

No. 10 July 11, 2024

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Note: Due to annual field days out in the state, extension specialists are speaking and attending these events. So, the number of articles is low this week. Thank you.



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

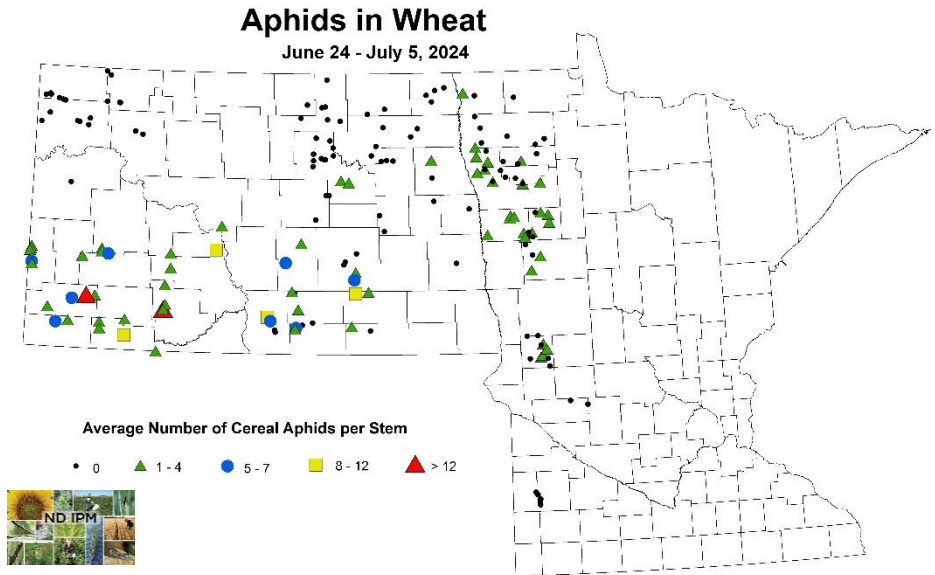


IPM INSECT UPDATE

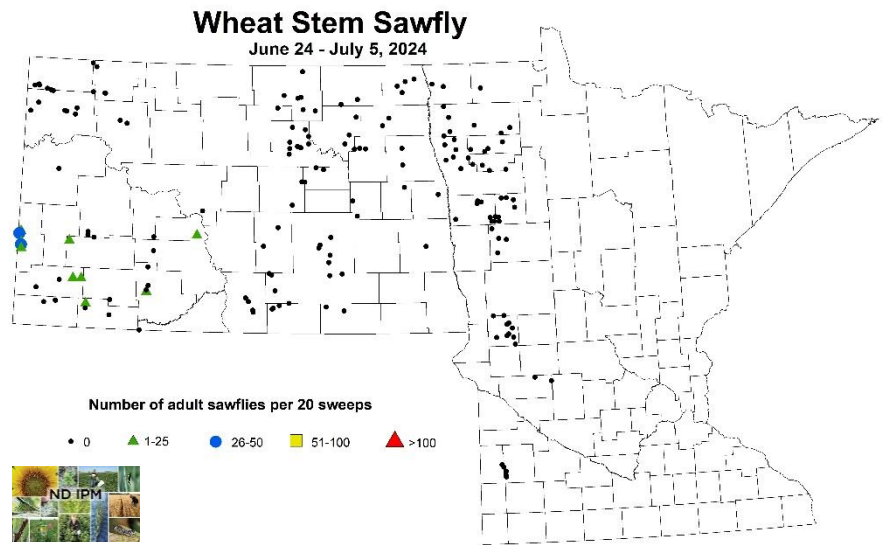
The IPM scouting maps can be found on the NDSU Extension [IPM website](https://www.ndsu.edu/agriculture/ag-hub/ag-topics/crop-production/diseases-insects-and-weeds/integrated-pest-management): <https://www.ndsu.edu/agriculture/ag-hub/ag-topics/crop-production/diseases-insects-and-weeds/integrated-pest-management>

Wheat:

Cereal aphids ranged from an average of 1-17 aphids per stem in North Dakota. About 47% of the wheat and barley fields scouted had cereal aphids present over the last two weeks. The hot spot is the southwest and south-central areas of North Dakota. Crop growth stages varied from 15 to 69 Zadoks (or 5 leaf to anthesis complete).



Wheat stem sawfly emergence has peaked with highs of 44 sawflies collected per 20 sweeps this past week in the southwest area, especially in Golden Valley County. However, wheat stem sawfly was only observed in 13% of the wheat fields surveyed.



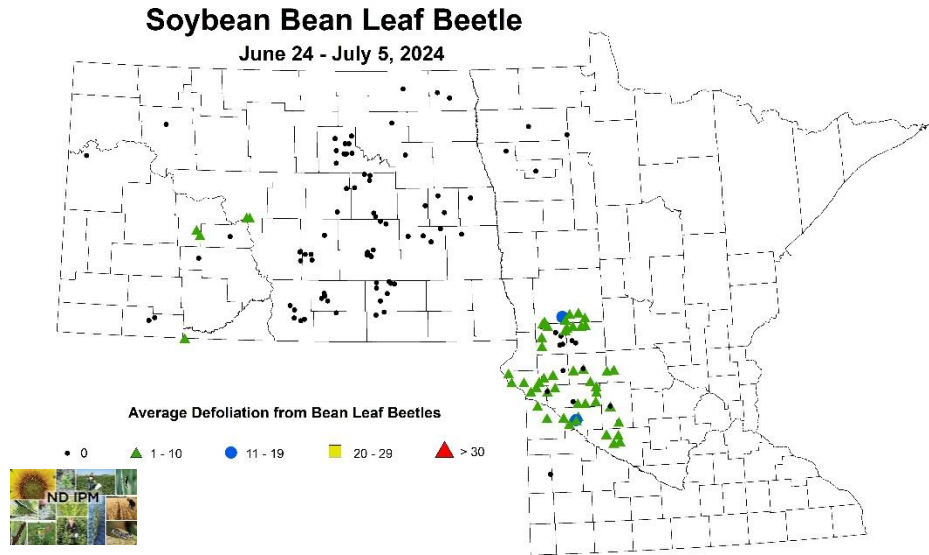
Wheat stem maggot was observed in 13% of the wheat field surveyed. Incidence ranged from 2-30% of plant with white heads. The highest incidence was found in Oliver County with 16% and 22% in Sioux County of North Dakota.

Soybean:

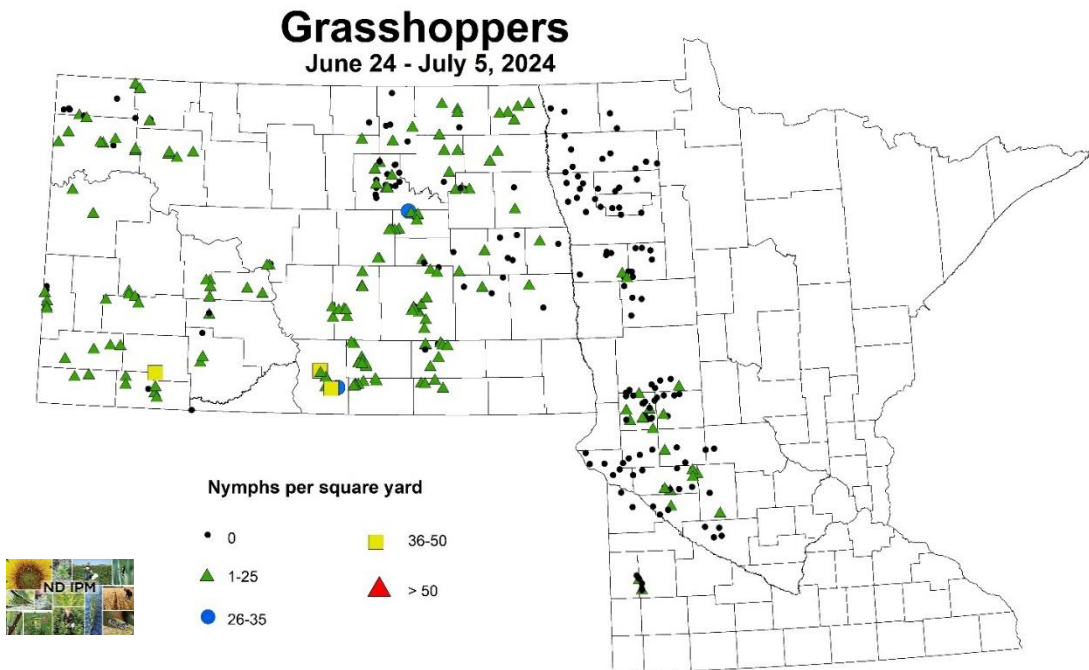
Soybean aphids were NOT observed in any of the 90 fields scouted last week in North Dakota and Minnesota. Good news! Perhaps, the numerous thunderstorms and rain took them out!

Bean leaf beetles was observed causing in 59% of the soybean fields scouted last week, mainly in Minnesota. However, low defoliation ranging from 1-12% was present in fields scouted. Treatment thresholds are based on defoliation and crop stage:

- 30% defoliation during vegetative (V) stages,
- 20% defoliation from beginning bloom (R1) to beginning seed (R5) and
- 10% defoliation during full seed (R6).

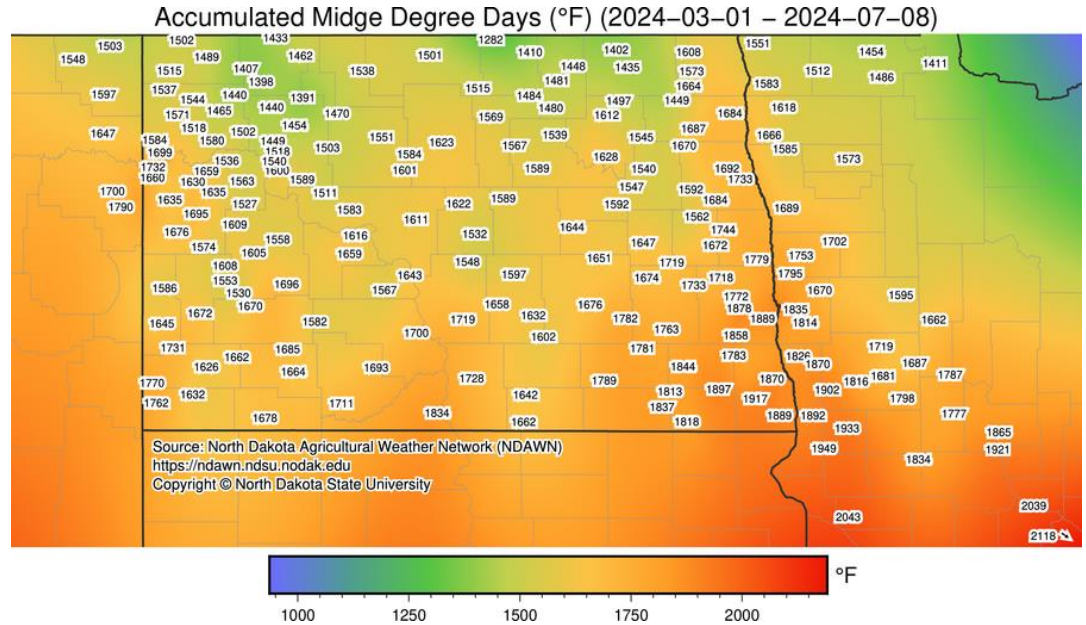


Grasshoppers continue to be the most detected insect pest in field crops this year. IPM Scouts found that 70% of fields scouted (wheat, barley, sunflower and soybean) were infested with grasshopper nymphs last week. However, grasshopper nymph densities ranged from 1 - 50 nymphs per square yard on field margins. The grasshopper nymph economic threshold is **>50 nymphs per square yard on field margins and >30 nymphs per square yard in field**. The higher grasshopper nymph counts were in Emmons and Hettinger Counties in southwest and Eddy County in east central area.

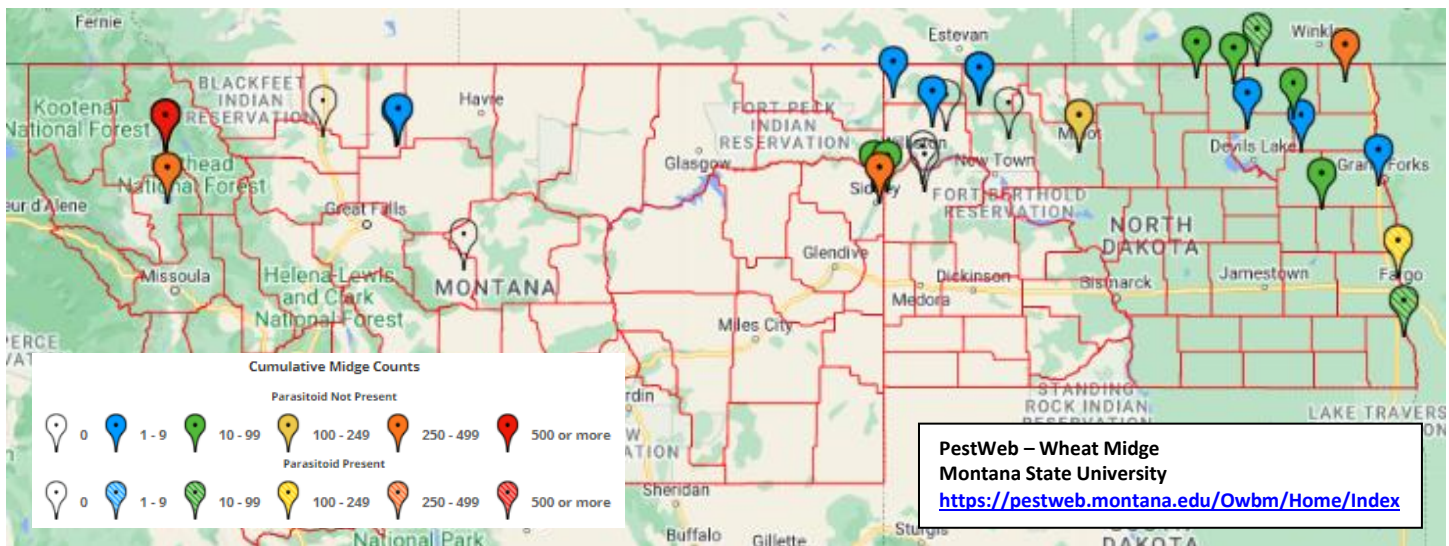


Insect Trapping:

Wheat midge: The degree day model predicts that wheat midge emergence is between 50% to 90% completed, 1475-1600 accumulated midge degree days, in northern North Dakota. So, if your wheat is in the susceptible stages, heading to early flowering, now is the time to scout and determine if fields are at risk for wheat midge.



Insect trapping shows low cumulative midge counts in most counties monitored, except for Pembina County.



Canola Insect Trapping:

Pheromone trapping can be used to detect the risk of adult **bertha armyworms** in a general area. The green unitrap (or bucket trap) is used for bertha armyworm and suspended above the crop canopy near the field’s edge. The cumulative moth count serves as a predictive risk indicator of larval

Table 1. Interpreting bertha armyworm cumulative moth counts from pheromone traps.

Cumulative Number of Moths Per Trap		Larval Infestation Risk Level
From	To	
0	300	Low – Infestations are unlikely to be widespread, but fields should be scouted for signs of insects or injury.
300	900	Uncertain – Infestations may not be widespread, but fields that were particularly attractive to egg-laying females could be infested. Check your fields.
900	1,200	Moderate – Canola fields should be scouted regularly for larvae and evidence of injury.
1,200	1,500+	High – Canola fields should be scouted frequently for larvae and evidence of injury.

Source: Manitoba Agriculture, Food and Rural Initiatives, Canada

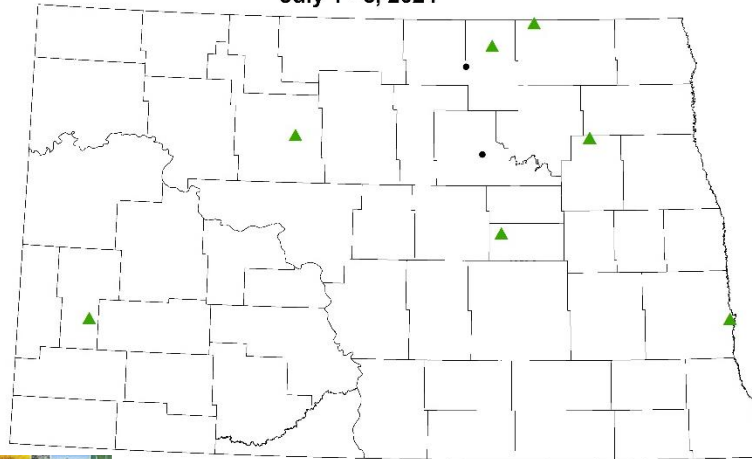
infestation (Table 1). Bertha armyworm had increasing prevalence and cumulative numbers of moths captured this past week. However, cumulative numbers of moths are still low (0-300 cumulation moths captured) and below the moderate to high risk level of >900 cumulation moths captured. At >900 moths, fields need to be scouted regularly for larvae causing defoliation and chewing on pods.



Bucket trap (Courtesy of Janet Knodel)

Bertha Armyworm Trapping Network

July 1 - 5, 2024

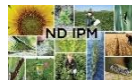
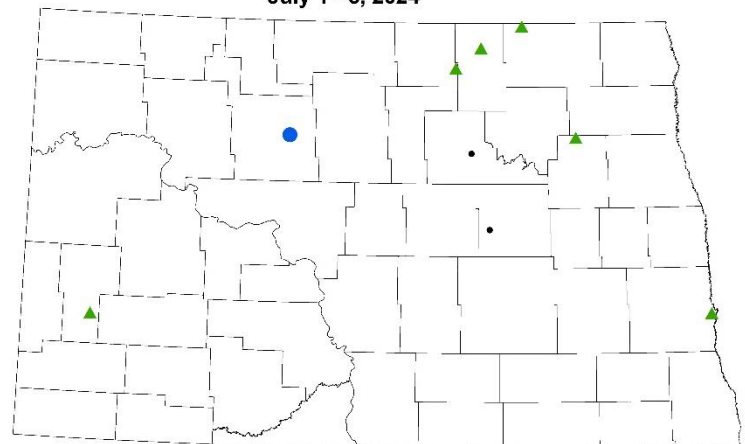


Cumulative number of moths per trap
 • 0 ▲ 1-300 ● 301-900 ■ 901-1200 ▲ >1200

Diamondback moth migrates into North Dakota from the south and the winged or Delta styled pheromone traps are used to detect its arrival and population levels. So far, the current trap levels are low (range of 0-36 moths per trap per week) at all trap sites this year. High numbers of moths captured in the traps (>100 moths per week per trap) during bloom to early pod development provide an early warning that significant larval infestation may follow. Fields should then be monitored for larvae to assess the numbers of larvae present. Flowering through early pod are the most susceptible crop stages to diamondback moth larval feeding on flowers, leaves and pods of canola.

Diamondback Moth Trapping Network

July 1 - 5, 2024



Number of moths per trap per week
 • 0 ▲ 1-25 ● 26-50 ■ 51-100 ▲ >100



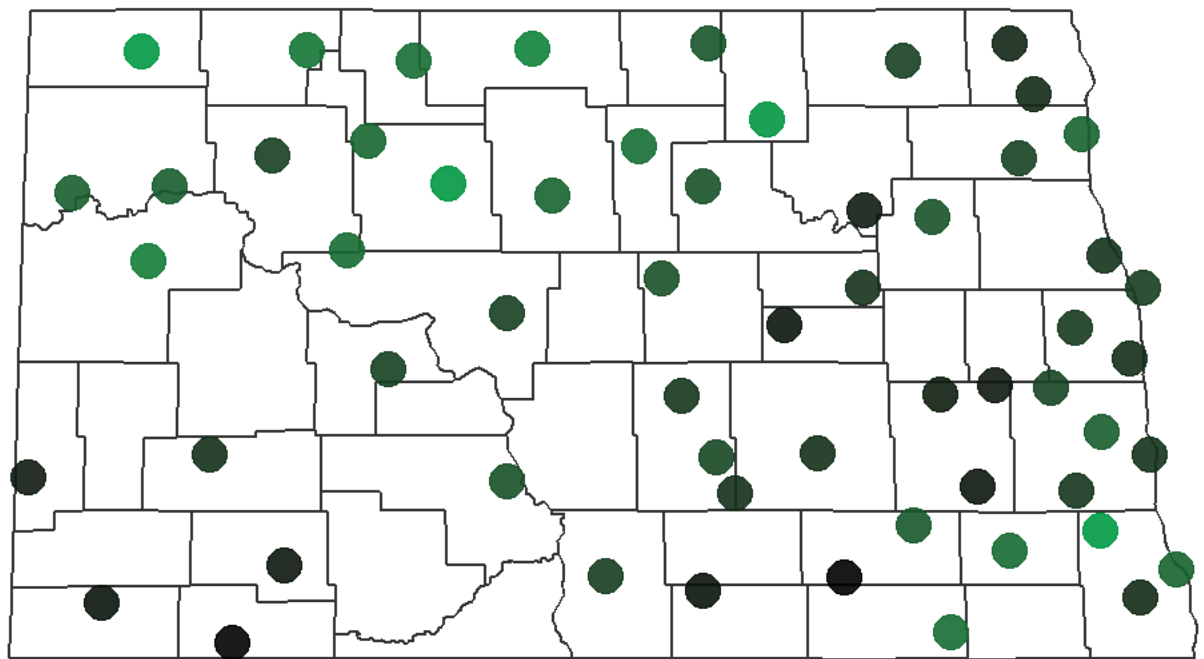
Diamondback moth. (Courtesy of Gerald Fauske, NDSU)

[Janet J. Knodel](#)
 Extension Entomologist



SOYBEAN REACHING R1

Soybean plants in North Dakota are transitioning from the vegetative growth stages to the reproductive phase of their crop development cycle. Shortening day length (increasing night length) and warm temperatures control soybean flowering. This means that shortly after summer begins (June 21st), the soybean plants sense the decrease in the day length and accelerate the start of blooming. So far, the 2024 growing season has been cool and wet (Figure 1). Lower than normal Growing Degree Day units have delayed the crop development. Additionally, some regions experienced planting delays due to rains.



Average temperature difference (in °F) comparing May and June 2024 with the historical average ● -1.5 ● -1.0 ● -0.5 ● 0.0

Figure 1. Temperature difference of the months of May and June between the current season (2024) and the historical average. Points represent the location of weather stations. Weather data was retrieved from ndawn.ndsu.nodak.edu

So far, some flowers appeared in some of my research plots near Fargo during the first week of July (planted around May 15; Figure 2). Generally, the soybeans will be in the V4 to V6 growth stage when this occurs. The first flower can be found lower on the stem and this stage is called reproductive one (R1) and is depicted in photo 2. Full flowering or bloom (R2 growth stage) is reached when a flower is open at one of the two uppermost nodes on the main stem.



Figure 2. Flowering in NDSU Soybean plots. Pictures taken on July 3rd, Fargo.

Pollination usually occurs the day before the full opening of the flower, and shortly after pollination, the pod formation phase starts. The pod development stage (R3) is reached when the pods are 3/16 inch long at one of the four uppermost nodes on the main stem with fully expanded trifoliolate leaf. This marks the start of the critical period for soybeans, and having water deficit during the pod development and grain filling growth stages will result in lower yield.

When determining the growth stage of your crop, consider that a growth stage begins when 50% or more of the plants are in or beyond that stage. Adding an extra level of difficulty, the stages in soybeans can overlap. To know more about the soybean growth stages, please check the *Soybean Growth and Management Quick Guide* at <https://www.ag.ndsu.edu/publications/crops/soybean-growth-and-management-quick-guide>

Finally, some management considerations:

- Some herbicides can be applied until full bloom (R2), so always read the label!
- Scout for insects; even though this season is cool, and the insects are a little bit slower, always keep an eye on them!

[Ana Carcedo](#)
Extension Broadleaf Agronomist



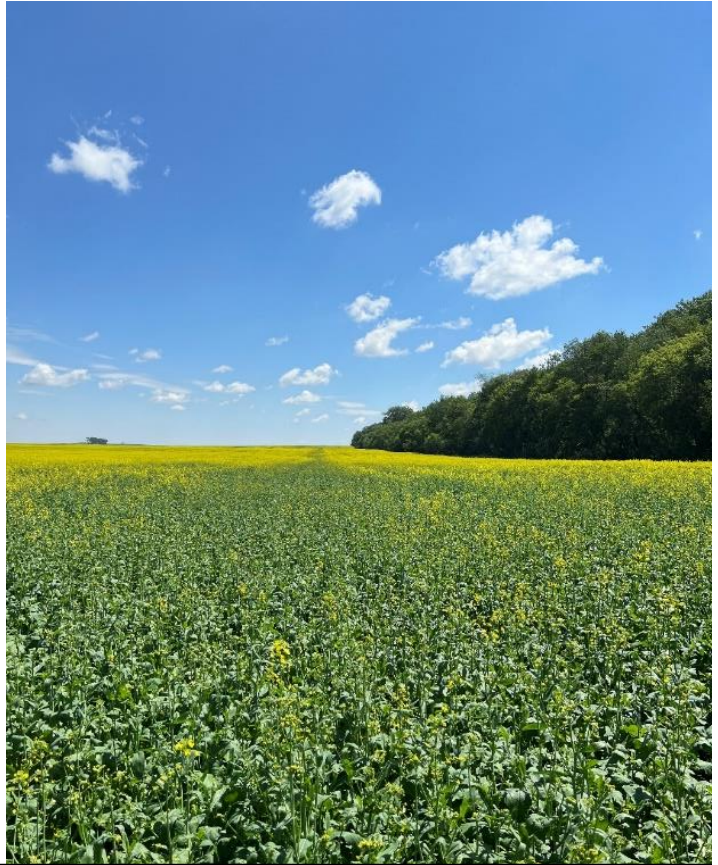
around the state

AROUND THE STATE

NORTHEAST ND

The NE region got a break from heavy rains with high temperatures favoring the development of crops. Some areas still received rains which led to standing water in already saturated fields. Small grains are at heading to flowering stages. Canola is anywhere between bolting to stem elongation and flowering stages. A situation in canola has been reported last week where several plants were girdled and broken at the soil level. The plants looked stunted. When pulled with roots, there was a constriction at the collar region just below the soil level. The plants appeared to be infected with a root rot complex. Another canola field was reported to have clethodim damage that was sprayed at a later stage of crop development with unopened flower buds clumped together.

Soybeans and dry beans continue to progress with most advanced fields reaching R1 stage. Grasshopper populations are increasing in several areas with high numbers in the field margins.



Clethodim damage with unopened and clumped flowers in canola
Photo: Anitha Chirumamilla, LREC



Canola plants affected with root rot complex (Photo: Anitha Chirumamilla, LREC)



Canola field with standing water in Ramsey County (Photo: Lindsay Overmyer, Extension Agent, Ramsey County)



**Grasshopper damage in soybeans
Photo: Photo: Anitha Chirumamilla, LREC**

[Anitha Chirumamilla](#)

Extension Cropping Systems Specialist
Langdon Research Extension Center

SOUTH-CENTRAL/SOUTHEAST ND

The region received 0.09 inch of rain near Hillsboro in Traill County to 2.54 inches of rain near Fingal in Barnes County this past week with an approximate average for the region of 0.92 inch, less than last week! Barnes, Burleigh, Eddy, McIntosh, Steele, Ransom, and Richland Counties received the greatest rainfall over the past week in the region at greater than 1.06 inches. Ducks have now taken up residence in water-podded areas of fields! The 4-inch bare soil temperature stayed below normal again for the region this past week. Hail occurred last Thursday at least in Griggs County with less damage than the week before!

Winter wheat still looks good in the southern part of the region. Hard red spring wheat development ranges from jointing up through the milk stage in the region with most areas having just pollinated. Hard red spring wheat looks good to excellent for the most part across the region as long as we keep Fusarium Head Blight out of the region. Wheat stem maggot and barley yellow dwarf virus is being observed in the region at least in Griggs County, both barely present.

Corn in the region ranges from two collars (V2) up to 12 collars (V12) with most at the 8th collar stage (V8), way behind last year. As of July 8th, Cooperstown was only 19 Growing Degree Days (GDD) below the normal 333 GDD below 2023 and 149 GDD below the 5-year average! Corn condition declined drastically across most of the region due mostly to wet and cool conditions! No disease and insect issues at the moment, unless corn rootworm is present in the far SE corner of the state. Weed control in corn continues looking good across most of the region.

Soybean and dry beans are the poorest looking crops in the region for this past week with Griggs County reporting greater than 50 percent of soybean acres being fair to very poor! Soybeans are struggling throughout most of the region due to cool soils, reduced sunshine, excessive rains, preemergence herbicide injury, and some of the most severe and frequent IDC I've seen at least in Griggs County. Dry beans look fair or less due to these same conditions in addition to clopyralid carryover in the soil. Soybean growth stage in the region ranges from unifoliates fully expanded (VC) to full flower (R2) with most soybeans being about fourth trifoliolate (V4) and just starting to flower. Phytophthora is reducing soybean stands, and septoria leaf blight and bacterial leaf blight are showing up in some fields at least in Griggs County. Weed control in soybeans is across the board from very good where multiple preemergence herbicide sites of action were applied to poor and struggling if the soybeans were planted early and postemergence herbicide applications haven't been.



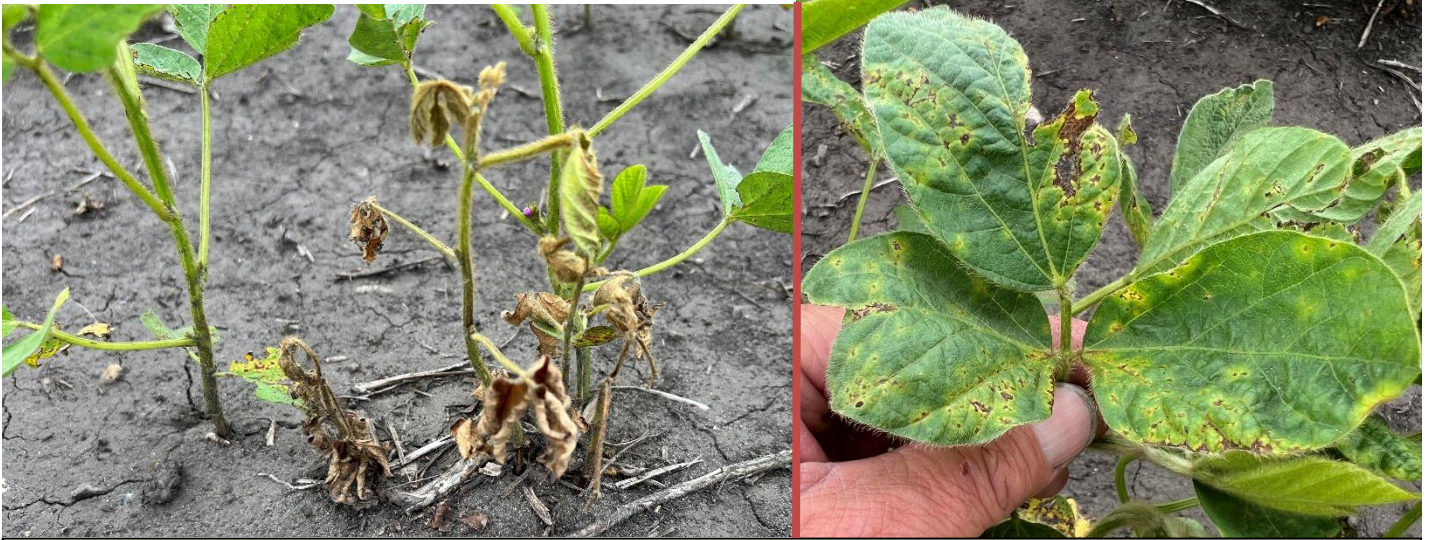
The largest corn in Griggs County at V9 (on left) and Potassium deficiency showing up in corn even in heavier soils in Griggs County (on right). Photo: Jeff Stachler, Griggs County Extension.



Most advanced wheat in Griggs County at late watery-ripe to early milk stage (on left) and Wheat stem maggot (white head in red oval) is present at very low levels in most hard red spring wheat fields in Griggs County (on right). Photo: Jeff Stachler, Griggs County Extension.



Barley yellow dwarf virus (yellowing flag leaves, vectored by cereal aphids) showing up in scattered areas of many hard red spring wheat fields in Griggs County. Photo: Jeff Stachler, Griggs County Extension.



Late-season phytophthora root rot is showing up now in soybean fields across the region (on left) and Bacterial leaf blight in soybean in some fields (on right). Photo: Jeff Stachler, Griggs County Extension.

[Jeff Stachler](#)

Griggs County Extension Agent

SOUTHWEST ND

Over the last 7 days, we had some rainfall recorded in the Southwest, with the greatest precipitation in Sioux County (1.46 inches). However, a considerable portion of the area south of I-94 is still either abnormally dry or under moderate drought conditions, according to the U.S. Drought Monitor.

Concerning the crop progress, the winter wheat fields in the region are turning color, and spring wheat fields range from booting to flowering. Canola fields continue to bloom, turning the landscape a bright yellow. Soybeans are still a little behind, between VC and V3 stages, but hopefully, they will start to pick up with the increase in temperatures expected this month.



Figure 1. Drone Demonstration at the DREC Agronomy Field Day (Photo credit: Mahmuda Rahman)

This week, we had our agronomy field day in Dickinson, where we covered topics including herbicide-resistant kochia management, lime recipe, cover crops management, fertilizer management for soybean and canola, a sprayer drone demonstration, and a NDAWN demonstration. Field days at the RECs will continue throughout this week and the following one. With the breadth of decisions to be made in agriculture, be sure to take advantage of these events to stay up-to-date with state-of-the-art research-based information and to make informed decisions.

[Victor Gomes](#)

Extension Cropping Systems Specialist
Dickinson Research and Extension Center



WEATHER FORECAST

The July 11 to July 17, 2024 Weather Summary and Outlook

You have probably heard about the high heat in the western part of the United States in recent days. There has been a ridge of high pressure over the western one-third of the country for the past week (Figure 1). You can think of the black lines in Figure 1 as where the upper-level wind is blowing. The yellows and oranges are ridges and the blues are troughs. Because North Dakota has been on the edge of these warmer temperatures, thunderstorms have tended to ride along that edge and in turn, that has been one of the reasons we have experienced hit and miss thunderstorms most days this past week.

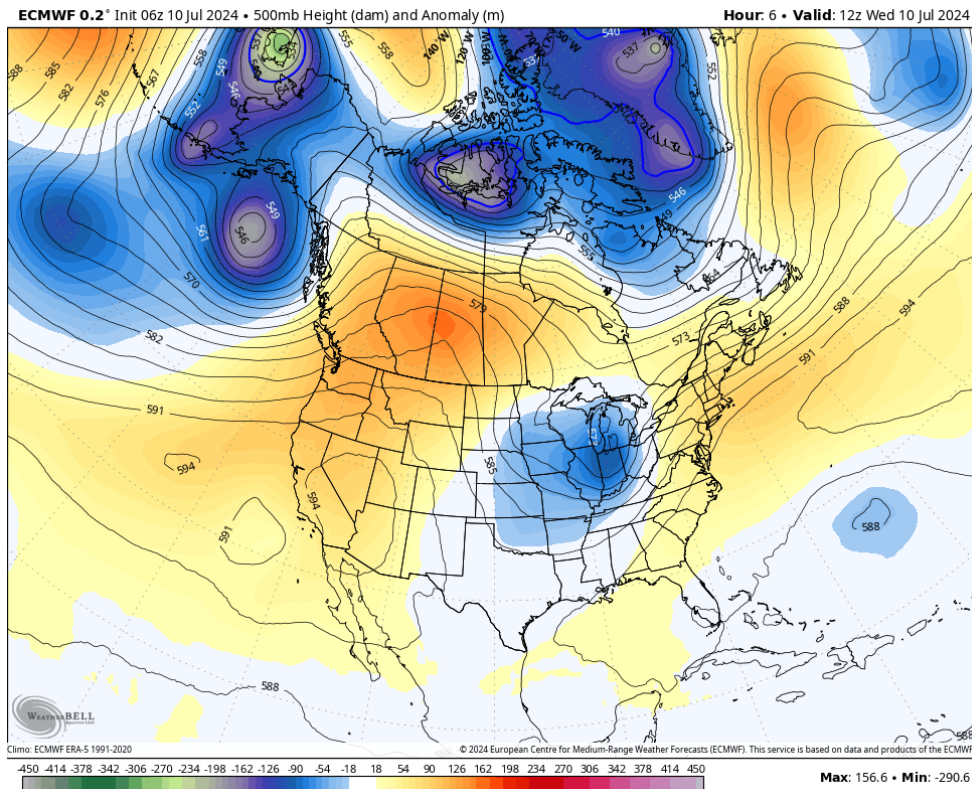


Figure 1. 500 mb (18,000 feet) Heights and Anomalies from Wednesday, July 10, 2024. Used by permission via WeatherBell.

We will likely continue to see some days with thunderstorms during this forecast period. Especially in eastern North Dakota and Minnesota. But odds favor rain amounts varying greatly, similar to what occurred this past week (Figure 2). Being July, some severe weather will probably occur. With that ridge of high pressure moving to the east, above average temperatures can be expected through the weekend, with a couple of cooler days at the end of this forecast period.

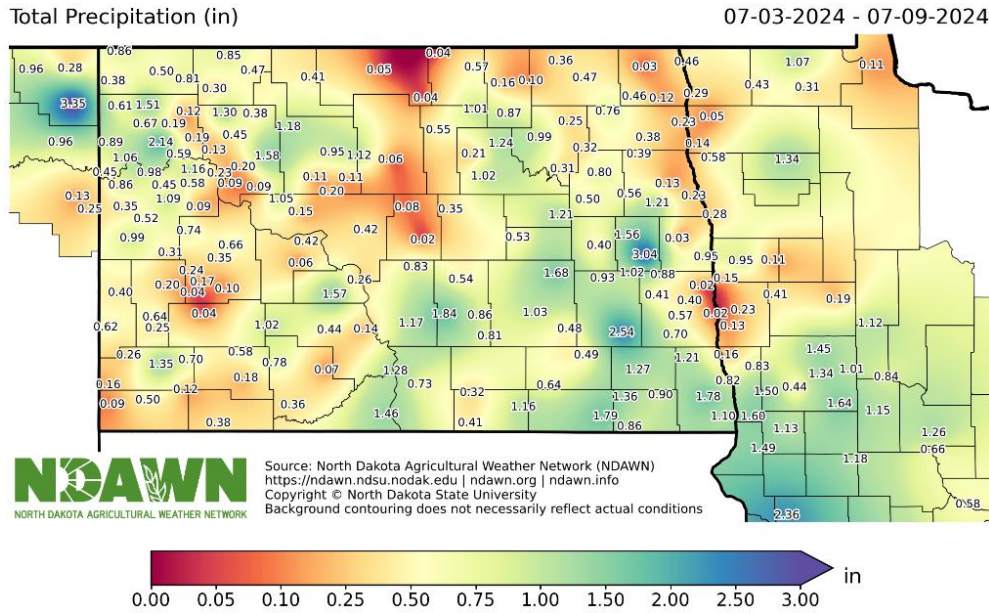


Figure 2. Rain amounts at NDAWN weather stations for the Period of July 3 to July 9, 2024

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. With temperatures expected to be above average, the region should record the highest number of growing degree days of any week so far this growing season. As a reminder, most crops do not record growing degree days beyond a maximum high of 86°. High temperatures will exceed 86° on several days in many locations.

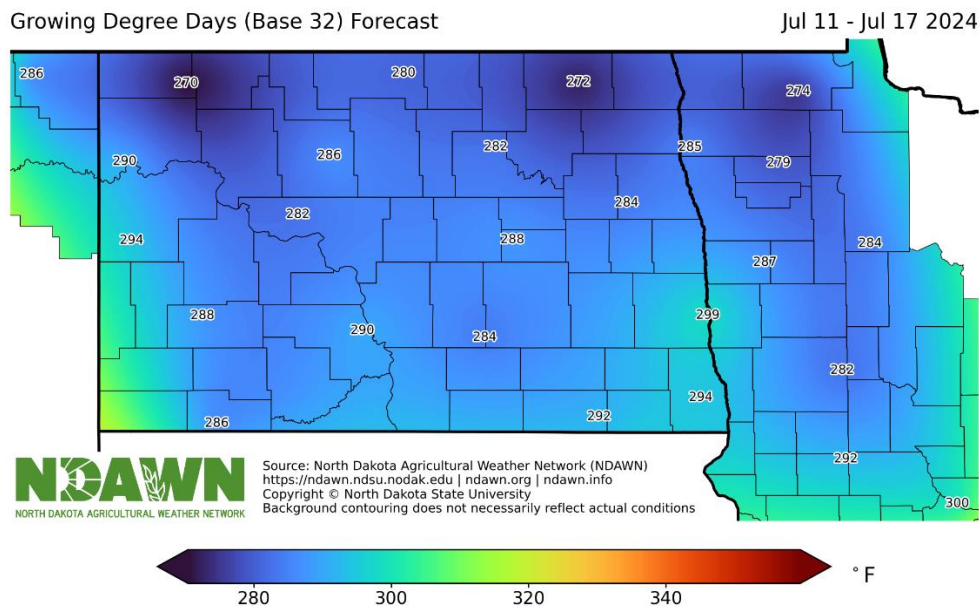


Figure 3. Estimated Growing Degree Days Base 32° for the Period of July 11 to July 17, 2024.

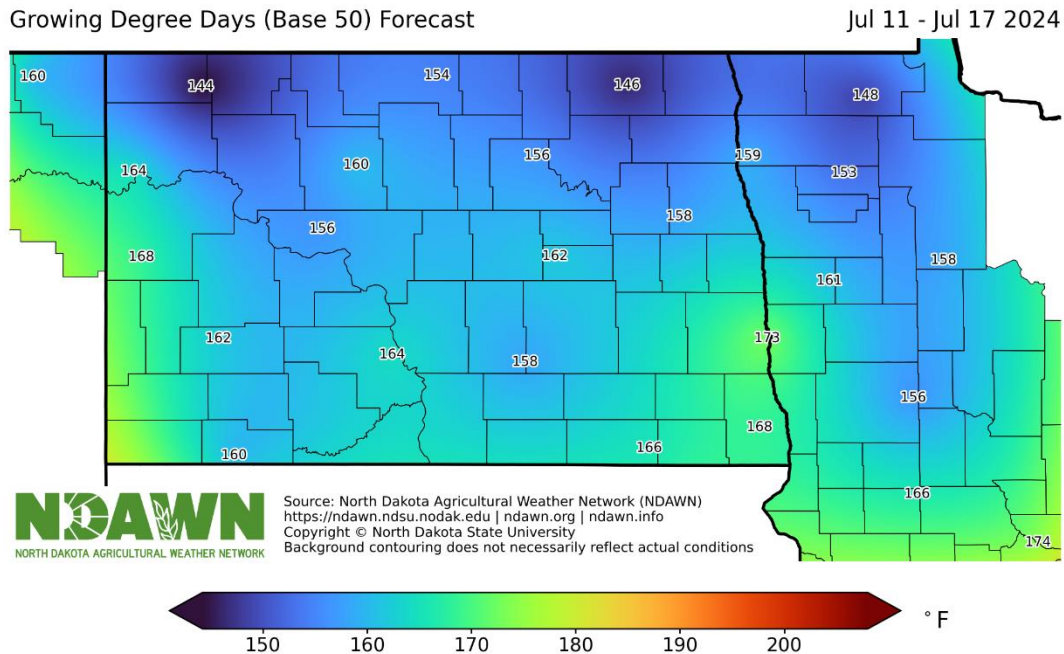


Figure 4. Estimated Growing Degree Days Base 50° for the Period of July 11 to July 17, 2024.

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>

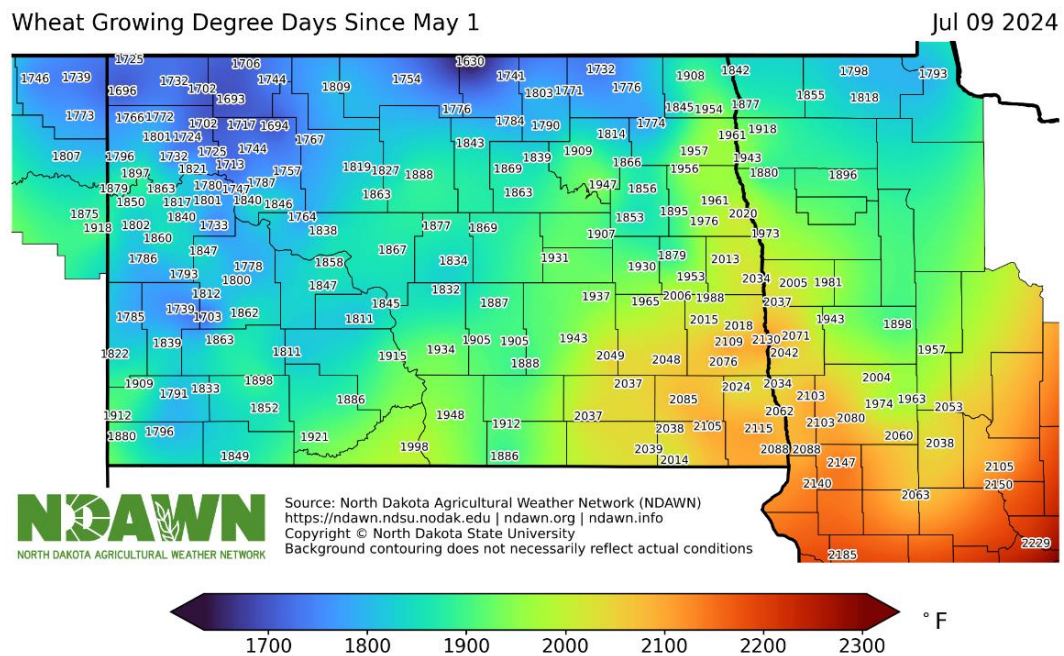


Figure 5. Wheat Growing Degree Days (Base 32°) for the period of May 1 through July 9, 2024

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>.

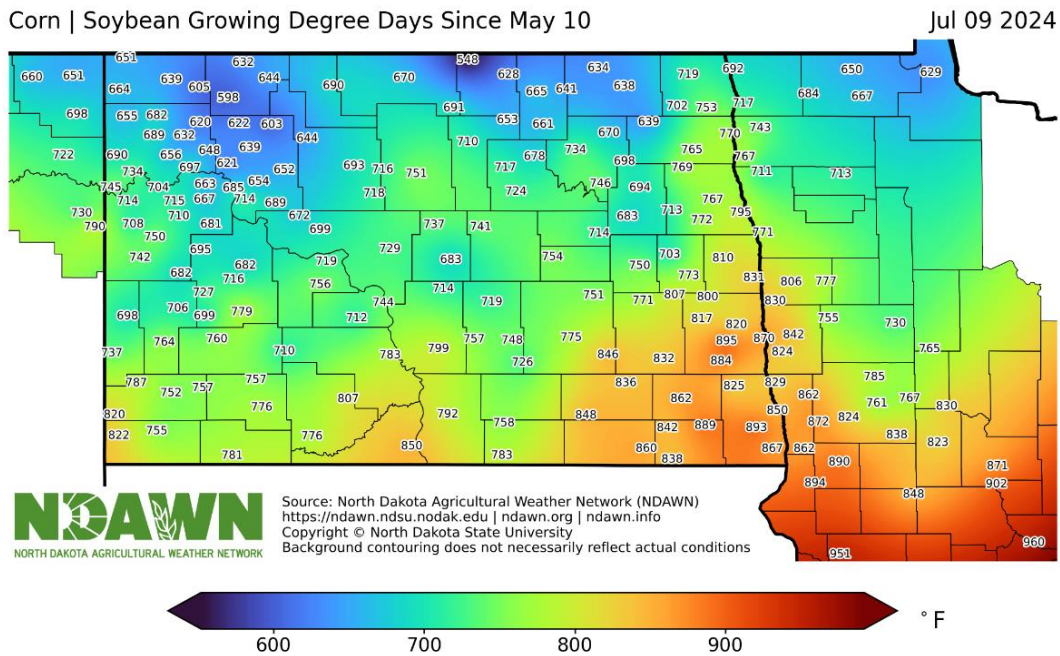


Figure 6. Corn Growing Degree Days (Base 50°) for the period of May 10 through July 9, 2024

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.

[Daryl Ritchison](#)

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