally showing up in some low spots in soybeans. Soybean aphids are starting to show up early. Farmers are encouraged to scout for aphids more often this year because, with right conditions, aphid populations could multiply rapidly. Sunflowers are at 2-3 leaf stage and the stands are looking very good. Peas are at flowering to early pod setting stage.

Canola fields have caught up fast with majority of the fields closing rows and some early planted fields bolting or even flowering. Watch for grasshoppers at the field margins and borders.



Wet wheat field with ruts from spray equipment in Benson County. Photo: Scott Knoke, Extension ANR Agent, Benson County



Wheat field heading in Cavalier County. Photo: Anitha Chirumamilla, LREC



Canola in Walsh County. Photo: Anitha Chirumamilla, LREC

[Anitha Chirumamilla](#)

Extension Cropping Systems Specialist
Langdon Research Extension Center

NORTHWEST ND

The timely rain events and the increasingly warm weather has helped crop plants gain biomass and be further along in the growth stage just in the past week or two. The weather conditions benefited especially the crops that are entering or are in the reproductive stages like wheat, pulses, and canola. Most of the northwest received rain from scattered thunderstorms, most notable were last Friday (Jun-21), and Monday (Jun-24) per NDAWN records. Williams, Divide, Burke, and a few areas west of Mountrail County received most of the precipitation during the rain events. In Williston, total rainfall was 1.09". However, some areas in the northwest did not receive nearly as much, like in Watford in McKenzie County and in Four Bears in Mountrail County, both locations only had 0.04" of rain in the past seven days. Some areas didn't even have rain such as in Alexander which is not far from Watford City. Conversely, some low-lying areas are waterlogged even a few days after the last rain event.



Warm and humid weather conditions in the past week have been conducive for loose smut to colonize wheat head at the time of flowering in Williams County. Photo taken 6/25/2024.



Field pea at early flowering. Sunny with adequate soil moisture in the past few weeks has made the crop in the northwest took off in short period. Photo taken 6/25/2024.



Early planted canola flowering on the left and canola planted later that is yet to bolt and flower on the right. Canola fields are blooming although not uniformly. Photo taken in Williams County on 6/25/2024.

Most advanced stage in spring-seeded

small grain crops was at anthesis. Peas and chickpea are starting to flower. Canola are mid-flowering in some fields, but some fields have yet to flower. I as walked down the fields, I've seen loose smut in spring wheat that at flowering. Insect trapping efforts showed true Armyworm adult moths detected in Divide, McKenzie, and Mountrail counties. The larva of this insect pest is what cause damage by chewing on foliage preferably small grains and corn. This insect pest does not survive the winter in ND but migrate from southern states by flight or being blown by southerly winds. Adult moths lay eggs that hatch within 8 to 10 days. After hatch, larva then feeds for 3 to 4 weeks, pupate for 2 weeks, then transform into adults to mate and lay eggs to produce the next generation. Typically, one generation is produced in North Dakota during most seasons. Please download the NDSU Extension publication [E830](#), to know more about armyworms, how to scout, action thresholds, and the tools available for control.

[Charlemagne "Charlie" Lim](#)

Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

SOUTH-CENTRAL/SOUTHEAST ND

The region received 0.62 inch of rain near Carrington in Foster County to 2.94 inches of rain near Mooreton in Richland County this past week! Barnes, Eddy, LaMoure, McIntosh, Stutsman, and Richland Counties received the greatest rainfall over the past week in the region. A much calmer week for wind across the area for spraying, but fields were too wet in most of the region to spray. Pondered areas exist in much of the region as seen in the photo below from Griggs County. The 4-inch bare soil temperature stayed below normal over most of the region this past week with Griggs

County being 7.7 degrees Fahrenheit below normal for the week, making it the second coldest weekly average 4-inch soil temperature this past week on record since 2019.

Winter wheat looks spectacular in McIntosh County and much of the southern part of the region. Hard red spring wheat development ranges from two leaves to flowering and up to the watery kernel stage in the southern part of the region. Hard red spring wheat development is way ahead of 2023. Hard red spring wheat looks good to excellent across much of the region, but looks a little worse in the eastern part of the region. Relatively few pests are plaguing hard red spring wheat at this time, including leaf diseases in Griggs County.

Corn in the region ranges from two collars up to 8 collars (in Richland County) with most in the 4 to 5 collar stage and is mostly in good to excellent condition, although plants have died in some fields due to ponded water. Corn growth is behind schedule compared to 2023. Corn injury from herbicides is more common than normal this year.

Soybeans range from emerging to up to four trifoliates in the southern part of the state. Soybeans are struggling throughout most of the region due to cool soils, reduced sunshine, excessive rains, and herbicide injury. The soybean growth stage is behind last year by at least one trifoliolate and more in some areas.

Dry beans are being injured in some areas of the region from clopyralid (Stinger) carryover.

Weeds are becoming more of a problem since timely herbicide applications can't be made due to wet soil conditions and weeds surviving the vertical tillage prior to planting. Otherwise, few diseases and insects are being reported in the region. Farmers should be checking the Fusarium Head Blight risk model to determine the need for fungicide applications.



Corn under water in Griggs County.



Lack of leaf diseases in hard red spring wheat in Griggs County.



Excellent quality corn in the region.



Soybean growth stage only at second trifoliolate in Griggs County.



Dry beans injured by clopyralid carryover.



Kochia getting too large in soybeans.

[Jeff Stachler](#)

Griggs County Extension Agent

SOUTHWEST ND

Over the last 7 days in Southwest North Dakota, total rainfall ranged from 0.24-inches in Dunn County to 1.86-inches in Morton County. After successive weeks of a dry spell, Bowman and Slope counties finally received over 1-inch of rainfall in the last 7 days. This much needed moisture is timely as the small grains and canola crops are entering the reproductive stages.

We've also seen a lot of active weather across the Southwest region of the state. Bowman was affected by a frost last week with temperatures dropping to 32°F. According to Penny Nester, ANR Ext. Agent in Bowman County, corn was the most affected crop, and the frost damage was most noticeable in low spots in the field and field margins. It is likely that

the growing points were not affected but leaf injury was evident, so yield penalties may occur but not all is lost. No signs of frost damage on wheat or canola were reported in those areas.

There were reports of significant hail damage in Golden Valley, Slope and Adams Counties with isolated storms and about 1" hail reported south of Golva on Saturday evening. According to Ashley Ueckert, ANR Ext. Agent in Golden Valley, a few producers reported losing their fields. In central Slope County, Lillian McFadden, ANR Ext. Agent, also reported fields getting completely wiped out by hail in the central area of the County. The full extent of the damage is still being assessed. The general recommendation at this moment is to give it 7-10 days to give crops a chance to recover before assessing the damage and making any management decisions.

Regarding diseases, the weather conditions in the area, have increased the scab risk for susceptible wheat varieties to medium or high in all of Southwest NoDak (Figure 1). With some of the earlier planted spring wheat now well into the heading stage and going into flowering, timely fungicide applications are crucial to ensure good yields.

Insect populations remain fairly low but some relevant pests have just made their first appearance in our traps. Diamondback moth and wheat stem sawfly were present in Stark County.

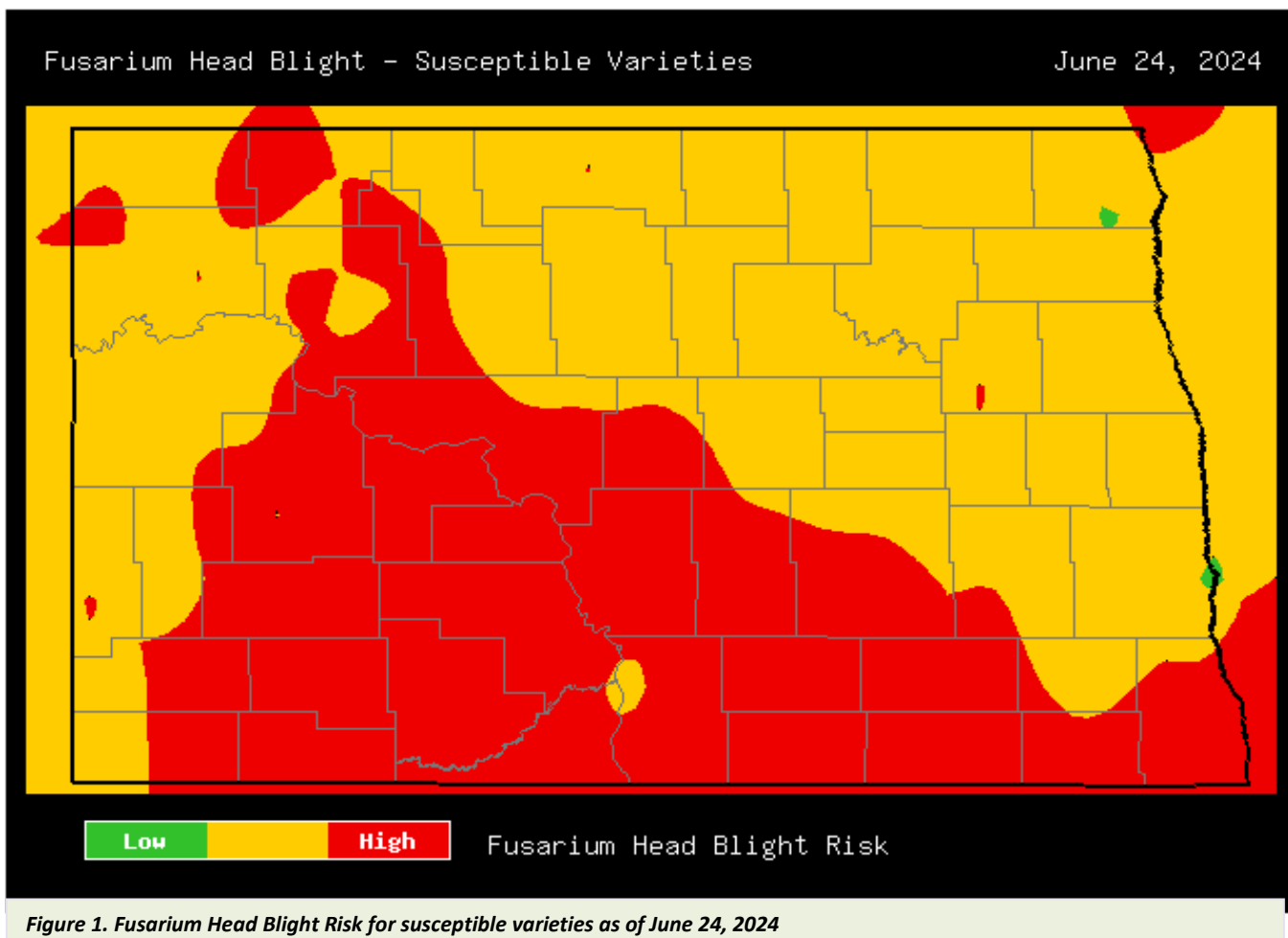




Figure 2. Corn field completely wiped out by hail. Corn was in V5 stage before the hail. Near Golva, ND. Photo credit: Josh Hammond, Crop Consultant



Figure 3. Hail damage to field peas that were flowering. Near Golva, ND. Photo credit: Josh Hammond, Crop Consultant

Dunn and Billings although in very low populations. True armyworm moths have been captured in greater numbers in wheat, but leaf damage is still low. Regular scouting to monitor pest populations is crucial before deciding whether or not to spray a pesticide.

[Victor Gomes](#)

Extension Cropping Systems Specialist
Dickinson Research and Extension Center



WEATHER FORECAST

The June 27 to July 3, 2024 Weather Summary and Outlook

There were certainly some exceptions, but a high percentage of North Dakota recorded near or less than one-half inch of rain this past week (Figure 1). There will be two significant weather makers during this forecast period. The first will be today (June 27) that will impact western North Dakota, then impact eastern North Dakota late tonight into Friday. Another storm is expected early next week. Both storms will probably have localized severe weather with some locations recording 1 inch + rains. Yet, typical of thunderstorms, there will likely be highly variable rain totals in short distances making it difficult to forecast where the potential heavier rain will fall.

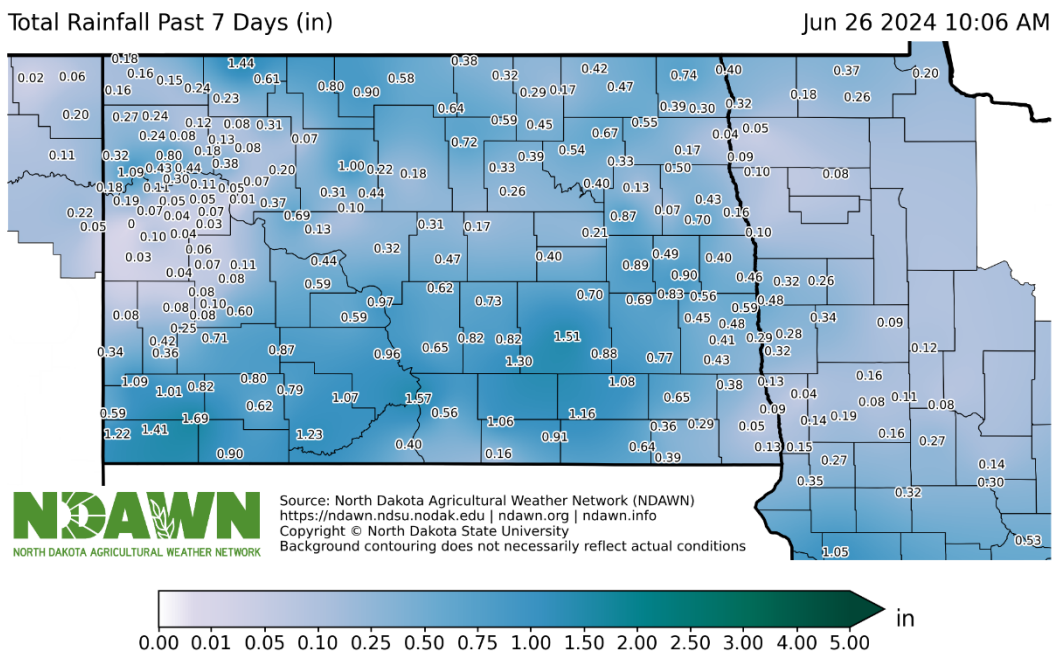


Figure 1. Total Rain at NDAWN Stations for the 168-hour (7 day) Period Ending at 10 AM on June 26, 2024.

Temperatures this past week continued to be near or slightly below average (Figure 2). Beside almost everyone needing a break in the rain, the most asked question of me is when will we see a prolong period with temperatures in the 80s. As of this writing, I just don't foresee that during this forecast period. Some hot weather may appear around Independence Day, but even that doesn't look to be long lasting, meaning, near or slight below average temperatures looks to be the norm for awhile longer.

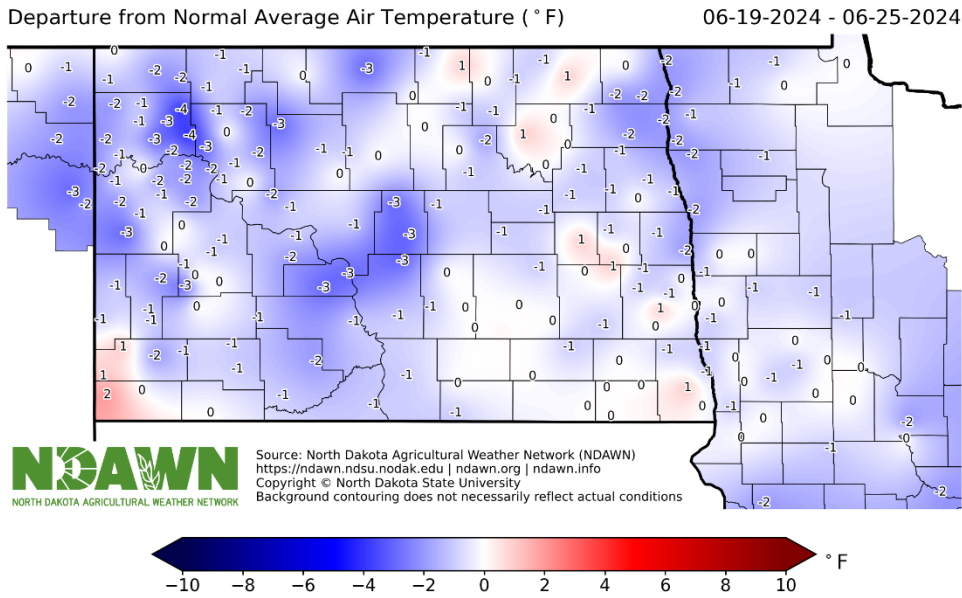


Figure 2. Departure from Average Temperatures at NDAWN stations for the Period of June 19 to June 25, 2024

Figures 3 and 4 below are forecasted growing degree Days (GDDs) base 32° (wheat and small grains) and base 50° (corn and soybeans) for this forecast period.

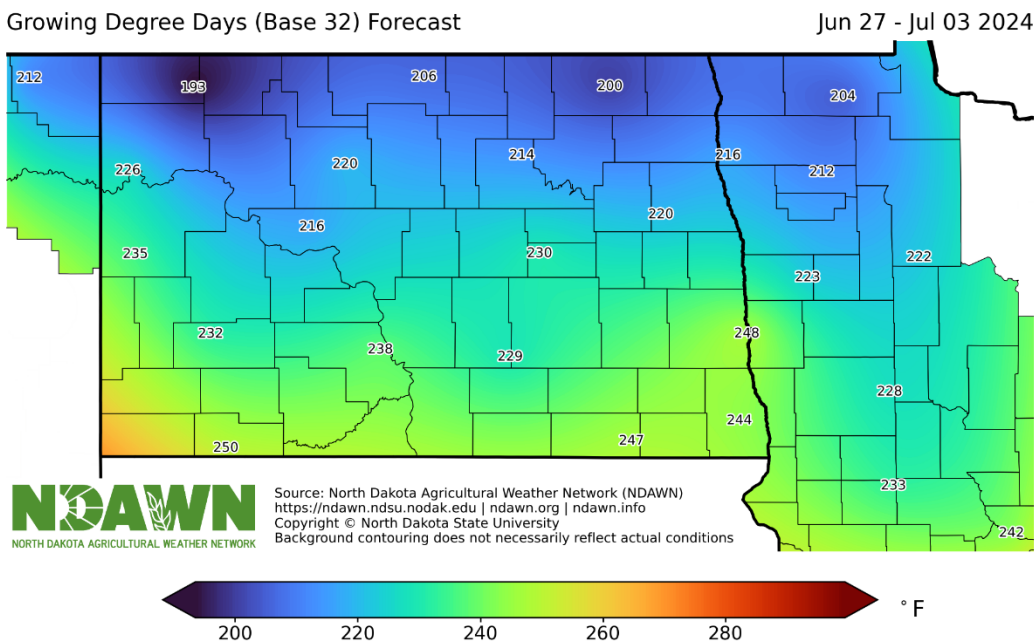


Figure 3. Estimated Growing Degree Days Base 32° for the Period of June 27 to July 3, 2024.

Growing Degree Days (Base 50) Forecast

Jun 27 - Jul 03 2024

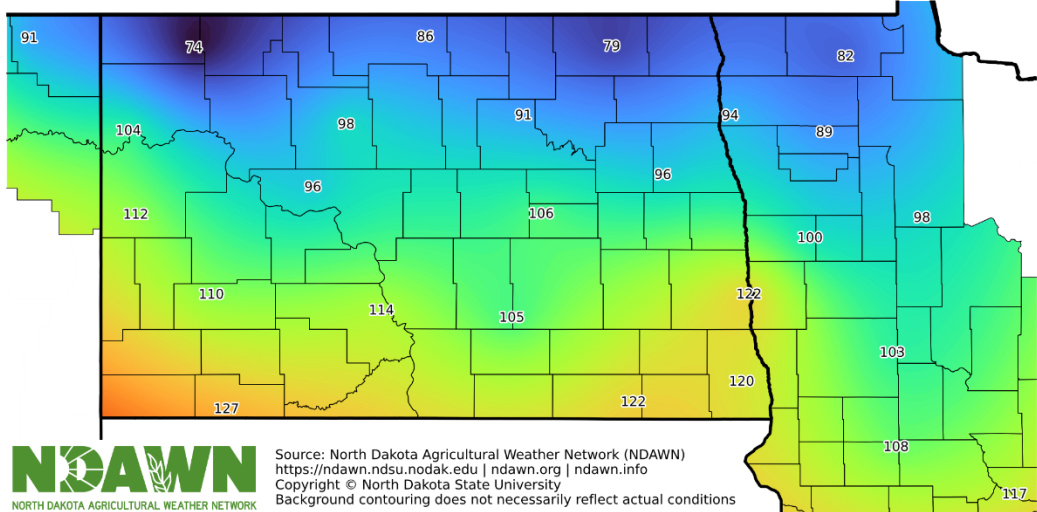


Figure 4. Estimated Growing Degree Days Base 50° for the Period of June 27 to July 3, 2024.

Using May 1 as a planting date, the accumulated growing degree days for wheat (base temperature 32°) 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>

Wheat Growing Degree Days Since May 1

Jun 25 2024

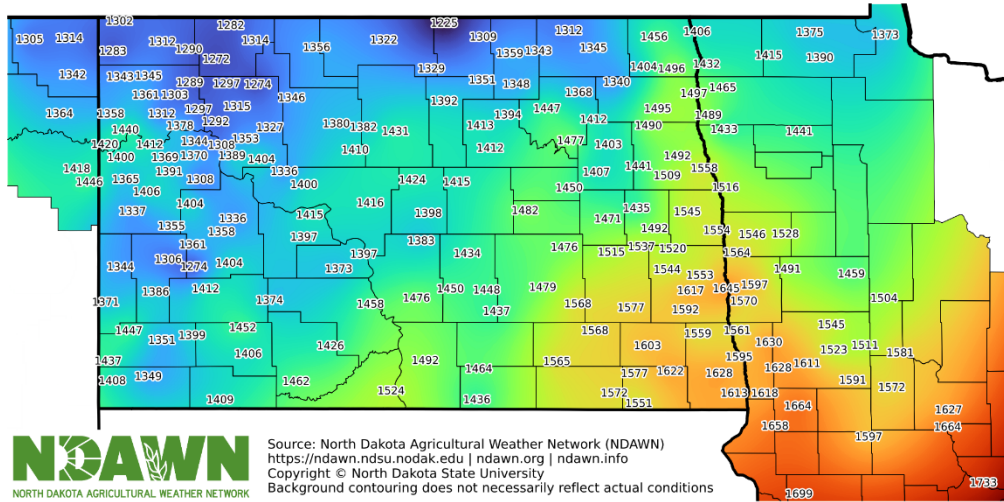


Figure 5. Wheat Growing Degree Days (Base 32°) for the period of May 1 through June 25, 2024

Using May 10 as a planting date, the 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>.

Corn | Soybean Growing Degree Days Since May 10 Jun 25 2024

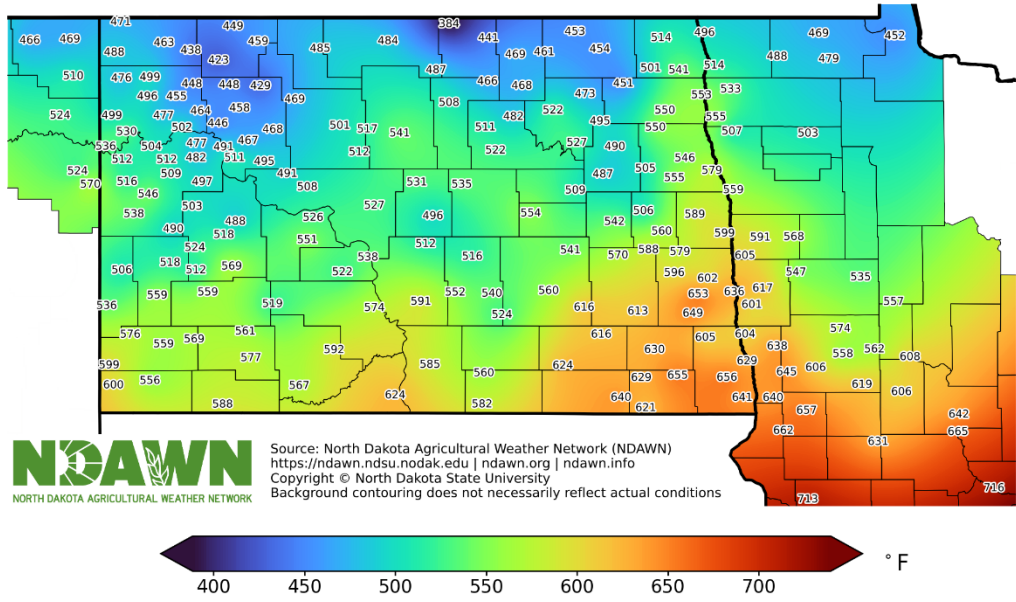


Figure 6. Corn Growing Degree Days (Base 50°) for the period of May 10 through June 25, 2024

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.

If you are a sugarbeet grower, cercospora data in a mobile complaint format can be found on that second link as well.

[Daryl Ritchison](#)
 Meteorologist

Director of the North Dakota Agricultural Weather Network (NDAWN)
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