North Dakota State University
CROP & PEST REPORT
NDSU EXTENSION

No. 13 July 2, 2026

Inside this Issue...

2026 NDSU 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.

2026 Field Days Locations & Dates

Location	Date	Time
Central Grasslands	July 7	10 a.m. - 3 p.m. CDT
Hettinger	July 8	5-8 p.m. MDT
Dickinson	July 9	4:30-9 p.m. MDT
Williston	July 10	9 a.m. - Noon CDT
Agronomy Seed Farm	July 13	5-7:30 p.m. CDT
Carrington	July 14	9 a.m. - 3 p.m. CDT
North Central	July 15	9 a.m. - Noon CDT
Langdon	July 16	8:15 a.m. - 12:30 p.m. CDT
Nesson (WREC)	Aug. 5	9 a.m. - 1 p.m. CDT
Oakes (CREC)	Aug. 6	9 a.m. - 1 p.m. CDT

Sugarbeet Research Plot Tours

Monday, July 13 – 10:00 am - NDSU & USDA Root Maggot Control Research, St. Thomas ND
Tuesday, August 11 – 10:00 am – Sugarbeet Weed & Disease Management Research, Prosper ND
Tuesday, August 25 – 10:00 am – CLS Management Research, Foxhome MN

More information can be found at www.SBREB.org/events

plant pathology

FEATURED MATCHUP: CERCOSPORA LEAF SPOT OF SUGARBEET VS. NDSU PLANT PATHOLOGISTS

Players to Watch:

- Cercospora leaf spot of sugarbeet (CLS)
  caused by the fungus ***Cercospora beticola***

Scouting Report:

- **Latent or asymptomatic infections are already present** (typically starting mid-June)
  Approximately 1/3 of tested leaf samples this year have already been positive throughout MN and ND
- **Visible disease symptoms develop in July following row closure:**
  Circular lesions or spots 1/8" – 3/16" diameter
  Light to dark tan centers, brown or purple borders (Figure 1)
- Older leaves will brown and die completely, resulting in defoliation (Figure 2)

Opponent's Game Plan:

- During the season, CLS spreads by airborne and rain-splashed spores
  New spores are produced every 10-14 days
- CLS can impact sugarbeet until harvest, especially during warm falls
- Plants will continue to grow new leaves, but deplete otherwise harvestable sugar

Opponent's Strengths:

- Warm temperatures (80°F daytime, 60°F nighttime) promote rapid infection
  This week's **heat and humidity is the "home turf advantage"** for CLS
- Free water (especially from **rain or dew**) is essential for spore germination
- CLS populations can quickly become resistant to fungicides. Fungicide resistance is one of the biggest challenges for sugarbeet growers.

Opponent's Weaknesses:

- Proactive and preventative fungicides—**tank-mixes of two effective modes of action**
  Fungicide programs are most effective when started at or before row closure
- Cultural practices: crop rotation, residue management, and avoiding planting next to the prior year's sugarbeet beet fields

Trick Play to Watch:

- CLS symptoms in sugarbeet can be similar to Alternaria leaf spot or bacterial leaf spot
- Dew on leaves in the fall promotes infection even though daily temperatures are cooler. September can still have high CLS disease risk!

Figure 1. Left: tan or light brown lesions from Cercospora leaf spot (CLS) on a leaf. Right: CLS lesions. Also notable is the dew formation on this sugarbeet leaf. Free water promotes spore germination.

Figure 2. Older sugarbeet leaves have become completely necrotic from Cercospora leaf spot. New leaves continue to grow, and continue to become infected.

https://www.youtube.com/@NDSUExtension/shorts
https://www.facebook.com/ndsuextcpr
https://x.com/NDSUExtension

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Extension Plant Pathology, Sugarbeets
Wade Webster
Extension Plant Pathology, Soybeans

Andrew Friskop
Extension Plant Pathology, Cereal Crops
Sam Markell
Extension Plant Pathologist, Broad-leaf Crops

FUSARIUM HEAD BLIGHT (SCAB) RISK

Another week with severe and isolated thunderstorms accompanied by fog and higher levels of humidity has increased scab risk in the state. Scab risk for susceptible varieties (FHB score 6 or higher) is high for a majority of the state (Figure 1). Scab risk for moderately susceptible varieites (FHB score of 5) is greatest in the northern third of the state (Figure 2). I am expecting scab risk to remain elevated throughout the Fourth of July weekend. Future scab risk predictions from the models suggest risk will start declining for the state beginning July 6. However, I think the risk models are too conservative in that estimation. Although rain chances will lessen next week, higher humidity levels and prolonged dew periods will continue to be more frequent. Given that information, my Fusarium head blight crystal ball is suggesting scab risk will remain elevated until the middle of July for several areas of the state.

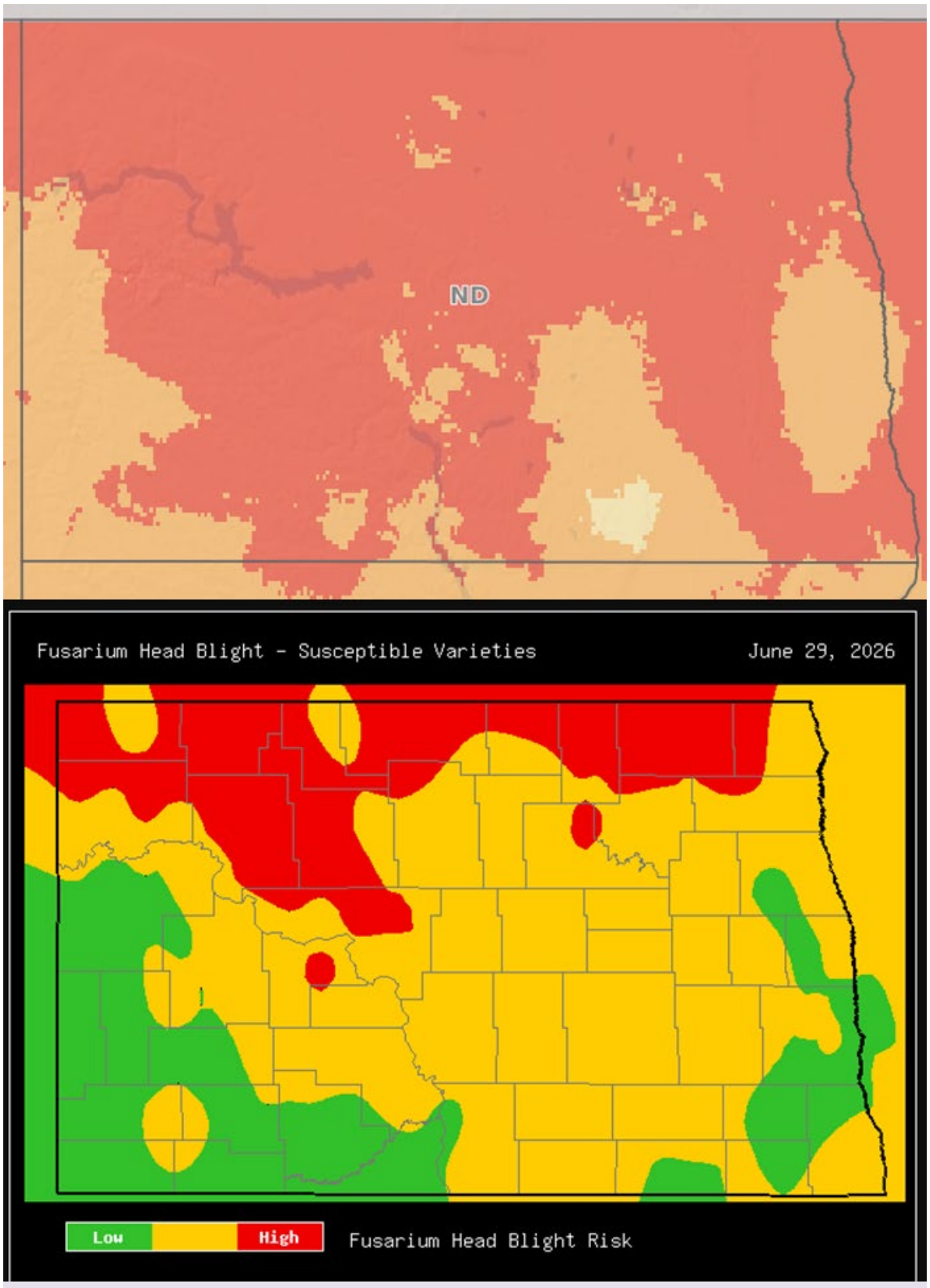


Figure 1. Scab risk for susceptible varieities in North Dakota. Top image is the scab risk predicted by the USWBSI FHB Risk Tool (red = high risk; orange = moderate risk; yellow = low risk) and bottom image is scab risk from NDSU Small Grain Disease Forecasting site (red = high risk; yellow = moderate risk; green = low risk).

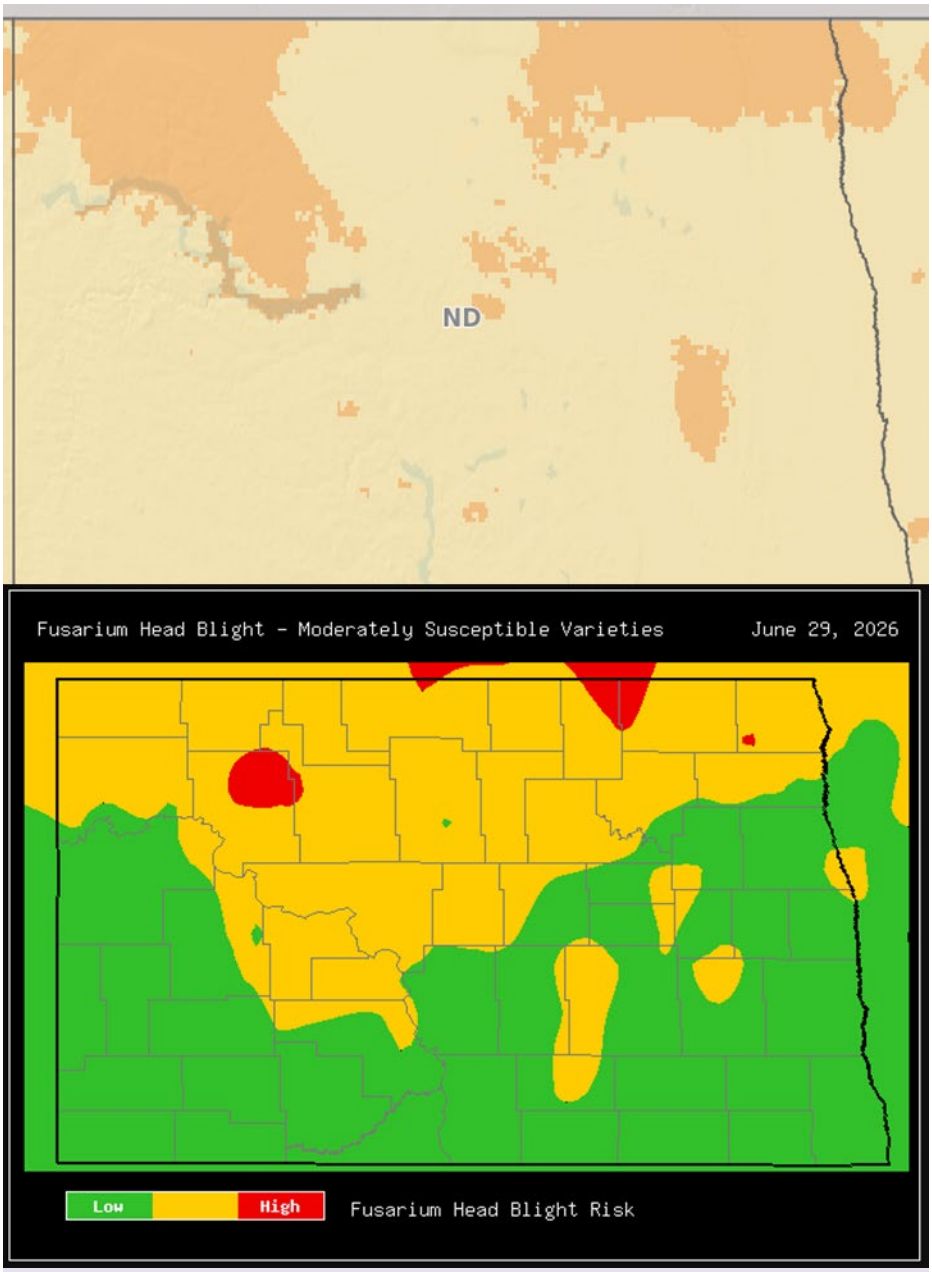


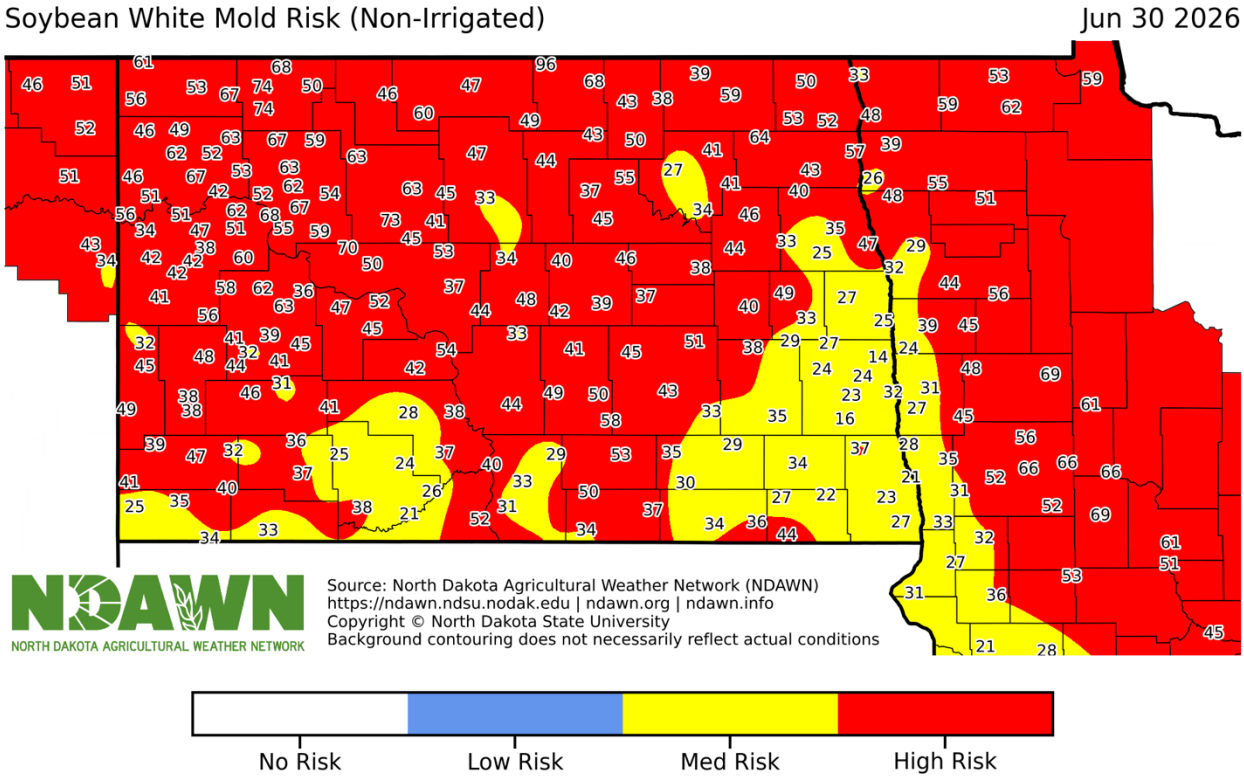
Figure 2. Scab risk for moderately susceptible varieities in North Dakota. Top image is the scab risk predicted by the USWBSI FHB Risk Tool (orange = moderate risk; yellow = low risk) and bottom image is scab risk from NDSU Small Grain Disease Forecasting site (red = high risk; yellow = moderate risk; green = low risk).

Andrew Friskop
Extension Plant Pathology, Cereal Crops

WHITE MOLD UPDATE

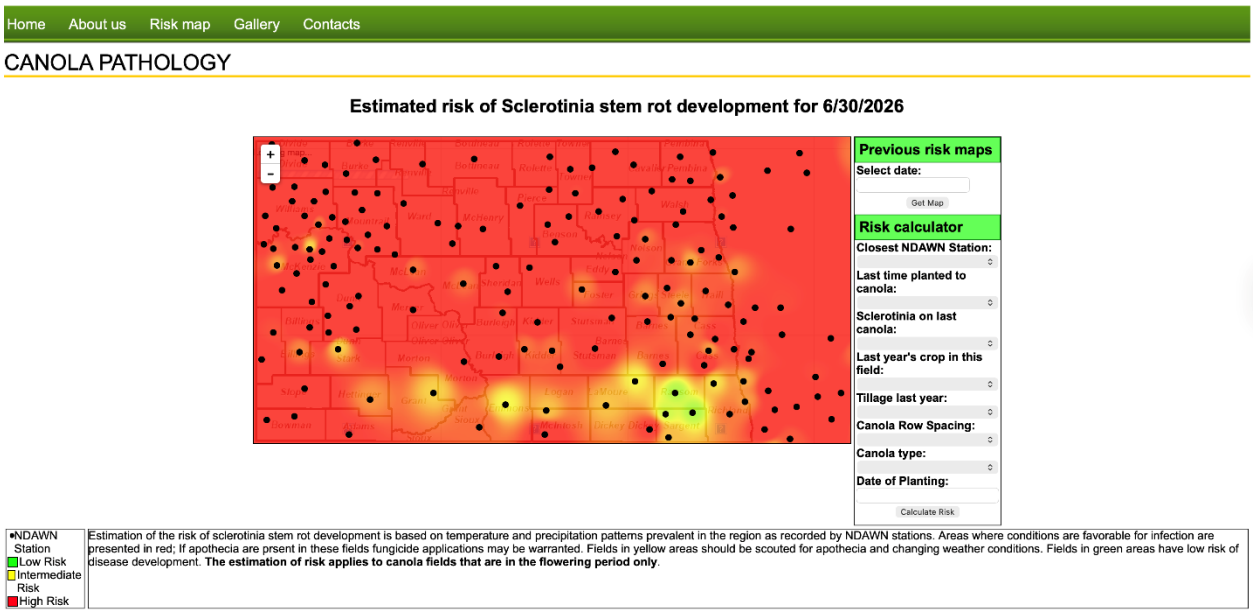
Soybean

Across most of the state, we are still a bit early for thinking about white mold risk in soybeans. But in portions of the state with early planting dates, soybeans are starting to flower. With the recent rains, high humidities, and cool temps, white mold risk is high across most of our region. The only exception is portions of the southeast. If you are in a region with high risk (red), then fungicides may be beneficial if soybeans have reached canopy closure and flowering.



Canola

Much of the canola is now in bloom, or will bloom soon, making the crop susceptible to white mold infection. Risk remains high for most of the state. While high temperatures (above 85F) may impede infection in parts of the state, the majority of canola is grown in the North (and cooler) and will be unaffected (or minimally affected) by the heat. Risk is expected to remain elevated as rainfall remains in the weather forecast.



Dry Bean

Dry beans will be flowering in the near future, at which time they become susceptible to white mold. Although neither the soybean white mold or canola white mold models have been validated on dry beans, they are useful for predicting risk in the dry bean crop. Models evaluate risk using factors favorable for pathogen (***Sclerotinia sclerotiorum***) development. White mold on all broadleaf crop is caused by ***Sclerotinia sclerotiorum*** and the conditions leading to infection across the crops are consistent (wet soil, wet canopy, canopy closure, history of white mold, tight rotations, etc.).

Sunflower

Sunflowers are particularly sensitive to white mold, and can be infected at various stages of their life. Sunflowers may be infected through the roots by germinating sclerotia (small black overwintering structures of the pathogen) leading to Sclerotinia wilt. They may be infected through leaf tissue (damaged, or with a floret on the leaf) leading to mid-stalk rot. Most importantly, they can be infected through the sunflower head once flowering begins, leading to head rot, which is particularly devastating. Given the soil conditions, I expect to that Sclerotinia wilt infections are (or will) be occurring. The disease is devastating for a plant, but rarely yield-limiting at a field scale.
Sunflowers will not bloom until later this season, so weather conditions ***in the future*** will influence Sclerotinia head rot. Unlike soybeans, canola, dry beans and other crops, fungicides do not provide effective management for white mold in sunflower. Decades of fungicide research at NDSU (and elsewhere) have shown that fungicide applications are not effective.

Other broadleaf plants

While we focus on Soybean, Canola, Dry Bean and Sunflower, it is important to note that most broadleaf crops and weeds can be impacted by white mold. This ranges from lentils, to green beans in a home garden, to many weed species. In general, the same principles all apply; the pathogen is ***Sclerotinia sclerotiorum***; favorable conditions include cool to moderate temps, wet

soil, frequent rains; tight rotations and a history of disease in that field increase the risk. Importantly, the level of susceptibility/resistance varies among plant species, and of some broadleaf crops not mentioned in this article, we consider lentils to be among the more susceptible, peas less susceptible, and flax to be among the most 'resistant').

Sam Markell
Extension Plant Pathology, Broadleaf Crops

Wade Webster
Extension Plant Pathology, Soybeans

ON-FARM STUDY PLOT TOUR: MANAGEMENT OF APHANOMYCES ROOT ROT IN FIELD PEAS AND LENTILS

On Thursday, July 16 at 10:00 am, Michael Wunsch, plant pathologist at the NDSU Carrington Research Extension Center, will be hosting a plot tour southwest of Minot at a pair of on-farm studies evaluating the impact of variety selection, planting date and seed treatments (field peas) and variety selection and planting date (lentils) on field pea and lentil agronomic performance under Aphanomyces root rot pressure.

The focus of the tour will be walking plots, evaluating the agronomic performance of field pea and lentil varieties under Aphanomyces pressure relative to planting date and seed treatment. The performance of the same treatments at a third study location with severe Aphanomyces pressure north of Devil's Lake will be discussed, and previous findings from this multi-year, multi-location research effort will be summarized.

Plots will be walked at two 6-acre-farm studies located 0.5 mile apart in adjacent fields. The fields differ in crop rotation history and Aphanomyces root rot pressure. Parallel field pea studies are being conducted in both fields, with nearly identical planting dates.

The on-farm studies are evaluating the replicability of findings from Carrington and on-farm locations that suggest that successful management of Aphanomyces root rot in field peas may be possible with the combined use of planting date, fungicide seed treatment and field pea variety selection. Results from previous research are available at https://www.ndsu.edu/agriculture/ag-hub/research-extension-centers-recs/carrington-rec/research/plant-pathology.

Directions to the plot tour:

- From the Cenex gas station located just north of Makoti on Highway 23, turn south off of Highway 23 onto 338th St SW (State Highway 9). Go 10 miles south; pass through the town of Makoti and past Hiddenwood National Wildlife Refuge.
- Turn west onto 29th St SW. Go 3.5 miles west. The field studies are located on the south side of 29th St SW. One study is directly south of a missile silo; the other is at the junction with 61st Ave NW.
- GPS coordinates of the studies are 47.8328, -101.8790 and 47.8328, -101.8901.
- In the event of rain, the tour will begin at the Hiddenwood Lake picnic area (GPS coordinates (47.8454, -101.8010) until the rain passes.

Lunch will be served at 11:30 am at the Hiddenwood Lake picnic area.

Michael Wunsch, Ph.D.
Plant Pathologist
NDSU Carrington Research Extension Center

plant science

HAIL DAMAGE IN EARLY SEASON CORN

Much needed rain fell across northern North Dakota late last week and over the weekend, but unfortunately, some of the severe thunderstorms were accompanied by strong winds and large hail. The photo included in this article is of hailstones collected in Clay County, Minnesota the evening of June 29th. These large hailstones were fortunately the exception at that location and most of the hail was less 0.25 inches in diameter. But even 0.25 inch hailstones can turn what was a beautiful corn field into a worrisome situation. The good news is, young corn (V8 eight leaf collars visible or less) is quite resilient to hail. Even a field that appears badly damaged with many broken stems and tattered leaves can recover surprisingly well as long as the growing point was not injured and there is adequate moisture available the rest of the growing season. The apical meristem, or growing point, of corn is at or below the soil surface until V5-V6. While hail damage to V6 corn or younger can look ugly in the immediate aftermath of a storm, it typically does not result in significant yield loss. The most important thing to keep in mind when assessing hail damage to early season corn is patience! Wait 3-5 or even 7 days after the storm event to walk the field and determine which plants are alive and estimate stand count.

Hailstones collected the evening of June 29, 2026 in Clay County, MN.

Corn fields that sustain early season hail damage typically experience a delay in maturity of a few days to a week compared to undamaged fields, but surviving plants do not experience a drop in yield potential unless 50% or more of their leaf area is destroyed. But even plants losing 50-75% of their leaf area are likely to lose 5% or less of their yield potential. 100% defoliated corn at V7-V8 is only expected to lose about 10% of its yield potential as long as the growing point survives. If you are interested in reading a more detailed discussion of hail damage in corn, see this great 2015 article from Dr. Bob Nielsen, retired Purdue corn agronomist: https://www.agry.purdue.edu/ext/corn/news/timeless/haildamageyoungcorn.html

Clair Keene
Extension Agronomist Small Grains and Corn

FLOODED FIELDS: UNDERSTANDING CROP RESPONSE TO EXCESS WATER

Periods of intense rainfall have become increasingly common across North Dakota, leaving many producers dealing with saturated soils and standing water. While fields may appear to recover once the water recedes, flooding can have lasting effects on crop growth and yield. The extent of damage depends on several factors, including the duration of flooding, crop growth stage, soil type, temperature, and drainage. Understanding how flooding affects plants can help producers better evaluate crop recovery and make informed management decisions.

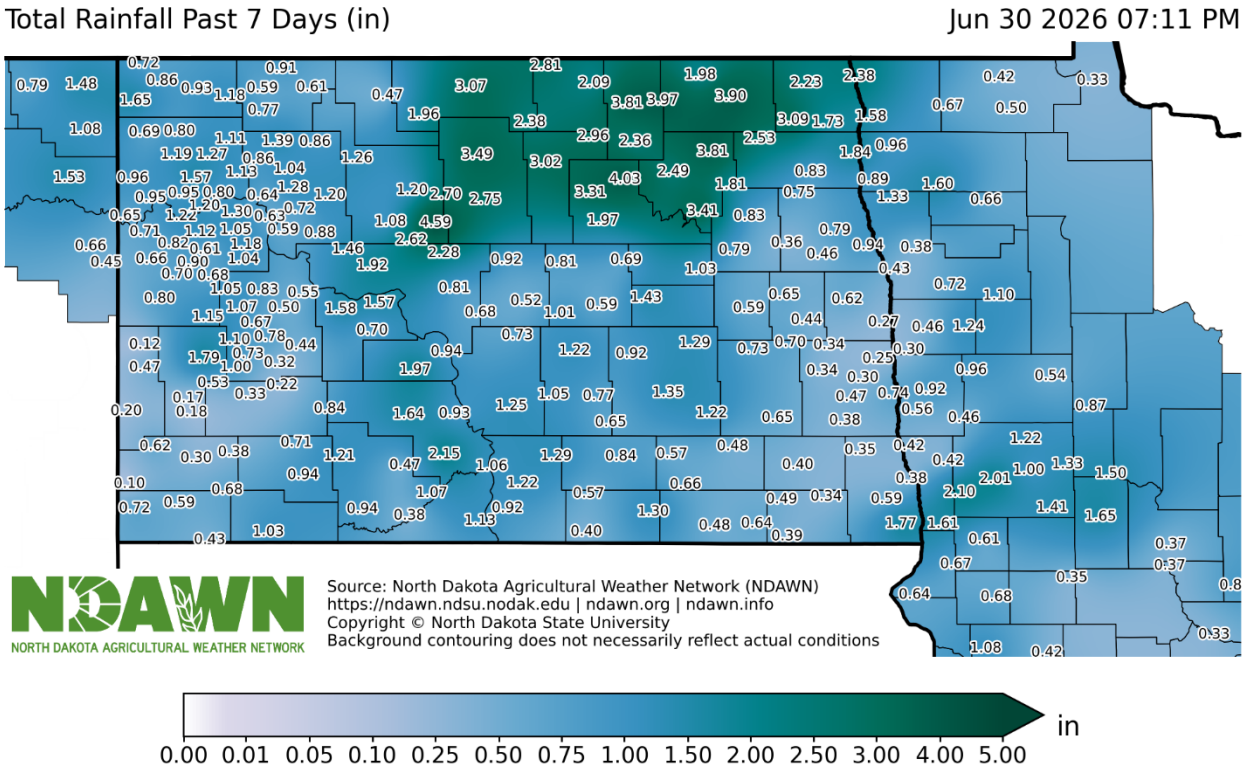


Figure 1. Total rainfall in the past 7 days. Source: NDAWN

What happens when soils become saturated?

The primary problem during flooding is not the water itself, but the lack of oxygen. Under normal conditions, oxygen occupies the pore spaces between soil particles and is essential for root respiration. Once these pores fill with water, oxygen is rapidly depleted by soil microorganisms and plant roots. Because oxygen diffuses approximately 10,000 times more slowly through water than through air, roots can become oxygen deficient within hours after flooding begins.
As oxygen disappears, several changes occur simultaneously. Root growth slows dramatically, reducing the plant's ability to absorb water and nutrients. Nitrogen losses increase through denitrification, nitrate leaching, and runoff, while mineralization of organic nitrogen slows, reducing the supply of available nitrogen later in the season. Soil chemistry also changes, with greater availability of iron and manganese that can reach toxic concentrations under prolonged flooding. These effects often persist well after standing water has disappeared, meaning plants may continue to exhibit stress symptoms for days or even weeks after soils have dried.

Flooding also creates favorable conditions for many soilborne pathogens. Root diseases caused by ***Pythium***, ***Phytophthora***, ***Fusarium***, and other organisms become more common because stressed roots are less capable of defending themselves against infection. Consequently, not all flooding damage is immediate; some yield losses develop later as root systems deteriorate and nutrient uptake remains limited.

Why do some fields flood more than others?

Although excessive rainfall is the most obvious cause of flooding, field characteristics often determine where water accumulates and how long it remains. Low landscape positions naturally collect runoff from surrounding areas, particularly where soils are poorly drained. Heavy clay soils slow water infiltration, while soil compaction caused by machinery traffic further restricts drainage by reducing pore space. In some situations, irrigation followed by heavy rainfall or naturally shallow water tables can also lead to prolonged periods of waterlogging. These conditions not only increase the duration of flooding but also prolong the oxygen deficiency that causes most of the crop injury.

Soybean

Soybean is among the more flood-sensitive row crops because its root system and nitrogen-fixing nodules require oxygen to function properly. Once soils become saturated, nodulation and nitrogen fixation decline rapidly, reducing the plant's ability to supply its own nitrogen. This often explains the pale green or yellow appearance that develops several days after flooding.
The severity of yield loss depends heavily on the growth stage. Research has consistently shown that flooding during the early vegetative stages (V2 and V3) causes some of the greatest reductions in yield because young plants have relatively small root systems and limited reserves. Waterlogging during these stages reduces plant population, plant height, branching, and root development. Photosynthesis declines as stomata close in response to stress, while reduced nutrient uptake limits biomass accumulation. Plants that survive often remain stunted throughout the season.

Soybeans are also highly susceptible during the reproductive period. Flooding during flowering (R1-R2) reduces pod set because fewer flowers successfully develop into pods. During pod development and seed filling (R3-R5), flooding reduces seed size and pod retention, leading to substantial yield losses. Across multiple studies, seven or more days of flooding reduced soybean yields by approximately 20% to more than 80%, depending on growth stage and environmental conditions. Early reproductive stages generally experience greater losses than late seed fill (R6), when plants have already accumulated much of their biomass.

Following flooding, producers should monitor soybean fields for persistent chlorosis, reduced branching, poor nodulation, root discoloration, and symptoms of root rot diseases. Recovery is often possible after short flooding events if growing points remain healthy and new white roots begin developing within several days after soils drain.

In fields with carbonates in the soil, the situation becomes even more challenging. Under waterlogged conditions, carbonates dissolve and form bicarbonates, which increase soil pH and reduce iron availability to soybean plants. As a result, soybeans growing in these conditions often exhibit iron deficiency chlorosis (IDC) symptoms. Unfortunately, there are no effective in-season

rescue treatments for IDC. Therefore, it is important to document affected areas and plan appropriate management strategies for the following season (Figure 2).

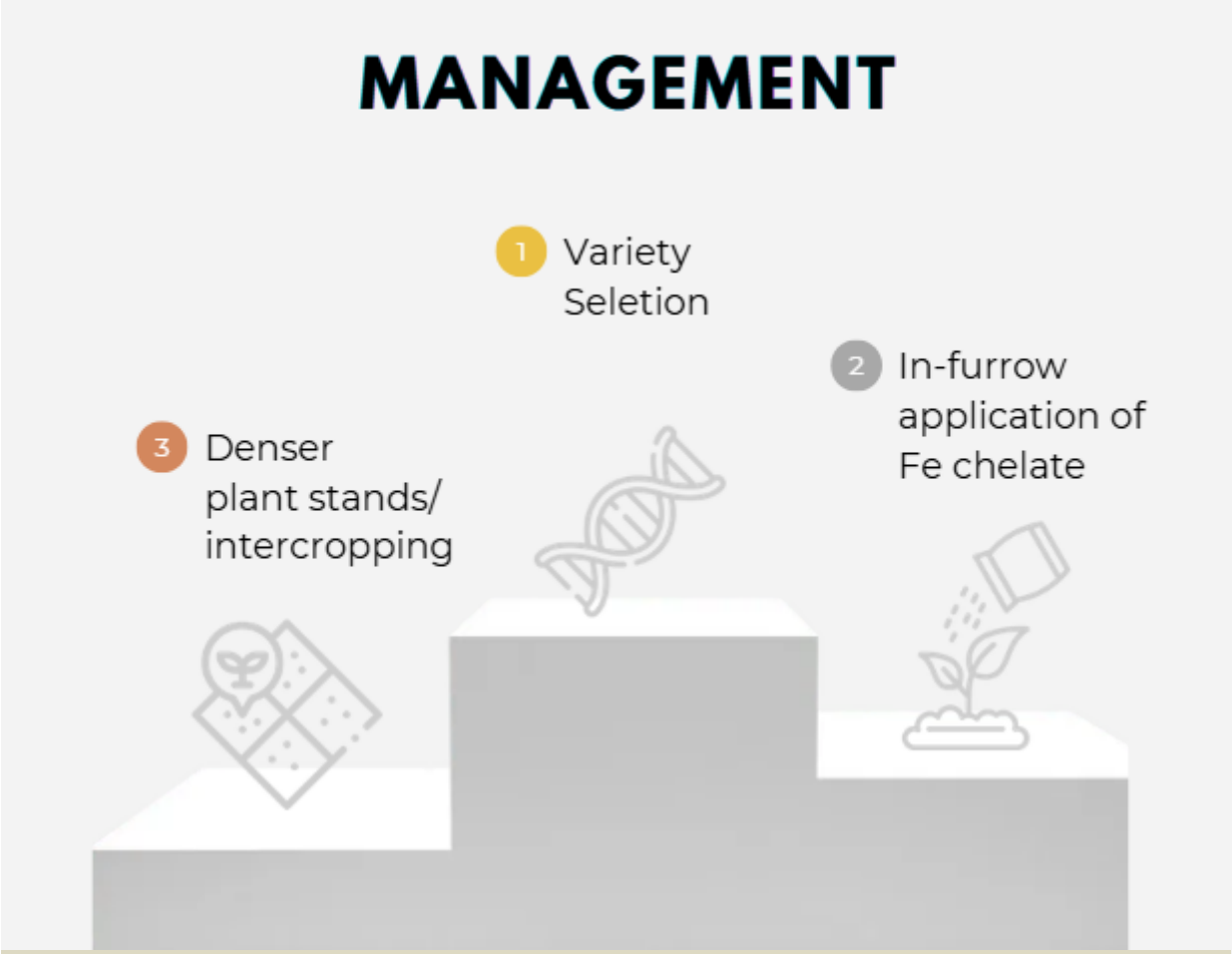


Figure 2. Iron deficiency chlorosis management.

Canola

Canola is particularly vulnerable during early growth because seedlings have relatively small root systems and limited carbohydrate reserves. Research indicates that the rosette stage and the beginning of flowering are the most sensitive periods to flooding. During these stages, prolonged saturation reduces leaf expansion, plant height, root growth, and total biomass accumulation. Defoliation commonly develops after several days of flooding as oxygen deficiency limits root function and nutrient uptake.

Flooding during flowering can be especially damaging because it coincides with one of the crop's highest demands for water and nutrients. Reduced photosynthesis during this period limits the plant's ability to support pod development and seed filling, ultimately decreasing grain yield. In North Dakota, canola fields that experienced prolonged ponding should be monitored carefully for uneven flowering, delayed maturity, and secondary infections by root pathogens.

Management following flooding

Once flooding has occurred, few corrective measures can reverse the damage. Instead, management should focus on accurately assessing crop survival and minimizing additional stress. Fields should be allowed several days to drain before evaluating stands, as many plants initially appear worse than they ultimately recover. Healthy plants typically resume growth by producing new leaves and white roots, whereas brown growing points or soft, decaying roots usually indicate poor recovery potential.

Flooded fields should also be monitored for nitrogen deficiencies and disease development during the weeks following saturation. Nitrogen losses can be substantial in crops that depend on soil nitrogen, while saturated conditions often favor root rot pathogens that continue affecting plants after soils dry.

Long-term management focuses on reducing the likelihood and duration of future flooding events. Practices that improve soil structure, including reducing compaction, maintaining residue cover, using cover crops, and improving drainage, can increase infiltration and reduce ponding. Cover crops are particularly valuable because their root systems create continuous macropores that improve water movement through the soil profile while gradually improving soil structure over time. Subsurface tile drainage remains one of the most effective solutions in chronically flooded fields, although it requires considerable investment.

Want to know more? Here is an adaptation from a table from Kaur et al., 2019 that summarizes the results from several studies!

Crop	Growth stage(s)	Flooding duration (days)	Yield reduction (%)	Main reported responses	Reference
Corn	V6	1, 3, 7	10–36	Chlorosis	Kaur et al. (2017)
	V3	7	16–38	Reduced leaf greenness and stomatal conductance	Kaur (2016)
	V6, VT	1–3	1–22	Reduced plant height, reduced N and K uptake, increased P uptake	Singh & Ghildyal (1980)
	V2, V7, VT, R1	10	8–80	High plant mortality; reduced plant height, leaf area, dry weight and carbohydrate reserves; shortened anthesis-silking interval; reduced carbohydrate content at R1	Zaidi et al. (2004)
	20 and 40 DAP	11	51–69	Reduced N, P, K and Zn concentrations; fewer ears per plant; lower grain weight	Sandhu et al. (1986)
	V6, VT	5	25–43	Reduced leaf number, leaf area and dry matter accumulation	Shah et al. (2012)
	V1, V6, VT, R1	2, 4, 6, 8, 10	9–100	Reduced plant height and leaf area throughout development	Liu et al. (2013)
	V3, V6, 10 d after VT	3, 6	7–33	Reduced grain number, 1000-grain weight, plant height, leaf area, grain filling and dry matter accumulation	Ren et al. (2014)
	V3	—	40	Not reported	Bhan (1977)

	Early and late vegetative; flowering	10	19–64	Not reported	Mukhtar et al. (1990)
	4 weeks after planting	1–6	6–61	Not reported	Chaudhary et al. (1975)
	6- and 30-inch height; silking	1–3	2–33	Not reported	Ritter & Beer (1969)
	V6	3, 6, 9, 12	27–56	Reduced leaf area, root length and root weight	Ahmad (1991)
Soybean	V5, R1, R5	2, 4, 6, 8	20–41	Yield reduction reported; physiological responses not detailed in this table	Rhine et al. (2010)
	V1, V4, R2	2–14	12–84	Reduced N and K concentrations, canopy height and dry matter; yellowing, leaf abscission and stunting; higher Mn, Fe and Al concentrations at R2	Scott et al. (1989)
	V4, R2	7	39–52	Reduced photosynthesis, dry matter accumulation, growth and stomatal conductance	Oosterhuis et al. (1990)
	V2, V3, V7, R1, R3, R5, R6, R6.3	7	9–93	Reduced plant height, branch number, pods per branch and seed size	Linkemer et al. (1998)
	V2, V3	3, 6, 8	20–93	Reduced plant population and plant height	Sullivan et al. (2001)
	R1, R5	—	—	Suppressed nodule nitrogenase and nitrate reductase activities	Sung (1993)
	R1	—	—	Reduced shoot dry weight and leaf area	Youn et al. (2008)
	V5	—	—	Reduced plant growth and biomass accumulation	Cho & Yamakawa (2006)
	V6	—	—	Reduced height, chlorosis, stunting and diminished plant growth	Griffin & Saxton (1988)
Wheat	3–4 leaf	10–30	44	Not reported	Collaku & Harrison (2002)
	Leaf 7–anthesis	5	34–92	Not reported	Romina et al. (2014)
	2 weeks after planting; ear emergence	42	40–53	Not reported	Watson et al. (1976)
	Flowering	5–50	4–90	Not reported	Olgun et al. (2008)
	Anthesis; grain filling	10–30	40	Not reported	Ghobadi & Ghobadi (2010)
	Seedling growth; stem elongation	10	8–39	Not reported	Yavas et al. (2012)
	Stem elongation	4–24	25–50	Not reported	Marti et al. (2015)
	Grain filling	20–30	15–23	Not reported	Luxmoore et al. (1973)
	25 days after planting	1–6	8–39	Not reported	Sharma & Swarup (1989a)
	Late tillering	14–28	16–49	Not reported	Arguello et al. (2016)
	3–4 leaf	4–60	19–30	Not reported	Pampana et al. (2016)

This article summarizes Kaur et al., 2019 (https://doi.org/10.1002/agj2.20093), and Liu et al., 2020 (https://doi.org/10.1007/s11104-020-04669-z)

Ana Carcedo
Broadleaf Crop Agronomist

farm health and wellness

STRESS MANAGEMENT FOR FARM/RANCH COUPLES – 10 RELATIONSHIP CHECKUP QUESTIONS

H. Jackson Brown, Jr., once said: "Remember that creating a successful marriage is like farming. You have to start over again every morning." For farmers engaged in farming with a spouse or partner, there may be stresses related to finances, busy schedules or shifting roles in family life. Often, one or both spouses or partners manage multiple roles, including farm/ranch partner, spouse and/or parent, and employee in an outside job.

10 Relationship Checkup Questions

Relationship checkups are for all couples, in every stage of their relationship. A relationship checkup can prevent getting disconnected or help with getting reconnected. It's never a bad idea to slow down and get on the same page together. Here are 10 questions you can ask as a couple to check in on your relationship:

Focus on Positives

- **1) What am I doing now that you like?**
- **2) What's one of your favorite traits of mine?**
- **3) What is one positive thing that you appreciated about us in the last week?**

Assess How Things Are Going

- **4) Are we happy with the way we divide household roles and responsibilities?**
- **5) Are we happy with the frequency and quality of showing affection for each other?**
- **6) How is our friendship? Are we happy with our time together and emotional connection?**
- **7) Do we each feel supported and secure with each other?**

Some Gentle Suggestions

- **8) Is there just one thing that you would like me to change or work on? (name only one)**
- **9) What's something specific I can do this week to help you feel loved or supported?**
- **10) Do we have any recent hurts between us that we still need help resolving and healing?**

Access Helpful Resources

Life as a couple in farming or ranching will never be totally free from stress. But through practices like asking the questions above, you can recognize warning signs of stress and work to ease pressures and stay connected.

To learn more specifically about tips and tools in managing stress as a couple on the farm, read the NDSU Extension publication FS285, "Stress Management for Farm/Ranch Couples" – link: Stress Management for Farm/Ranch Couples | NDSU Agriculture

If you or someone you know is in need of mental health or substance abuse resources, call or text the **9-8-8 Suicide and Crisis Lifeline**, or chat at https://988lifeline.org.

Contact your NDSU Extension county office or search the Web for ***NDSU Extension farm stress*** for more resources on wellness in agriculture.

Working together on the farm includes reducing your stress and taking care of your relationship.

Sean Brotherson
Extension Family Science Specialist

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Extension Farm and Ranch Stress Program Coordinator

around the state

AROUND THE STATE

SOUTH-CENTRAL/SOUTHEAST ND

Crops continued to grow slowly for most of last week, but woke up Sunday and Monday, unless areas received too much rain, which isn't too many places in our region compared to the northern part of North Dakota.

Lack of conditions to apply herbicides, off-target herbicide movement, sprayer contamination issues, and lack of complete weed control in some fields are the biggest issues in the region this week. The "Twisted Whorl Syndrome" is still present in a few corn fields as of June 30th. The only other issue, which is minor in most hard red spring wheat fields, is the presence of wheat stem

maggots. There are a few scattered fields having a greater presence of wheat stem maggots, but nothing more than normal and only in a few fields.

The turn-around in temperatures has slowed the loss of corn growing degree days (GDD's this past week, as seen in Table 1. The last row shows the change in departure from the 5-year average compared to last week's GDD's. At least based upon these 7 NDAWN Stations, Denhoff saw the greatest loss in GDD's last week. Thankfully, we are still ahead of last year's GDD's. Edgeley has now accumulated the greatest number of GDD's at 694. Denhoff has accumulated the fewest GDD's so far this season at 584 and lost the greatest number of 5-year GDD's compared to last week at 17 GDD's.

Table 1. Accumulated and departure from normal GDD's for seven NDAWN stations across the region.

	Denhoff	Linton	McHenry	Jamestown	Edgeley	Mayville	Mooreton
Accumulation from 5-13 to 6-29, 2026	584	636	588	642	694	620	675
Departure from last week	+ 89	+ 99	+ 51	+ 109	+ 120	+ 11	+ 32
Departure from normal	- 43	+ 11	+ 56	+ 37	+ 74	+ 117	+ 100
Departure from 2025	+ 97	+ 77	+ 94	+ 89	+ 121	+ 143	+ 160
Departure from the 5-year average	- 28	- 25	+ 2	- 17	- 12	+ 30	+ 25
Departure this past week in the 5-year average	- 17	- 10	- 5	- 8	- 3	+ 9	+ 1

Iron Deficiency Chlorosis (IDC) has blown up in the region to be at a very high frequency, as seen in Figure 1. The warmer temperatures will hopefully start to turn the soybeans around now.

Corn improved over most of the region this past week and still looks the best in the southern and western parts of the state. Most corn in the region continued to get a deeper dark green color compared to last week, but nutrient deficiencies are still present, including sulfur deficiency in this Griggs County corn plant (Figure 2). Corn in the region is from V2 (2nd visible collar) to about V11. Most corn in the region is from V5 to V7.

Figure 1: Extensive IDC in a Cass County soybean field.

Figure 2: Sulfur deficiency visible in this corn leaf in Griggs County.

Figure 3: Hard red spring wheat at the early watery-ripe stage in Cass County.

Hard red spring wheat (HRSW) and barley continue to look pretty good across most of the region, but there are pockets within the region where stands and growth stages continue to be highly variable within a field and among fields. HRSW within the region is from jointed to early watery-ripe stage (Figure 3), with most HRSW at least at the heading to early flower stage. Still no leaf diseases present in the region at the moment, however, watch for the environmental conditions and small-grain varieties having an FHB rating of 6 or greater to know the need to apply a fungicide to reduce FHB. Some fields have a significant presence of wheat stem maggot as seen in Figure 4.

Figure 4: Bleached wheat heads in a Cass County HRSW field indicating presence of wheat stem maggot.

Soybean continues to be the toughest looking crop in the region, but has improved some over the weekend in many fields. Soybean stands and growth stages continue to be highly variable in the region. Soybeans have started to flower in some early planted and/or early maturing varieties. Figure 5 shows an awesome looking V6 (sixth trifoliate) stage soybean plant about ready to start flowering and has several strong branches growing. Soybean plants in the region range from VC (just emerging) to R1 (at least one flower on a plant) with most soybeans at the V3 (3rd trifoliate) to V4 growth stage.

Canola looks good to excellent in most of the region, but as more is flowering, more infield variability of stages if visible now. Some fields in the region have many different stages in them. Most canola in this region is in full-flower stage, but there is canola only starting to bolt in the region as well.

Dry bean and sunflower are looking pretty good across the region yet with dry bean from emergence up to the 3rd trifoliate stage. Sunflowers at least east of Cooperstown are looking great. Sunflower stage ranges from V4 (4th leaf) to R1 (flower bud visible) as seen in Figure 6 with most at the V4 to V7 stage.

Figure 5: V6 (6th fully expanded trifoliate leaf) stage in a Griggs County soybean field.

Figure 6: R1 (flower bud visible) stage sunflower in Cass County.

Jeff Stachler
Extension Cropping Systems Specialist

SOUTHWEST ND

Over the last 7 days, much needed rain has been observed across western ND. Precipitation totals range from 0.10 inches in south Slope County to 3.62 inches in southeast Ward County. Despite these showers over the last week, much of southwest North Dakota still registers below average precipitation for the month of June, our wettest month (Figure 1). Much of northwest North Dakota, however, has received above average rainfall in June, and that will certainly help with grain and forage crop performance through what has been mostly a dry year. It is important to highlight that since the start of the growing season (i.e., May 1st), precipitation totals have been below average for most of the region (Figure 2).

The combination of persistent dry conditions with the expected rise in temperatures forecast for this week, during the pollination period for small grains, field peas and canola, has many producers concerned about possible yield losses.

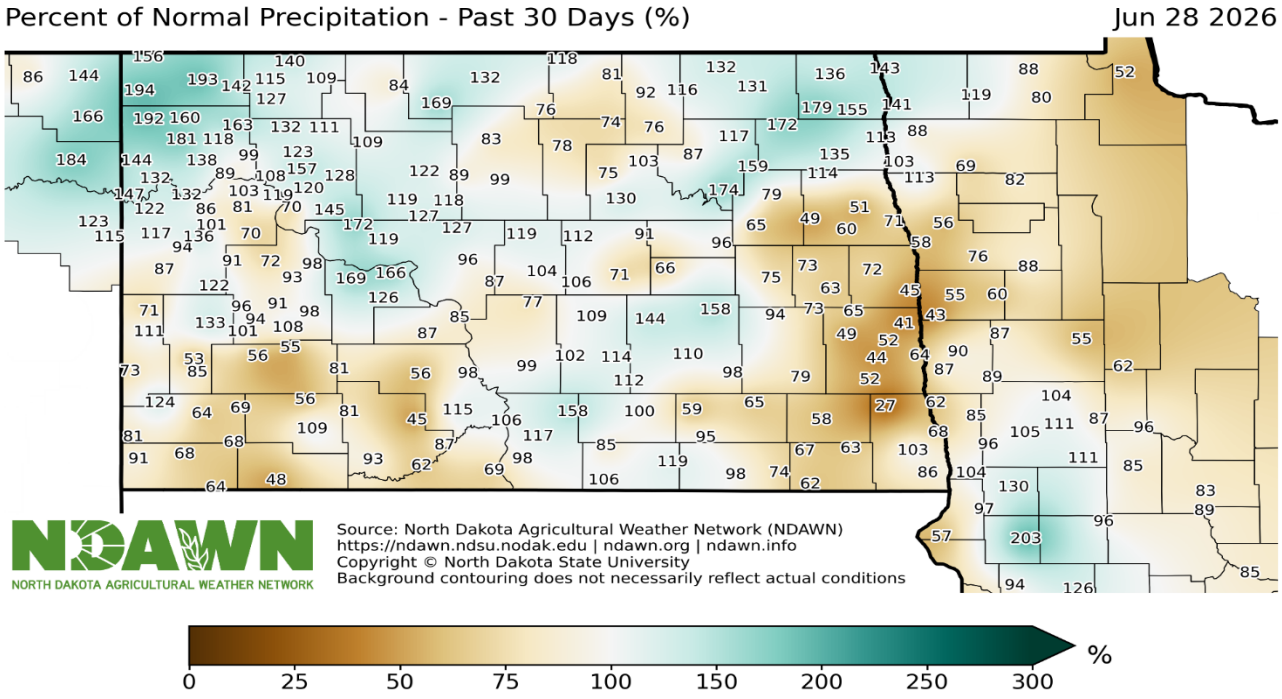

Figure 2. Percent of Normal Precipitation-Past 30 Days (%).

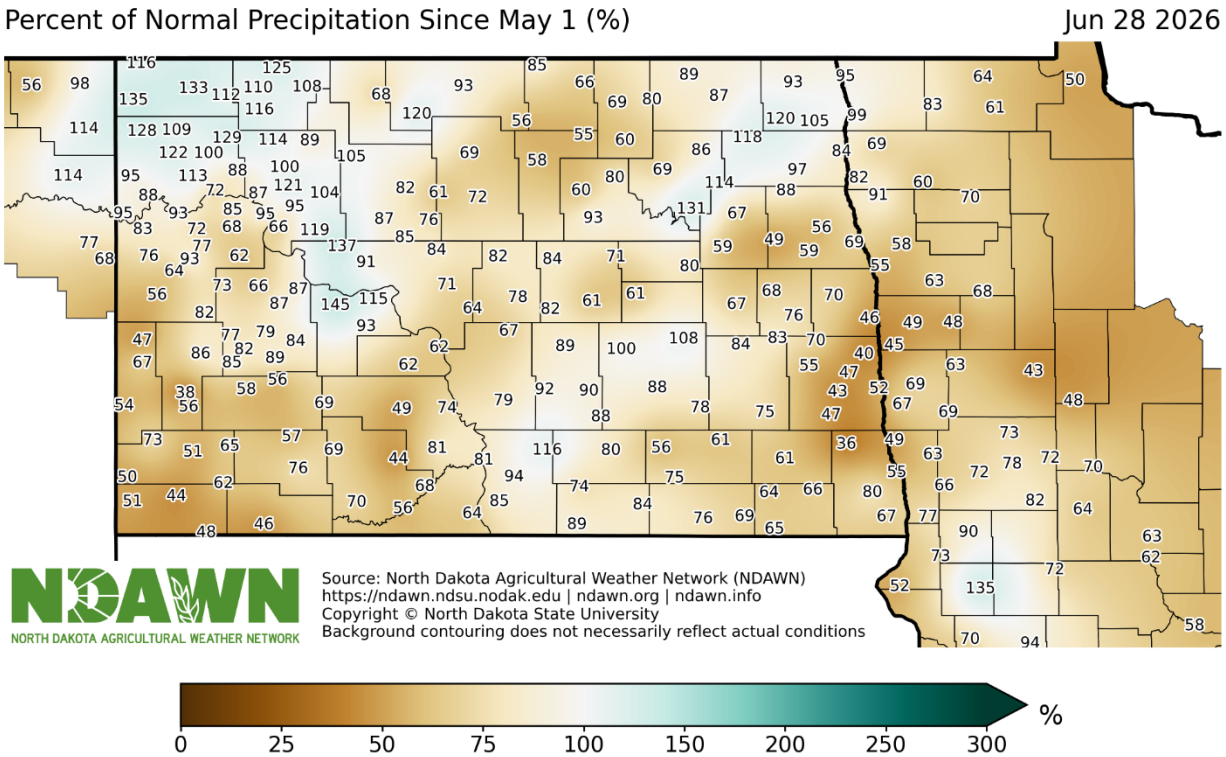

Figure 2. Percent of Normal Precipitation Since May 1 (%).

Concerning crop progress, in North Central ND, reports account for most crops doing relatively well and alfalfa's first cutting just starting, although the volume and quality of the forage may be underwhelming at this stage. Corn and soybeans are behind due to the lack of growing degree days. Winter wheat is starting to mature and turn color. Spring Wheat is between the booting stage to 50% headed out. Reports also account for approximately 5-10% of the dry beans and soybeans acres being replanted due to storm damage.

In Southwest ND, spring small grains are headed out and canola is flowering. Field peas are flowering but look short in stature and could represent harvest problems. With the persistent dry conditions, some nutrient deficiencies have been reported in the County, from my observations mostly Nitrogen and Phosphorus. Some structural damage has been reported due to the storms over last week. Some wheat got hailed out in the County.

This week, I received pictures from a corn field in Dunn County showing random plants with bright yellow leaves (Figure 3). Similar reports have been received from as far as Griggs County. Looking closely at the photos, you can notice that it is mostly the newer leaves that show these symptoms. Although some nutrient deficiencies and herbicide damage could cause similar symptoms, the distribution does not match the distribution of a nutrient deficiency or herbicide drift. Rather, the issue in these photos is associated with an abiotic stress known as Rapid Growth Syndrome (RGS). RGS normally occurs during the V5-V6 stage and is associated with an abrupt transition from cool temperatures to warmer conditions, or an abrupt transition from dry conditions to moist conditions, resulting in a sharp acceleration in plant growth rate. When that occurs, corn leaves fail to unfurl properly and may get trapped in the whorl, resulting in low exposure to sunlight, which will result in these bright yellow leaves.

Figure 3. A corn field showing symptoms of Rapid Growth Syndrome in Dunn County. Photo: Glenn Martin, NDSU DREC Research Specialist.

Overall, these leaves will quickly green up once exposed to sunlight. The development of individual plants may be slightly delayed as a result of RGS, but yield penalties are unlikely.

I would like to take advantage of this space to bid farewell to my dear readers and colleagues as this will be my last Crop & Pest Report article. Thank you very much for your time, attention, and inputs during these two years. Western North Dakota will always hold a special place in my heart as I move on to my next job in North Carolina. Once a Bison, always a Bison 🤟

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weather

WEATHER FORECAST

The July 2 to July 8, 2026 Weather Summary and Outlook

With some severe weather over the past week came some heavier rain potential. Northern North Dakota recorded significant rain, with the Devils Lake basin the hardest hit (Figure 1). This forecast period will continue to bring hit-and-miss storms on many days, but overall, the coverage and amounts should be less.

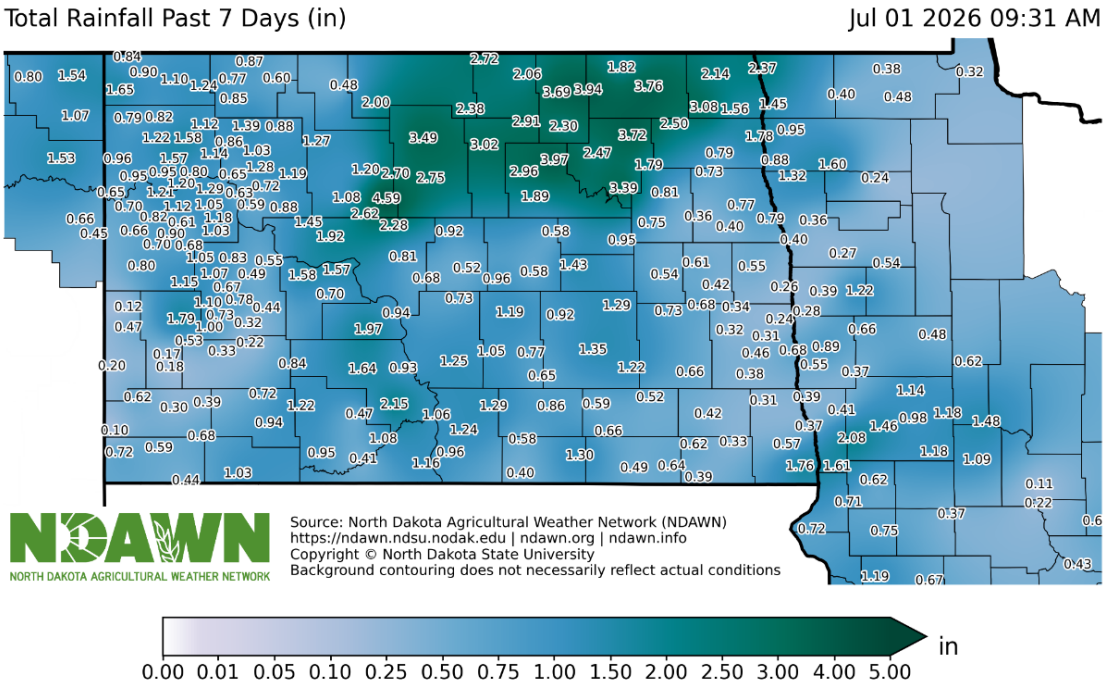

Figure 1. Total Rain at NDAWN stations from June 25 through 9:30 AM on July 1, 2026

A week ago, much of North Dakota was experiencing a drier than average June, but the last few days of the month turned many areas from a bit dry to wet or, in some cases, too wet (Figure 2). With warmer weather projected for the next couple of weeks, in combination with a lower risk of widespread heavy rain events, hopefully some drying out can occur. Locations that could use some rain may continue to be on the dry side.

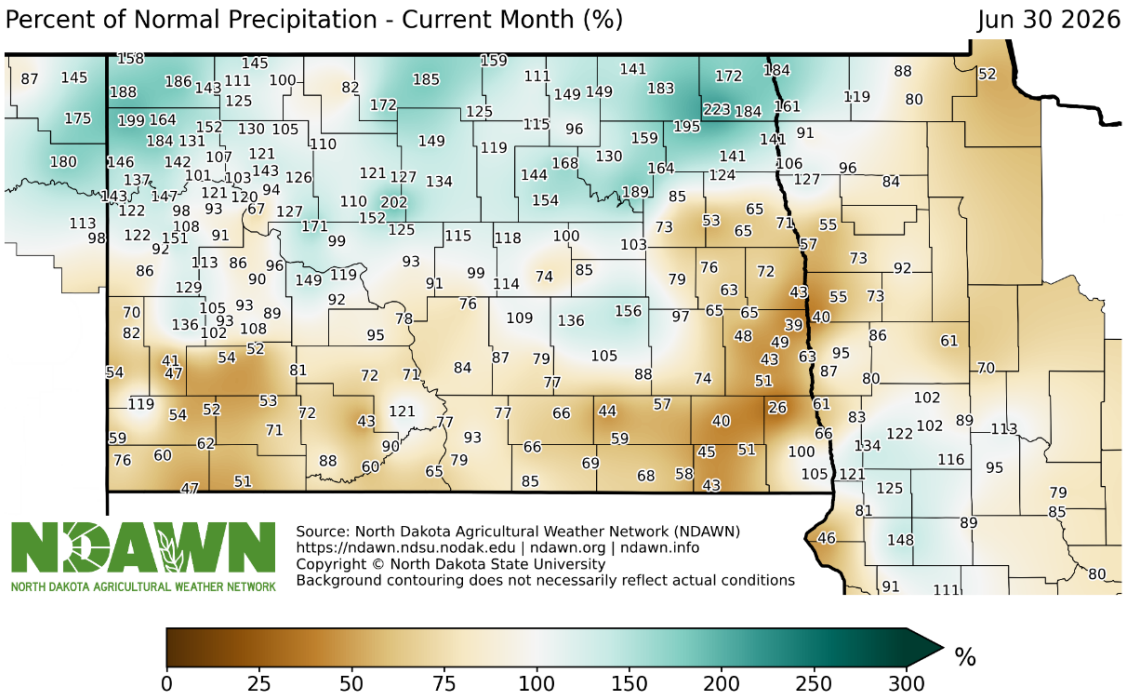

Figure 2. Departure from Average Rainfall from June 1 through June 30, 2026

The past few days started to warm up to near or in some areas above average (Figure 3). It still appears that the first 10 days of July will record above average temperatures across much of the region.

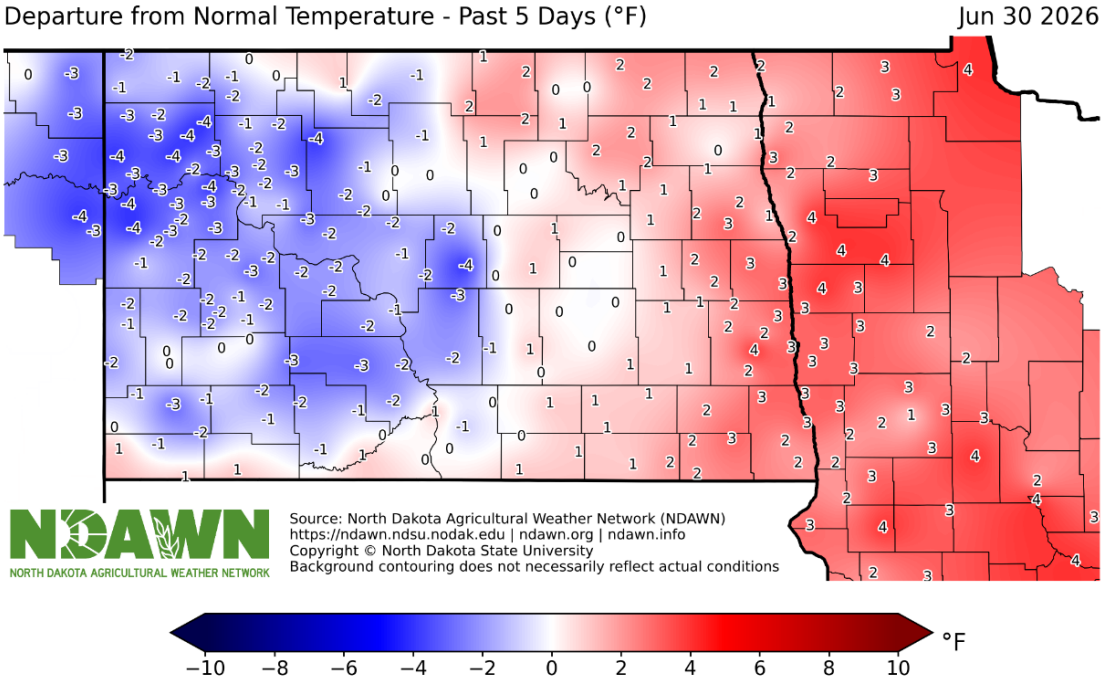

Figure 3. Departure from Average Temperatures for the period of June 26 through June 30, 2026

Figures 4 and 5 show the forecasted growing degree days (GDDs) for base 32° (wheat) and base 50°F (corn and soybeans) during this forecast period. Above average temperatures during the next week will mean more than average growing degree days.

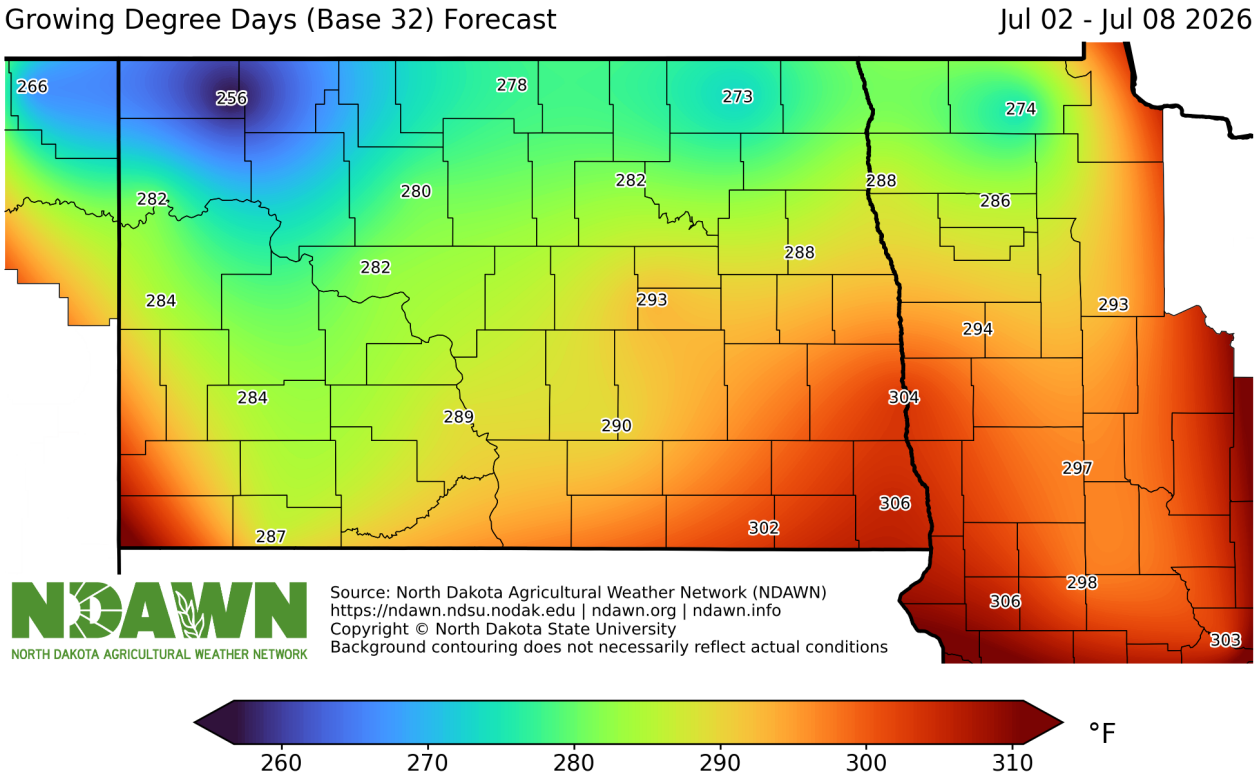

Figure 4. Estimated Growing Degree Days Base 32° for the Period of July 2 to July 8, 2026

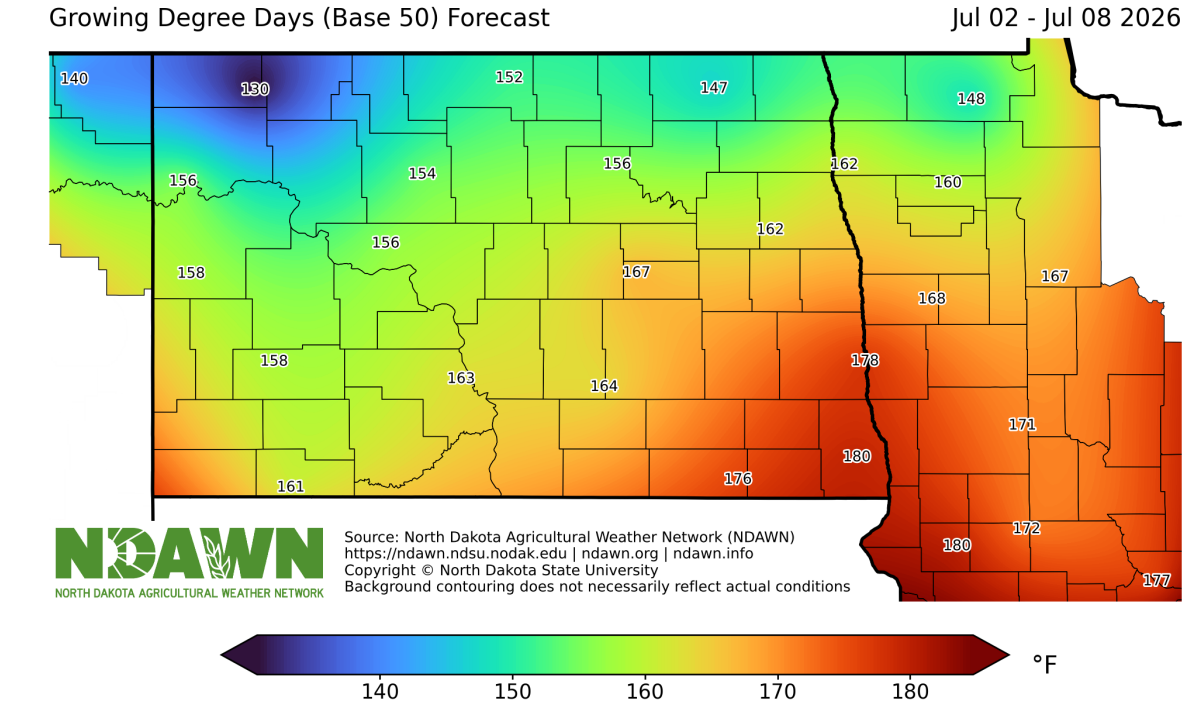

Figure 5. Estimated Growing Degree Days Base 50° for the Period of July 2 to July 8, 2026

Using May 1 as a planting date, the accumulated growing degree days for wheat (base temperature 32°) are given in Figure 6. 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

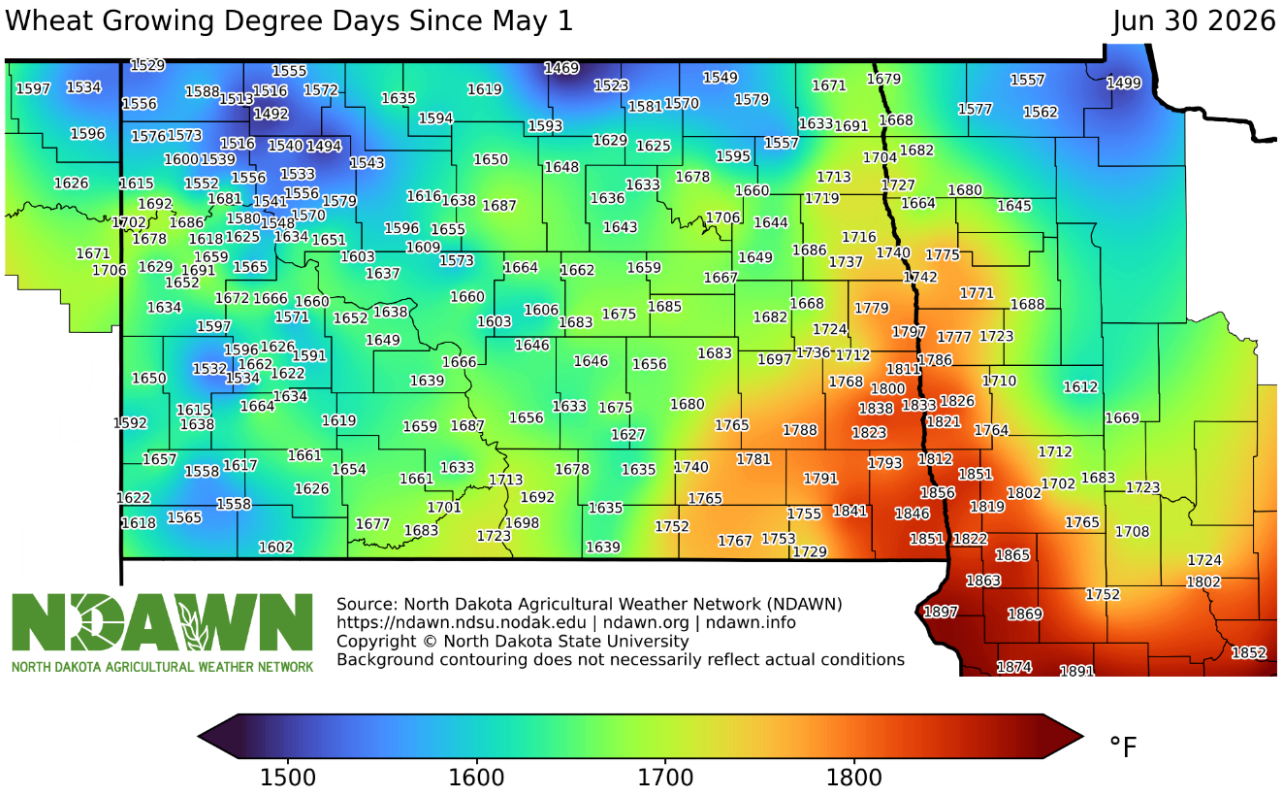

Figure 6. Wheat Growing Degree Days (Base 32°) for the Period of May 1 through June 30, 2026

Using May 10 as a planting date, the accumulated growing degree days for corn (base temperature 50°) are given in Figure 7. 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.

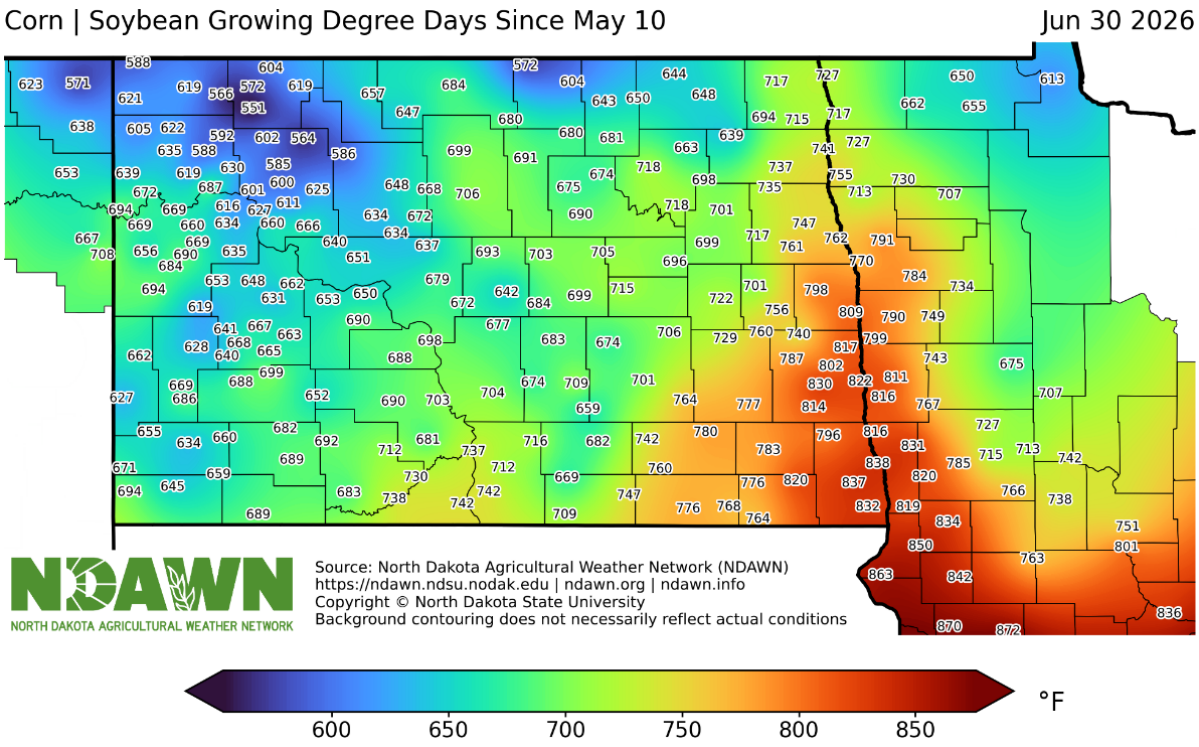

Figure 7. Corn Growing Degree Days (Base 50°) for the Period of May 10 through June 30, 2026

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