North Dakota State University
CROP & PEST REPORT
NDSU EXTENSION

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Inside this Issue...

entomology

SCOUT FOR FLEA BEETLES IN CANOLA

Flea beetles are active in canola just as canola is starting to emerge. The seedling to 4-6-leaf stage is the most susceptible crop stage to flea beetle infestation.

Flea beetles are easy to identify in the field due to their hopping behavior and small size (⅛ inch). The crucifer flea beetles have an iridescent blue sheen on the black wing covers. Striped flea beetles have two yellow stripes on their black wing covers.

Flea beetles cause injury by chewing into the cotyledons, true leaves and stems. Under severe feeding pressure, a rescue foliar-applied insecticide may be needed to protect the canola, especially under hot, dry conditions.

For scouting, walk a W pattern through the field. Start sampling about 150 feet into the field and randomly select 10 plants per sampling site. Walk an additional 150 feet between sampling sites, for a total of 5 sites per field. Estimate the percentage of defoliation for each selected plant and calculate the average defoliation per plant.

Striped flea beetle on left and crucifer flea beetle on right. Feeding injury (pitting) on true leaf. (P. Beauzay, NDSU)

Commercial insecticide seed treatments typically protect canola from flea beetles up to 14-21 days after emergence. However, it is important to check seed-treated canola fields to ensure insecticide seed treatments are holding up against the flea beetle infestation.

Recent research has found that **striped flea beetle populations collected in Langdon, North Dakota, were tolerant of neonicotinoid and diamide insecticide seed treatments tested.** The crucifer flea beetle, the dominant species present in North Dakota and northwest Minnesota, was susceptible to these insecticides.

For foliar insecticide applications, the **action threshold is when an average of 20 to 25 percent defoliation** has occurred on the cotyledons and/or first true leaves, and flea beetles are feeding actively in the field. Pyrethroid insecticides provide control of flea beetles regardless of the product selected. However, Extension Entomologists recommend that producers use the highest labeled rate of a product to help prevent the development of flea beetle insecticide resistance in the future.

WATCH FOR ASTER LEAFHOPPER

Aster leafhopper (six-spotted leafhopper) migrates northward each spring on storm fronts and upper-level winds. The last major outbreaks in North Dakota crops occurred in 2012 and 2024.

Aster leafhopper adult. (J. Knodel, NDSU)

Aster leafhoppers are small (about ⅛ inch), yellowish-green insects with wedge-shaped bodies and six spots between the eyes. They feed with piercing-sucking mouthparts and can transmit aster yellows phytoplasma disease to many crops.

Canola and flax are especially susceptible to aster yellows, which causes green flowers, leafy flower structures, witches' broom growth, and yellowing or purpling foliage. In cereals such as wheat, barley, and oats, symptoms are less distinct and may include yellow flag leaves, stunting, premature tiller death, and white heads. Wet conditions may increase symptom severity.

Leafhoppers usually infest roadside grasses, alfalfa, weeds, and winter crops before moving into spring-seeded crops, where they reproduce. Direct feeding injury is usually minor unless the insects are infected with aster yellows phytoplasma.

No economic thresholds currently exist for aster leafhopper management in field crops. Because populations can move frequently among fields and new populations migrate into the region, **routine scouting is important**. Monitor fields using a 15-inch sweep net by taking 25 sweeps at 5 locations in a "W" pattern to estimate population levels.

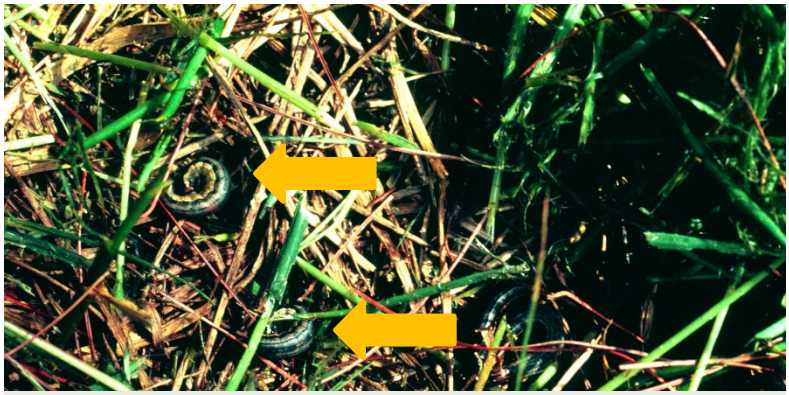
MIGRATORY TRUE ARMYWORM

With the southern winds, true armyworm moths have been flying into our region and infesting grasses in field ditches, crops (alfalfa, barley, canola, field corn, flax, mustard, oats, sugar beets and wheat, winter wheat) and perennial ryegrass (D. Grafstrom, Roseau, UMN). There is currently no significant threat. However, continued field scouting or pheromone trapping is important to detect any increasing population levels.

Moth migrations can produce significant infestations during early June and July. If the weather is cool and wet during egg laying and food is abundant, outbreaks are common. Moths fly around to find fields for egg laying that are lodged, or hail- or wind-damaged grains or grasses.

Female moths lay eggs at night in folded leaves or under leaf sheaths of small grain plants and other grasses. Egg development takes about 8-10 days to hatch into larvae (or caterpillars). Larvae undergo a long developmental period of 3-4 weeks and defoliate the plant's foliage and later clip heads of small grains, flax and other crops. Then, the larvae pupate for 2 weeks, after which an adult moth emerges. There is one generation per year in North Dakota.

Initial field scouting for armyworms should be done in field margins, low areas with vigorous, thick grass and areas where plants have lodged. Indications of armyworm feeding include leaf defoliation, worm frass (droppings) around the base of plants and severed leaf material that has fallen to the ground. Look for larvae beneath plant debris around the base of plants and on heads of wheat and barley. Populations often are higher in fields with grass weeds or grass cover crops.



Clipped stems and defoliation on wheat by armyworm infestation. (North Carolina Forest Service, Bugwood.org)

True armyworm moth. (G. Fauske, NDSU)

True armyworm larva (P. Beauzay, NDSU)

For more information, see NDSU Extension: The Armyworm and the Army Cutworm (E830, revised).

ALFALFA WEEVIL DD UPDATE

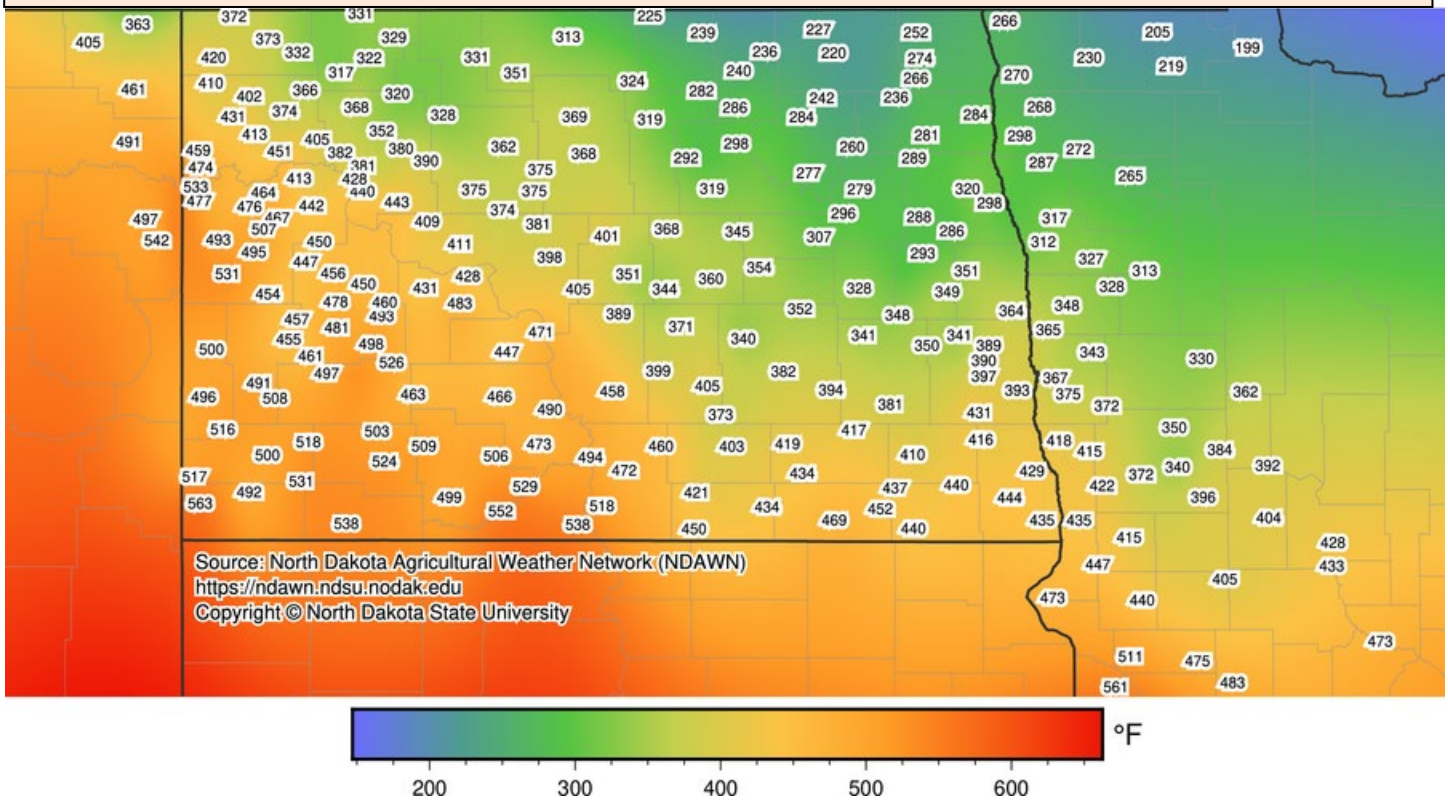
This week, the accumulated degree days (ADD) for alfalfa weevil activity increased to 225 to 563 ADD (see NDAWN insect degree day map) in North Dakota. We now have 1st to 4th (mature) larval stages in alfalfa fields. The more mature larvae are in southern North Dakota, while northern North Dakota is still lagging, with egg hatch (300 ADD) to 2nd instar larvae (438 ADD).

See Crop & Pest Report #7 for scouting and the economic threshold table.

Insecticides registered for control of alfalfa weevil on forage are listed in the ***North Dakota Field Crop Insect Management Guide E-1143***. Alfalfa weevils with pyrethroid resistance have been found in the western U.S. and Montana and are spreading eastward into the Dakotas and other states. In North Dakota, South Dakota and Minnesota, preliminary research on alfalfa weevil insecticide susceptibility found that some populations of alfalfa weevils were showing **reduced susceptibility** to lambda-cyhalothrin (Warrior and generics, IRAC Group 3A, pyrethroid) and indoxacarb (Steward EC, IRAC Group 22A, indoxacarb).

Continue to scout regularly, at least weekly, through the first cutting. For more information, see the NDSU Extension Integrated Pest Management of Alfalfa Weevil in North Dakota (E1676, Revised March 2026).

Current Alfalfa Weevil Degree-Day Accumulations (base 48°F) as of May 25, 2026 (Source: NDAWN)



Janet J. Knodel
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plant pathology

FEATURED MATCHUP: RHIZOCTONIA VS. NDSU PLANT PATHOLOGISTS

Players to Watch:

- Rhizoctonia damping off (sugarbeet, dry bean, soybean)
- Rhizoctonia seedling blight (soybean)
- Rhizoctonia root rot (sugarbeet, dry bean, soybean)

All caused by the fungus ***Rhizoctonia solani***

Scouting Report:

- Possibility of season-long disease risk depending on environment and inoculum
- Rhizoctonia survives 3-5 years in the soil
- Seedlings and young plants are most vulnerable. Pre-emergent or post-emergent damping off may occur
- Within a field, symptoms are patchy and somewhat follow along rows. Most Rhizoctonia inoculum is typically concentrated in the upper soil profile (top 4-6 inches)

Opponent's Game Plan:

- **Reduced stands**, seedling death, and reduced crop vigor and yield
- Rhizoctonia breaks down and **kills healthy plant tissues** (necrotrophic pathogen) resulting in discolored lesions on the root, hypocotyl, or crown of the host plant
- Rhizoctonia causes **dark lesions and "wire-stem" symptoms in sugarbeet seedlings** and lesions on petioles and root crown of mature sugarbeet (Figure 1).
- **Reddish-brown lesions** on soybean root (Figure 2).

Opponent's Strengths:

- Moist soils and moderate-to-warm soil temperatures promote infection
- Tough, dark-colored tissues are produced, called sclerotia, that enable overwintering and survival in the soil

Opponent's Weaknesses:

- Crop rotation! Small grains in the rotation can help keep Rhizoctonia in check
- Fungicides can be very effective as seed treatments, in-furrow applications, or even post-emergent applications (for sugarbeet)
- Rhizoctonia-tolerant variety selection is an important part of the long-term strategy.

Trick Play to Watch:

- Like other root diseases: Rhizoctonia frequently occurs with other pathogens or abiotic factors present. Proper diagnosis is key to effective long-term management strategies.

Figure 1. Rhizoctonia symptoms in a sugarbeet field. Multiple plants along a row are affected by root infections from Rhizoctonia solani.

Figure 2. Reddish-brown lesion on the root and hypocotyl

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EARLY SEASON FUNGICIDE ON WHEAT

Early-planted wheat is nearing the tillering growth stage post-emergence herbicide applications will be occurring soon. This pesticide application timing also provides an opportunity to tank mix a fungicide for early season disease control. This article will review information related to an early-season fungicide application.

Targeted Diseases

Residue-borne diseases such as tan spot and Stagonospora nodorum blotch (SNB) are the primary targets for the early-season fungicide application. Tan spot is more common than SNB in North Dakota (ND), but both diseases have shown a downward trend in prevalence in ND wheat fields over the past eight years. This can be largely attributed to the use of management tools such as crop rotation (has been shown to reduce tan spot by 70%), genetic resistance (average resistance in 2026 is better than average resistance in the 1990s), residue management (disrupts longevity of the pathogen), and regular use of fungicides in wheat crops (tillering, flag leaf, and/or early-flowering). The greatest risk for tan spot and SNB will be in no-till production regions, with a short rotation away from wheat, and during springs with excessive leaf wetness during the growing season. At this point in the growing season, my way too-early prediction risk for tan spot and SNB in North Dakota is "low".

Fungicide Selection

There are several efficacious products that can be used for tan spot and SNB. This includes products with active ingredients belonging to the mode of action groups 3, 7 and 11. There are several products listed as being very good to excellent on both tan spot and SNB. For the latest efficacy ratings on wheat fungicides, please consult the table "Fungicide Efficacy for Control of Wheat Diseases" located on the Crop Protection Website. Remember, fungicides applied at tillering will only protect the available leaves at time of application. Any new leaves that emerge should be considered as being left unprotected due to the limited effective mobility of fungicides.

Yield Response

One way to capture the answer to the yield response question is to dive deeper into the data generated by NDSU Extension – Cereal Crop Plant Pathology. I have continually updated a data set to estimate yield response from an early season fungicide reflective of disease risk. This data set now includes field research conducted from 2008 to 2025 with over 125 replicated data points on the tillering fungicide application. Figure 1 displays the yield response of a tillering fungicide on a range of disease risk scenarios. All fungicides with a very good to excellent rating on tan spot and/or SNB were combined for each disease risk scenario. The primary driving factor for determining disease risk was previous crop. Wheat following wheat would indicate a moderate to high disease risk scenario. Wheat following a broadleaf would be a very low to low disease risk scenario. The second driving factor for disease risk was environment (i.e., prolonged leaf wetness and cool-wet weather in late-May into early-June would increase risk). The data suggests yield responses ranged from 0.0002% to 1.7% for very low to low disease risk, and 4.1% to 4.3% for moderate and high disease risk scenarios. To better apply these values, let's assume a farm average for a wheat field is 60 bu/A. If you seed wheat after a previous broadleaf crop, an early season fungicide may provide a response of 0.01 to 1.02 bushels. However, if you are in a wheat-on-wheat production system, the estimated yield response will be approximately 2.5 bu/A.

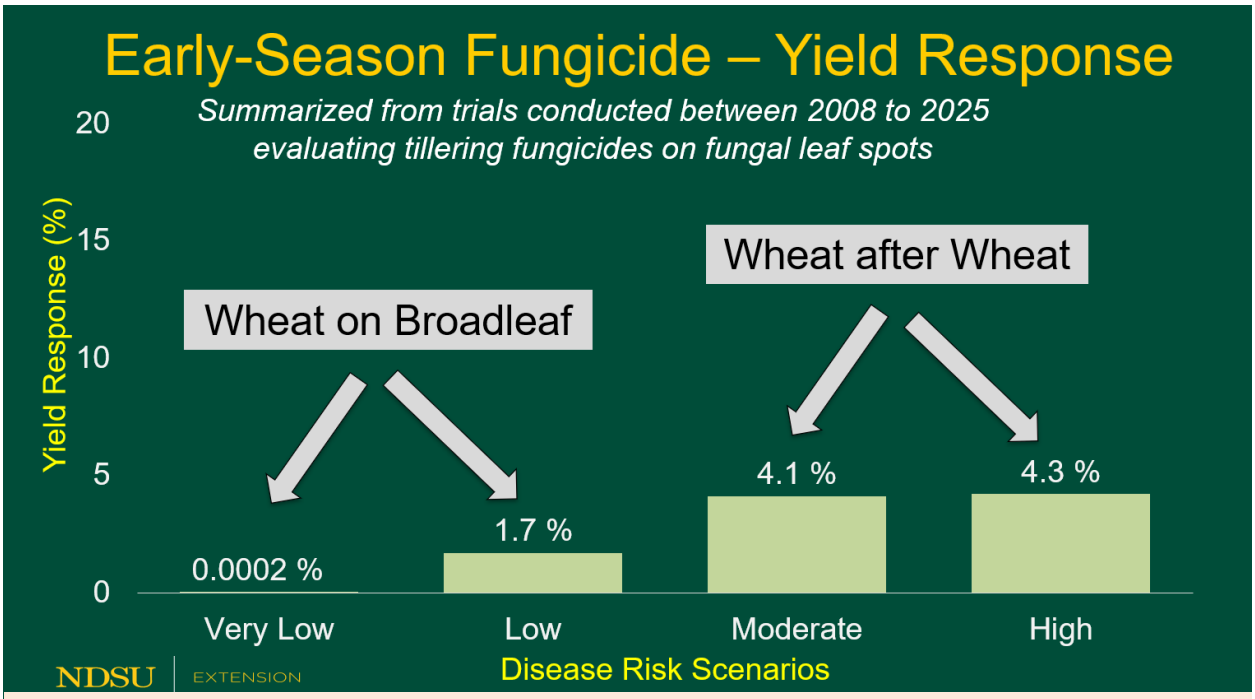

Figure 1. Summarized yield response data from field trials conducted between 2008 to 2025 evaluating tillering (early-season) fungicides in wheat. Yield responses are associated with four disease risk scenarios.

Andrew Friskop
Extension Plant Pathology, Cereal Crops

soils

PURPLE CORN?

A lot of corn was planted over the past few weeks, and for much of the state the rain we received last week was welcome. Although the moisture certainly helped the young crops, the wet conditions coupled with the cool weather certainly brought some challenges. One issue we received several reports of was ***purple corn syndrome***, which is the purpling of small corn plants, often confused with phosphorus (P) deficiency. While purple corn syndrome is induced by cool temperatures or cold and damp conditions, typically observed when the night time temperatures are in the 40°F range and the daytime temperatures are in the 40-60 °F range, there are several other disorders which also cause purpling of a young corn plant.

Purple Corn Syndrome

If you put together cool/cold temperatures, wet field conditions, and bright daytime sun, you create a stressed young corn plant! Through photosynthesis, plants create sugars which are then

metabolized and used as energy for plant growth and development; however, when growth is slowed by stress on the plant, the sugars start accumulating in the leaves causing the production of purple-colored anthocyanin pigments. While this disorder alone typically does not cause appreciable yield loss, long periods of limited plant growth can have productivity implications. Sometimes the purple corn will show up in the lowest and/or wettest areas of the field because those areas are the coldest and usually the wettest, allowing for a greater potential for the purple syndrome. Not all plants across the field are purple if purple corn syndrome is the cause. As you scout early emerged corn fields, note the position and extent of any purple plants observed. Are they clustered together in wet and/or low-lying areas, for example?

Phosphorus Deficiency and Root Growth

Figure 1. Phosphorus deficiency symptoms in corn (NDSU Photo).

Of course, the immediate response when purple corn is observed is to attribute it to a true P deficiency, driven by low soil test P levels. While this certainly can occur, P is in relatively low demand by the corn in the early season so a severe deficiency is unlikely, unless there are extenuating circumstances. Early, P-deficient corn will appear very dark green and show signs of stunting, as the deficiency progresses older leaves will take on a purple coloration (Figure 1). If soil test P levels are within the critical range, adding more P will not correct the deficiency, since it is being caused by reduced plant uptake, not lack of P in the soil. For a corn crop to access soil P, the roots need to be able to "explore" the soil to find it. If the corn's roots are restricted by soil compaction, sidewall compaction, improperly placed fertilizer, or cold soil limiting root growth, they will not be able to access soil P. Purple corn caused by a lack of P in the plant usually is localized to areas of the field having soil compaction, sidewall compaction, improperly placed fertilizer, and/or low soil test P levels, not across the entire field or showing up on all plants. If purple corn plants show up later in the season when it is not cold, this may indicate a P deficiency.

Fallow Syndrome

Occurring early in the growing season, fallow syndrome is a P deficiency in the corn crop caused by a lack of mycorrhizal fungi in the soil, not necessarily a lack of soil test P. Mycorrhiza fungi are naturally occurring symbiotic fungi which effectively extend the root systems of compatible crops including corn, soybean, flax, small grains, and more (for more information on mycorrhizal fungi, check out this article from SDSU Extension). This relationship is important because it allows the fungal hyphae to access soil P and transport the P to the plant "in trade" for carbohydrates. If non-mycorrhizal-supporting crops such as sugarbeet, mustard, canola, or radish are grown or the field was left fallow, it will take some time for the mycorrhiza to repopulate and build the P-supplying relationship. Remember that reducing tillage is also an effective strategy for protecting beneficial soil fungi and enhancing mycorrhiza populations so that they can colonize your corn crop after non-mycorrhizal species are grown.

Figure 2. Fallow syndrome symptoms in corn. (J. Ransom, NDSU)

Hybrid Purpling

Most corn hybrids contain five of the eight genes required for corn leaves and sheaths to turn purple in color during cold and wet conditions. However, some hybrids contain three additional genes with some of these genes being cold sensitive and plant leaves and sheaths may turn purple mostly due to these additional genes during cool/cold and wet conditions. If corn plants turn purple due to their genetics, nearly all plants in the field should show the purple color and not individual or a patch of plants due to P deficiencies and sometimes pockets of fallow field areas.

Purple-colored corn leaf caused by cold temperatures called "Purple Corn Syndrome".

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around the state

AROUND THE STATE

NORTHEAST ND

Farmers across the region have wrapped up planting of small grains. Most wheat and barley fields have emerged and are showing good-looking stands. However, some fields are experiencing patchy emergence due to recent windstorms, uneven moisture conditions, or saline areas.
Field pea planting is nearly complete, and some sugarbeet fields impacted by heavy winds required replanting. Warm temperatures and lighter winds have created near-ideal conditions for producers to continue planting canola, soybeans, dry beans, and corn. Some of the earlier planted canola, soybean, and corn fields are now emerging.
Flea beetles are emerging from their overwintering sites and are actively feeding on canola during warmer temperatures, although activity slows during cooler conditions. Both striped and crucifer flea beetles are being reported across the region. The risk from flea beetles remains elevated as long as temperatures remain below 85°F with limited rainfall and wind. Producers are encouraged to continue scouting fields regularly, even when seed treatments were used, since flea beetle emergence can occur over an extended period.
Weeds are also beginning to emerge, with kochia, lambsquarters, and common mallow appearing to be the most common species reported so far.

Striped and Crucifer flea beetles feeding on canola seedlings
Photo: Anitha Chirumamilla, LREC

Thick mat of kochia seedlings
Photo: Anitha Chirumamilla, LREC

Lambsquarter seedlings along with canola
Photo: Anitha Chirumamilla, LREC

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SOUTH-CENTRAL/SOUTHEAST ND

Planting progress slowed this past week due to rainfall across the region and the cold soils that remained for most of the past week. Planting progress has resumed at full speed this week with topsoil moisture drying out quickly due to the hot air temperatures and breezy conditions. Sunflower planting is progressing nicely and dry bean planting is finally beginning in earnest now.

The biggest challenges this past week across the region continued to be the cold soil temperatures and slow and non-uniform plant emergence, dryness in the western part of the region with Sheridan County being the driest, weed survival following vertical tillage, and lack of time and conditions too windy to apply burndown and/or preemergence herbicides.

The daily average 4-inch soil temperatures for the past week (May 19 to May 25, 2026) for 47 of the NDAWN stations I check weekly in the region ranged from 51 degrees Fahrenheit at Cooperstown to 63 degrees Fahrenheit in Livona with an average across the 47 NDAWN stations of 55 degrees Fahrenheit, 1 degree Fahrenheit below last week's average. However, by at least May 25th the daily average 4-inch bare soil temperature had gone above 60 degrees Fahrenheit with Livona having the highest daily average 4-inch bare soil temperature at 74 degrees Fahrenheit and having at least 4 days greater than 60 degrees Fahrenheit for the week. Despite this great spike in warm soil temperatures in the last few days, the Bremen, Cooperstown, Mooreton, Pickardville, and Robinson NDAWN stations average daily 4-inch bare soil temperature never reached greater than 60 degrees F any day in the past week. The range in the 4-inch bare soil temperature for the region at 0 hours May 27, 2026 ranged from 57 degrees Fahrenheit at Ayr, McKenzie, and

Robinson to 69 degrees Fahrenheit at Livona and Neudorf with an average of 62 degrees Fahrenheit, 7 degrees Fahrenheit greater than last week's daily average 4-inch bare soil temperature! A great turn around! Crops are emerging quickly now.

Non-uniform plant emergence is occurring across most of the region in nearly all crops, particularly at the moment in small-grain cereal crops, corn, and soybean due to several reasons. Reasons include lack of soil moisture in sandy and well-drained parts of fields, working the soil too wet causing a cloddy seedbed that dried out, the seeds had poor soil-to-seed contact or soil compaction from tires and/or seed furrow sidewall compaction, improperly operated planting equipment (Figure 1), and at least hard red spring wheat plants emerging under the soil surface (Figure 2). Figure 3 shows non-uniform corn emergence AND the presence of kochia, based upon the large size in the photo, that survived vertical tillage. These large kochia plants will present weed control issues later this season.

Figure 1: Hard red spring wheat emerging non-uniformly due to seeding depth not being uniform across the drill.

Figure 2 Hard red spring wheat emerging below the soil surface in Emmons County, ND. Photo from Nancy Deis, NDSU Extension Emmons County ANR Agent

Figure 3: Non-uniform corn emergence and kochia surviving vertical tillage in Emmons County, ND. Photo from Nancy Deis.

The 4-inch soil moisture is below 11% at Livona, Robinson, and Skogmo with Skogmo having the lowest moisture percentage at the 4-inch depth at 4.3%. The 39-inch soil moisture is below 11% at Linton, Marion, Neudorf, Pickardville, Skogmo, Tappen, and Wing with Tappen having the lowest moisture percentage at 39 inches at 5.7%. These areas need substantial rainfall soon or at least timely rainfall throughout the rest of the growing season.

Start creating good herbicide program plans for all crops in which burndown and/or preemergence herbicides were not applied or lack of preemergence herbicide activation due to low rainfall amounts. I'm seeing fields greening up on the surface from newly emerging weeds and from weeds surviving vertical tillage even before crops emerge. Plan to apply as much residual herbicides as possible in the first postemergence herbicide application in all crops where possible. Waterhemp has been growing well already in some early April planted hard red spring wheat in Griggs County as seen in Figure 4.

Figure 4: A dense patch of waterhemp in an early April planted hard red spring wheat field in Griggs County, ND.

Figure 5: Hard red spring wheat at the two-tiller stage planted in early April.

Over 95% of spring cereal crops, peas, lentils, and canola have been planted across the region, but there is still some of these crops being planted. At least 80% of these crops have emerged. Figure 5 shows a hard red spring wheat plant at the two-tiller stage in Griggs County planted in early April. Corn and soybeans across the region are at least 70% planted with the northern part of the region east of Sheridan County having the least corn and soybean acres planted. Only about 13% of soybean and 20% of corn have emerged as of this Monday. In 2025, at this time about 50% of the corn and 20% of soybean across the region had emerged! At least 25% of sunflowers are planted across the region and dry bean planting is only getting started over most of the region.

Cutworm species may be present in emerging crops. Look for individual plants cut off at or just above or below the surface of the soil. Scout for cutworms at night when cutworms are most active. For more information on cutworms in field crops, please consult the North Dakota Field Crop Insect Management Guide, E1143-26.

The average daily high temperature for May 19 through May 25th at 47 NDAWN stations across the region ranged from 67 degrees Fahrenheit at the Finley NDAWN station to 72 degrees Fahrenheit at McKenzie and Skogmo NDAWN stations with an average for the region from these stations of 69 degrees Fahrenheit, 6 degrees Fahrenheit warmer than last week and just slightly below normal. Thirty-one of the 47 NDAWN stations reached 90 degrees Fahrenheit for the first time of

the year on May 25th with the Sonora NDAWN station being the warmest at 95 degrees Fahrenheit.

The average daily low temperature for these NDAWN stations across the region ranged from 40 degrees Fahrenheit at Galesburg to 47 degrees Fahrenheit at Wirch with an average across these stations for the region of 43.5 degrees Fahrenheit, only 0.5 degree Fahrenheit warmer than the week before and slightly below the weekly normal. On May 20, 2026, the daily low temperature was below 32 degrees Fahrenheit at the Brampton, Galesburg, Gardner, Hillsboro, Hope, Jamestown, Leonard, Linton, Oakes, Pickardville, Stirum, and Zeeland NDAWN stations with the Leonard station being the coldest at 28 degrees Fahrenheit. This should be the last of freezing or frost conditions until the end of the growing season.

Total rainfall this past week ranged from 0.32 inch at the Wahpeton NDAWN station to 1.07 inches at the Brampton NDAWN station with an average of 0.69 inch across the region for these stations, which is close to the normal for the week in Cooperstown.

Please stay safe and congratulations to those having completed planting.

Jeff Stachler
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SOUTHWEST ND

Over the last 14 days, much-needed moisture was received across most of western North Dakota, with the greatest precipitation totals occurring in Burke and Dunn Counties. Counties bordering the Montana state line received significantly less precipitation than other areas of western North Dakota, with western Bowman County receiving only 0.06 inches during the last two weeks. However, the combination of high winds and elevated temperatures throughout this week will likely result in rapid depletion of that soil moisture.

Figure 1. Canola flea beetles feeding on canola seedlings in Stark County.

Small grain crops have emerged, and stand establishment remains variable across fields, according to county agent reports. Some fields are progressing well, while others are exhibiting uneven emergence.

Canola has also emerged, and canola flea beetle activity is also being reported (Figure 1). Per NDSU Extension recommendations, it is crucial to scout canola fields daily for seed treatment breakdown and economically significant flea beetle feeding injury. Foliar insecticide applications are warranted

when 20–25% defoliation has occurred from the seedling stage through the 6–8 leaf stage. The guide below is helpful in estimating flea beetle defoliation levels (Figure 2).

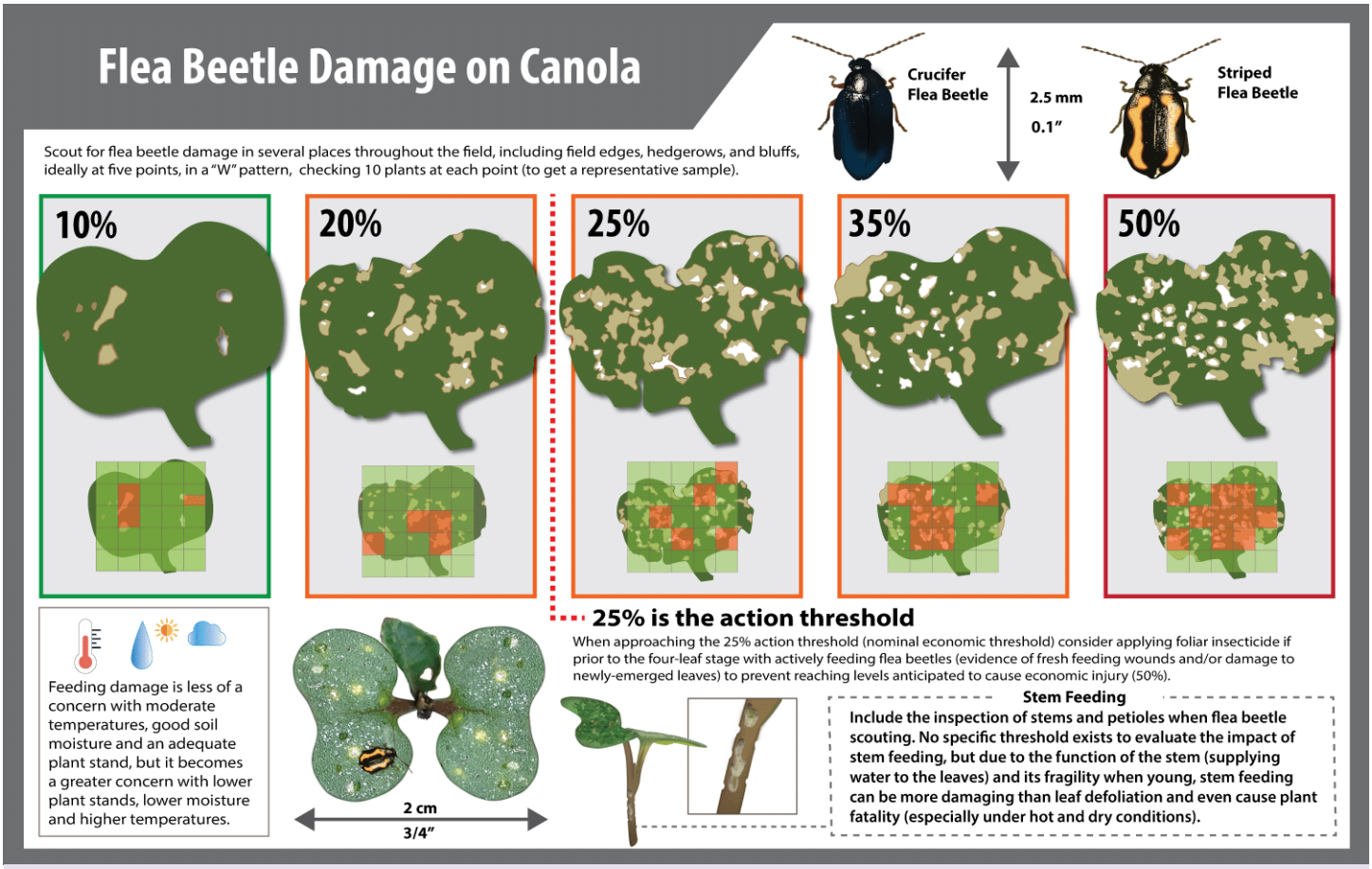

Figure 2. This graphic shows what various levels of leaf area loss look like. Source: canolacouncil.org

Corn planting is nearly complete across the region, with the earliest planted corn beginning to emerge. Similarly, soybean planting has progressed well, and some of the earlier planted soybeans are also beginning to emerge. Additional emergence is expected throughout this week following recent rainfall and increasing temperatures.

As a follow up to my article on CPR No. 06 May 14 regarding the more widespread use of varying tillage levels across the region, several additional reasons for tillage have been shared with me besides soil acidity management, including:

- Managing troublesome weeds
- Managing excess moisture in low-lying wet areas
- Incorporating manure or fertilizer
- Breaking up long-term pasture ground for crop production
- Residue incorporation to reduce hair-pinning issues in no-till drills

Largely, vertical tillage appears to be the most commonly used tillage practice across the region. This increased use of tillage may partially be associated with the significant topsoil loss observed during the high-wind event that occurred a couple of weeks ago. Unfortunately, there is no simple solution to quickly rebuild the topsoil and organic matter lost during such events. However, some practices may help reduce future topsoil losses, including:

- If conducting fall tillage, consider using a chisel plow instead of vertical tillage. Creating rougher and larger soil aggregates can help reduce soil movement by wind.
- Perform tillage operations perpendicular to the prevailing northwest winds whenever possible.
- Include crops that produce high amounts of residue in your rotation, to help maintain adequate soil cover. Although legumes are an important component of crop rotations, they generally produce lower residue amounts, which may leave soil more exposed to erosion. In this context, alternating a legume crop with a high-residue-producing crop such as corn may provide greater soil protection than rotating a legume with a lower-residue brassica crop such as canola.

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weather

WEATHER FORECAST

The May 28 to June 3, 2026 Weather Summary and Outlook

North Dakota is now moving into the wettest period of the year. Eastern North Dakota averages around 1 inch per week. Far western North Dakota averages from 0.50 to 0.75 inches per week. This past week did bring rain to almost the entire state, but in typical summer fashion, the amounts varied greatly (Figure 1). During this forecast period, there will be several chances for thunderstorms, but each threat looks hit and miss, meaning, most of the region will probably record below average rainfall.

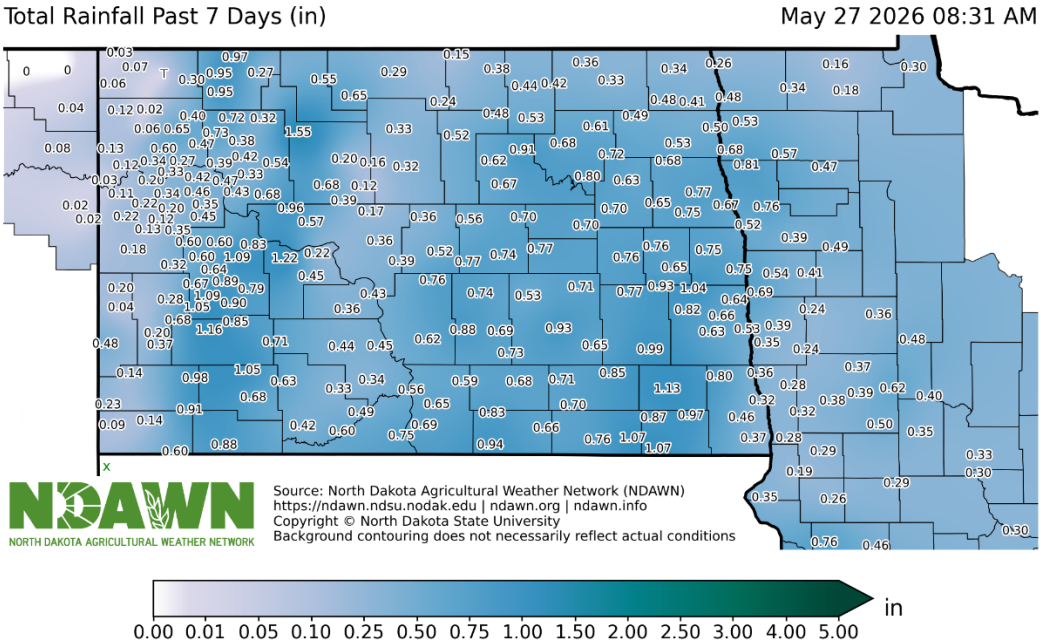

Figure 1. Total Rain at NDAWN stations from May 21 through 8:30 AM on May 27, 2026

Last week's cooler weather was offset by well above average temperatures this week. Overall, much of the state recorded temperatures from 2° to 4° above average in the past 7 days (Figure 2) The above average temperatures from the past several days will continue through the weekend, but should cool down for a few days next week. Overall, odds favor more above than below average temperatures through the middle of June.

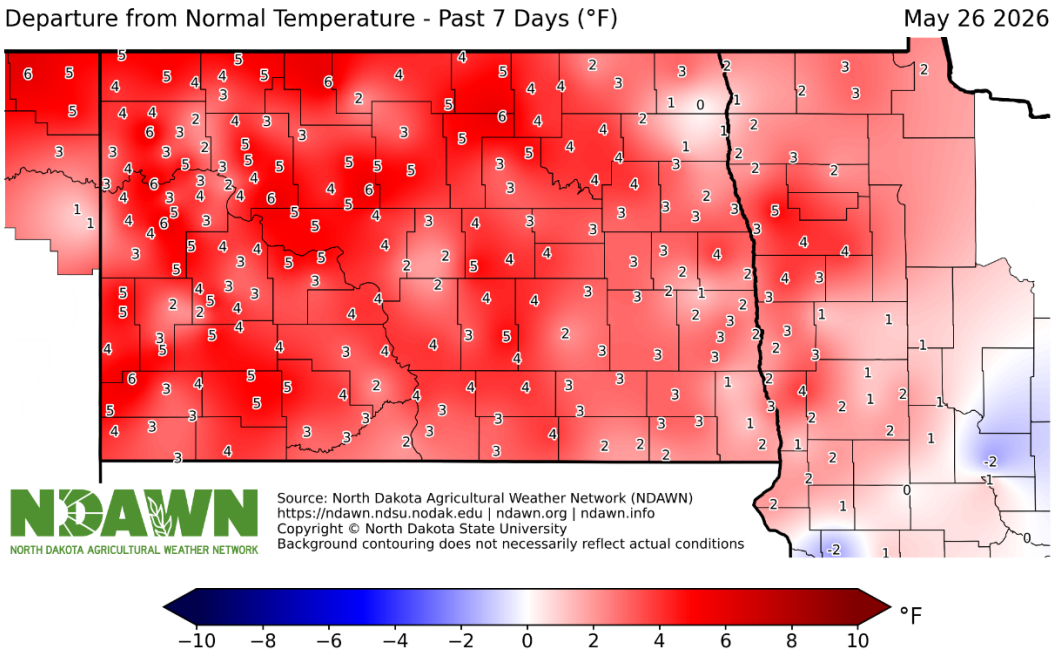

Figure 2. Departure from Average Air Temperature for the May 21 through May 26, 2026

The North Dakota Agricultural Weather Network (NDAWN) is also a soil moisture monitoring network (Figure 3). Most NDAWN stations measure soil moisture at five depths: 2, 4, 8, 20, and 40 inches. Because different soils (and different depths) have varying water-holding capacities, NDAWN accounts for local soil type and converts raw moisture readings into easy-to-understand categories that describe current soil moisture conditions at each station:

- Deficit – Soil moisture is near or at the permanent wilting point (very dry).
- Short – Soil moisture is 1% to 25% of the way between the wilting point and field capacity.
- Optimal – Soil moisture is 26% to 99% of the way between the wilting point and field capacity.
- Surplus – Soil moisture is near or at field capacity (very moist/wet).

Varying layers can and will have differing levels of water available to plants. These data can be found here: https://ndawn.info/soil.html

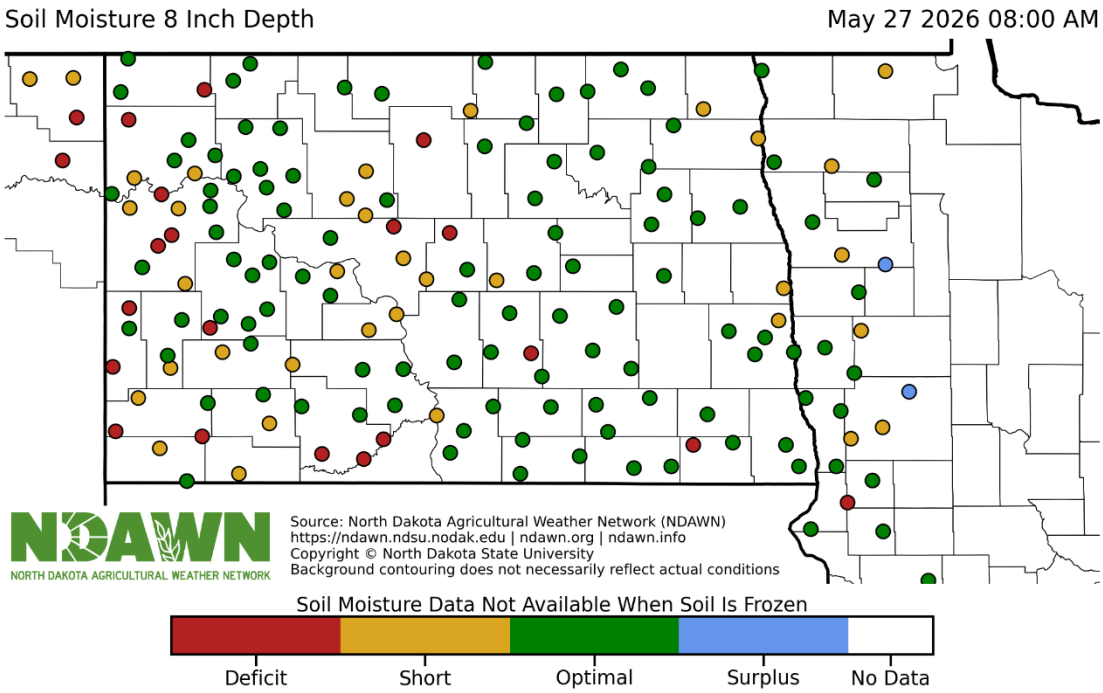

Figure 3. Soil Moisture Conditions at an 8 Inch Depth at NDAWN Stations with Such Sensors at 8:00 AM May 27, 2026

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 are expected, especially through the weekend. A reminder that most Growing Degree Day categories stop at 86° F, meaning high temperatures above that are not counted. GDDs this next week would be similar to what would be expected in late June or early July.

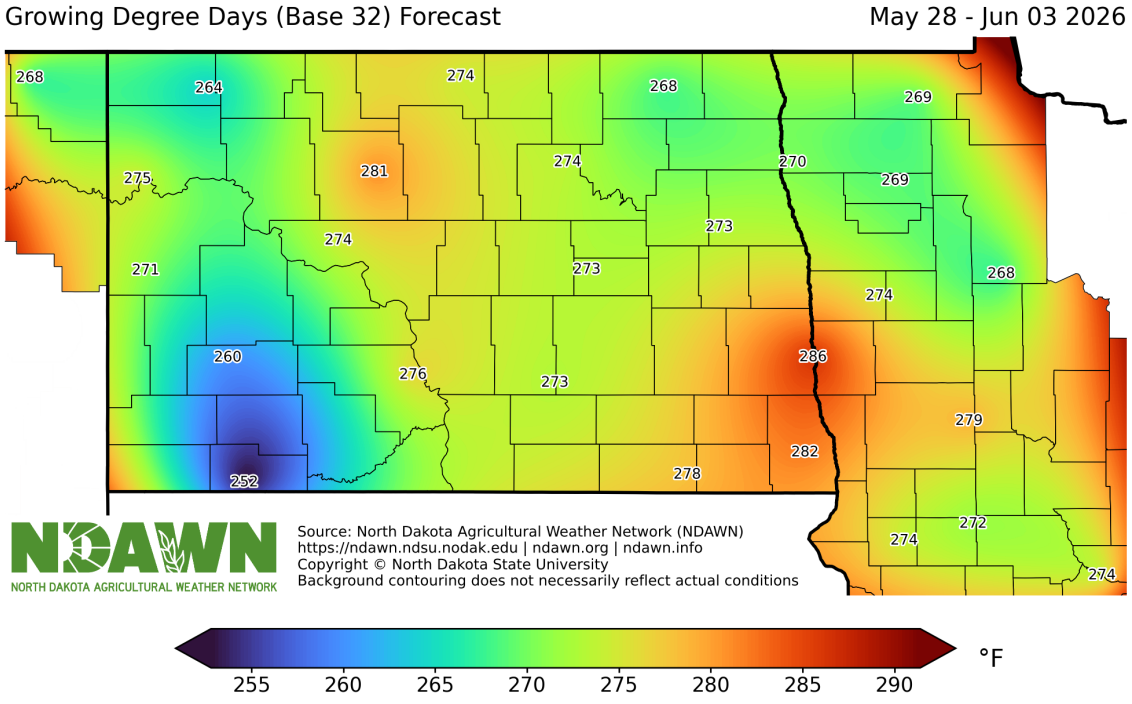

Figure 4. Estimated growing degree days base 32° for the Period of May 28 to June 3, 2026

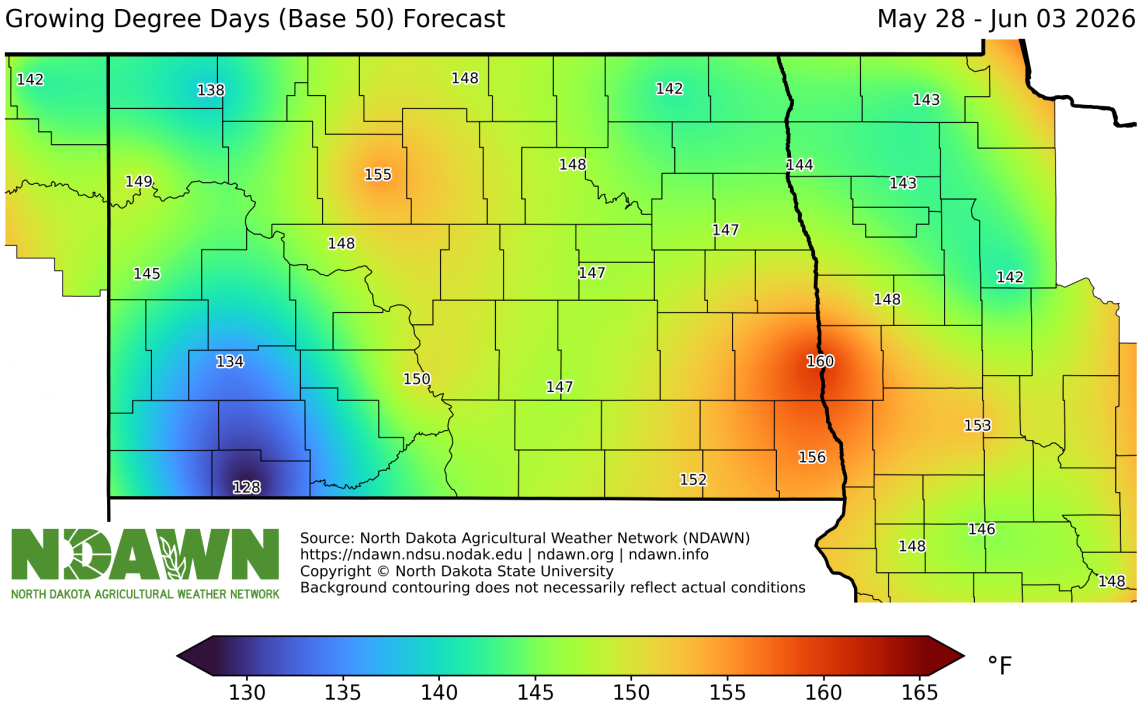

Figure 5. Estimated growing degree days base 50° for the Period of May 28 to June 3, 2026

Using May 1 as a planting date, the accumulated growing degree days for wheat (base temperature 32°) is given in Figure 6. You can calculate wheat growing degree days based on your exact planting date(s) here: [Tool to Calculate Wheat Growing Degree Days]

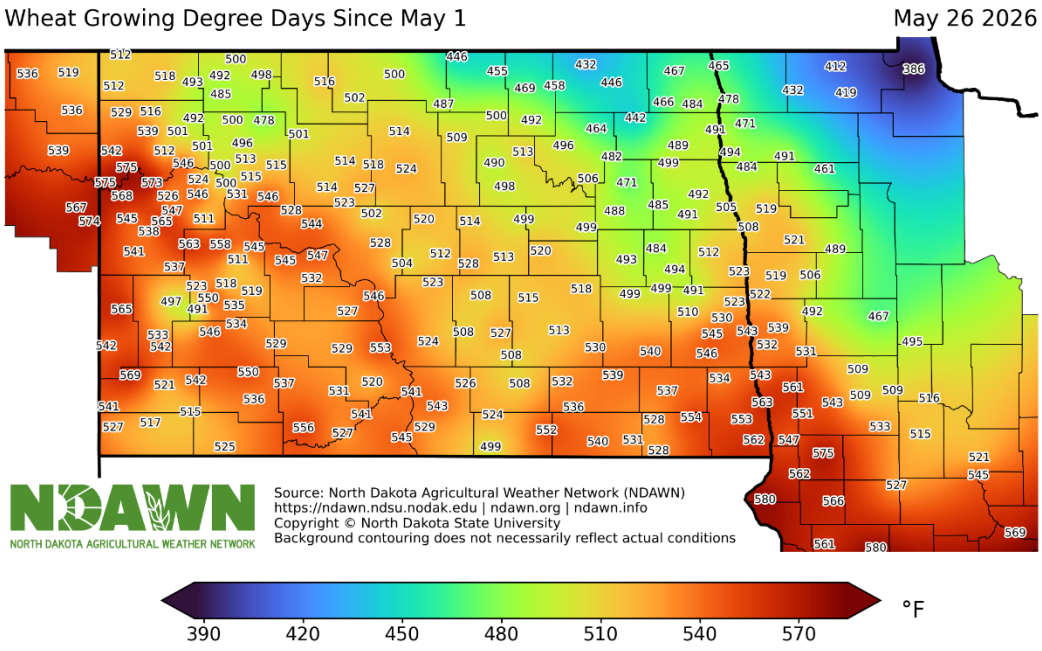

Figure 6. Wheat Growing Degree Days (Base 32°) for the Period of May 1 through May 26, 2026

Using May 10 as a planting date, the accumulated growing degree days for corn (base temperature 50°) is given in Figure 7. You can calculate corn growing degree days based on your exact planting date(s) here: Tool to Calculate Corn Growing Degree Days.

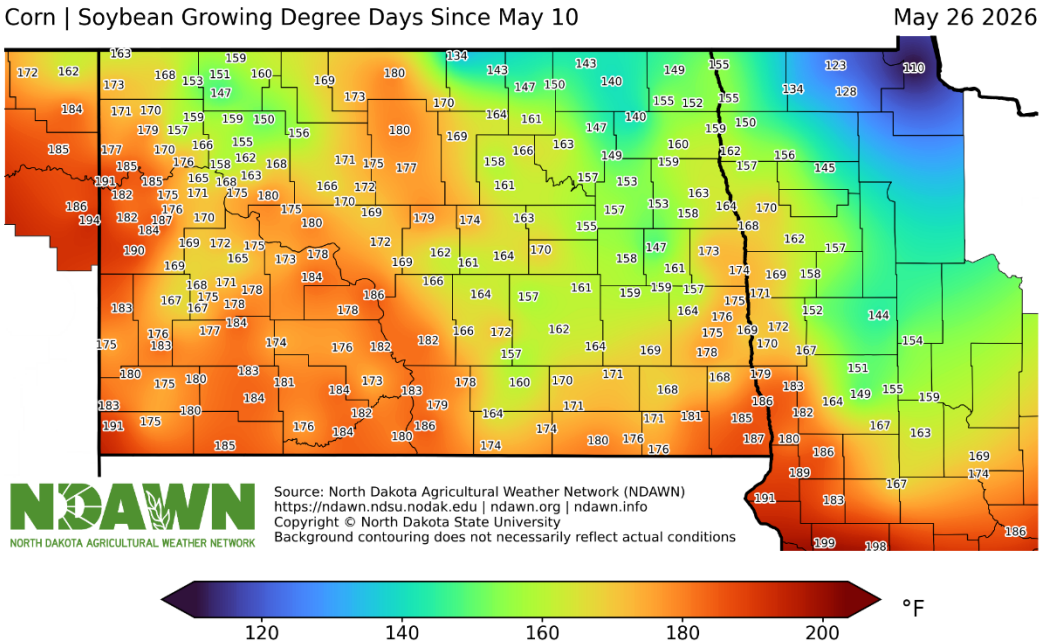

Figure 7. Corn Growing Degree Days (Base 50°) for the Period of May 10 through May 26, 2026

Soybeans also use base 50° like corn, but NDAWN has a special tool for soybeans that, based on your planting date and cultivar, can estimate maturity dates based on average temperatures, as well as give you GDDs based on the planting date(s) you set. That tool can be found here: Tool to Estimate Soybean Maturity Dates

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