

No. 8 June 17, 2021

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# entomology

## IPM CROP SURVEY - INSECT UPDATE

**Cereal aphids** continue at low levels in North Dakota, while Minnesota is seeing higher levels in the west central to southern area of the state. Continue scouting from stem elongation to the end of heading stage. Temperatures will be more favorable for aphid reproduction next week, with temperatures in the low to mid-80s F.

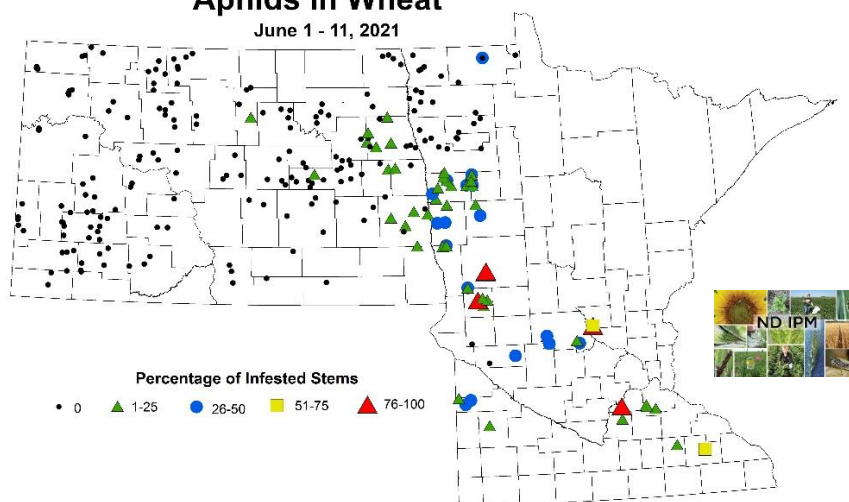
See last week's [Crop & Pest Report #6, June 10<sup>th</sup>](#) for the scouting protocol.

### Cereal Aphid - Economic Threshold

85% of the plants infested with at least one aphid

## Aphids in Wheat

June 1 - 11, 2021



**Grasshoppers** are getting larger, 3<sup>rd</sup> - 4<sup>th</sup> instar nymphs, and they will start to move around and feed more. Field reports of nymphs moving into field edges at some locations with higher populations were observed. Some farmers have sprayed ditches or field edges early to reduce overall populations. However, early insurance insecticide spraying also comes with several negatives – killing the natural enemies, resurgence of secondary pests like spider mites or pyrethroid resistant soybean aphids, and increased crop inputs (respraying the field for a 2<sup>nd</sup> time because grasshoppers are re-infesting fields).

### Grasshopper Nymph - Economic Threshold

50-75 nymphs per square yards in field margins or  
30-45 nymphs per square yard inside field

IPM maps on insect pests and diseases are available on the IPM website:  
<https://www.ag.ndsu.edu/ndipm>

### SOYBEAN APHIDS AND SPIDER MITES STARTING

The first soybean field infested with low incidence of **soybean aphids** (6% of plants infested, average of 1 aphid per plant) was found in Grand Forks County last week (Source. Katelyn Landeis, Grand Forks County Extension Agent). Soybeans were in the seedling to V4 growth stage. No treatment is recommended at V3 to V4 stages and is discouraged so that insecticides do not reduce the presence of predators and parasitic wasps. It is early for soybean aphids in North Dakota. With temperatures moderating in the upcoming weeks, aphid reproduction conditions in the low 80F will be favorable. Soybean field should be scouted at least weekly from the late vegetative stages through R5 (beginning seed). Look for the colonies of soybean aphids in the top tender leaves and undersides of leaves during early vegetative through early reproductive stages.

Soybean aphid is light yellow with black cornicles ("tail-pipes"). As with other aphids, soybean aphid is small, about  $\frac{1}{8}$  inch long. Nymphs (or young) are smaller yet.

Aphids suck fluid from plants. When infestations are large, infested leaves are wilted or curled. Aphids excrete honeydew, a sweet substance that accumulates on surfaces of lower leaves and promotes the growth of sooty mold. Soybean aphid colonizes tender leaves and branches from early vegetative through reproductive plant stages. Later, as vegetative plant growth slows, the aphids slow their reproductive rate, move down to the middle and lower part of the plant, and feed on the undersides of leaves. Toward the end of the season the colonies again begin to rapidly increase in number.

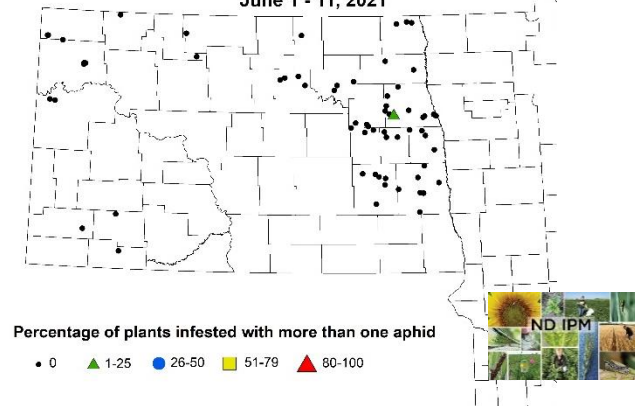
Minor stippling on lower leaves from **spider mites** also was observed on field edges in western Grand Forks County (Source. Katelyn Landeis, Grand Forks County Extension Agent). Scout for spider mites when out looking for soybean aphids. Examine the underside of leaves and lower foliage at the field edges first for tiny mites and fine spider-like webbing. A quick sampling procedure to determine whether mites are present is to hold a piece of white paper below leaves then tap them to dislodge the mites. The mites appear as tiny dust specks; however, they will move slowly after being knocked off the leaf. Dislodged predatory mites will move faster than the two-spotted spider mite.

#### Spider Mites - Economic Threshold (Spray Threshold)

Heavy stippling on lower leaves with some stippling progressing into middle canopy. Mites present in middle canopy with scattered colonies in upper canopy. Lower leaf yellowing is common.

### Soybean Aphids Incidence

June 1 - 11, 2021



#### Soybean Aphid - Economic Threshold

Average of 250 aphids/plant AND when populations are actively increasing in 80% of the field



*Soybean aphids in top growth and undersides of leaves (K. Landeis, Grand Forks County Ext.)*



*Spider mite stippling on soybean leaves (K. Landeis, Grand Forks County Extension)*

## BLISTER BEETLES IN FABA BEANS

Ash gray blister beetles, *Epicauta fabricii*, were reported in faba beans and lupine fields in east central and north central areas of ND (Source: T.J. Prochaska, NCREC; G. Endres, CREC). The ash gray blister beetle is approximately ½ inch in length and gray. Adult blister beetles can be an occasional pest of field crops causing defoliation to the leaves and clipping flowers or pods. Blister beetles are mobile and gregarious, and often congregate in certain spots in a field. In some instances, blister beetles only feed for a short period and then migrate to other fields. Larvae of blister beetles in the genus *Epicauta* are beneficial insects and actively prey on grasshopper egg pods.

Blister beetles are a major problem in alfalfa / hay fields or in bales, since they produce a toxic chemical (cantharidin), which is toxic to livestock, especially horses. Alfalfa and forage are preferred hosts of blister beetles and they often move into canola or other field crops after the alfalfa is cut. In canola, they are attracted to blooming canola fields for its nectar and pollen, but they also devour leaves, flowers and pods.

If treatment is necessary to avoid yield loss, producers can 'spot treat' with a foliar insecticide registered in that crop. Please avoid spraying flowering crops, for bee/pollinator safety.



*Ash gray blister beetles feeding on leaves of faba beans (T.J. Prochaska, NCREC)*

[Janet J. Knodel](#)

Extension Entomologist



## SOYBEAN PLANT POPULATION

Counting soybean plants in the unifoliate growth stage or early vegetative stages with true leaves developing is a good method to evaluate the crop stand. This year has been very challenging, established plant stands are very variable due to drought conditions, and a late May frost in some fields.

Based on various hail loss studies and other plant population research, a low stand for soybean in North Dakota is around 75,000 plants per acre, which is approximately 50% of the recommended stand. If you use the "hula-hoop" method to estimate the number of plants in solid seeded fields, you would need a minimum of 1.7 plants per square foot for this 75,000 established plant population.

The hula-hoop method for solid seeded soybean stand counts uses a perfect circular hoop with a known diameter. The hoop should be tossed randomly at five or more locations in the field and plants should be counted within the hoop. The area of a hoop can be calculated by the formula:  $\text{Area} = \pi r^2$ , where 'r' is the radius (or half the diameter of the hoop) and 'π' (pi) is approximately 3.14. As an example for a hoop with a 24 inch diameter (12 inch radius), the area is  $3.14 \times 12^2 = 452$  square inches. Divide 452 square inches by 144 square inches (a square foot) to equal 3.14 square



feet. If the average number of plants in this hoop is six, the population estimate can be calculated to be 6 (average plants in hoop) / 3.14 (area of the hoop in square feet) x 43,560 (square feet per acre) = 83,236 plants per acre.

With a 50% reduced stand, yield reduction will be somewhere between 10-20% of the potential yield of a timely planted soybean field with 150,000 established plants, if the growing conditions during the rest of the season will be favorable. Of course, if drought conditions continue then the yield potential will be lower. Soybean stands usually are not uniform throughout the field. There will be areas with higher or lower plant counts. With uneven emergence and gaps between plants, yields may be lower compared with an evenly distributed low stand of 75,000 plants per acre. Soybeans have the ability to compensate for low number of plants per acre by additional branching, producing more pods per plant, filling more seeds per pod, and increased seed size.



**Photo 1. Counting 21 plants in three feet of two rows of soybean with a 14-inch row spacing. Example. 36 x 28 inch = 7 square feet area.  $(21/7) * 43560 = 130,000$  established plants.**

[Hans Kandel](#)

Extension Agronomist Broadleaf Crops



#### SCOUT FOR FUSARIUM YELLOWS IN SUGARBEET AND RECORD FIELDS WITH THE DISEASE

Fusarium yellows and decline in sugarbeet are caused by *Fusarium oxysporum* and *F. secorum*, respectively. Fusarium yellows and decline may cause significant reduction in plant stand and root yield, and it is recommended that infected roots not be placed in long-term storage.

The pathogens may infect seedlings and older plants in fields where average soil temperature is at or above 55°F and in the presence of adequate moisture or wet conditions. We have observed Fusarium yellows and decline at our research site in Moorhead, MN in a year when conditions may be considered as dry. In seedlings and young plants, oldest leaves become yellow followed by wilting and death (Figure 1). Cross sections of infected roots will show darkening of the vascular system. On older plants (4 leaves and older), symptoms include interveinal yellowing and death of older leaves (Figure 2). Sometimes there is distinct necrosis of half the leaf on one side of the midrib which then spreads to the other side of the mid-rib (Figure 3). Typically necrosis occurs first on older leaves followed by death of the younger leaves. Under severe disease conditions, infected plants may die with seedling being more vulnerable. In fields where the disease is not severe, older leaves of infected plants display typical foliar symptoms but the plants survive. Roots of infected plants have no external symptoms, but when these roots are cut in a cross section, there is a distinct darkening and damage of the



vascular system (Figure 4). Roots of infected plants do not store well in piles and have high respiration rates which results in low sugar concentration during storage. The best and only way to manage *Fusarium* yellows and decline is to plant resistant varieties. Consult your agriculturists or seed sales representatives for *Fusarium* resistant varieties appropriate for your growing area. At this time, fields should be scouted for *Fusarium* yellows and decline and records should be kept to be used when deciding on varieties the next time fields with these diseases are planted to sugarbeet.



**Figure 1. Symptom of *Fusarium* yellows on 2-6 leaf stage sugarbeet – yellowing or necrosis first on oldest true leaves.**



**Figure 2. Typical symptoms of *Fusarium* yellows on an older plant – interveinal chlorosis and necrosis starting on oldest leaves followed by similar symptoms on younger inner leaves.**



**Figure 3. Distinct necrosis of half-leaf along one side of the mid-rib of *Fusarium* yellows/decline sugarbeet and darkening of vascular system.**



**Figure 4. Outer surface of root of *Fusarium* yellows plant appears healthy but cross-section shows vascular system is severely damaged with distinct discoloration.**

[Mohamed Khan](#)

Extension Sugarbeet Specialist  
NDSU & U of MN  
701-231-8596 / 218-790-8596

## HEADING SMALL GRAINS, SCAB RISK, AND A FEW FUNGICIDE QUESTIONS

The heat is speeding up small grain development as heat units are accumulating at a record pace. Water stress is accelerating this pace even further, so the decision to apply a fungicide is here. Currently, the risk for *Fusarium* head blight to develop is low across the entire state of ND and Western MN. (Figures 1 and 2). We expect the risk to remain low until at least the end of this week.

The *Fusarium* pathogen needs several days of high humidity to produce spores and infect small grain florets. Although, we had a day or two of rain, hot and dry weather will hinder *Fusarium* production and keep the risk for scab to remain low.

Last week's thunderstorm events *might* increase scab risk for very susceptible varieties by the end of this week in individual fields. However, this will be dependent on if additional precipitation is received this week, and if we have some dew in the mornings over the weekend. We are expecting scab risk to remain low for most. To help determine your risk in individual fields, visit either

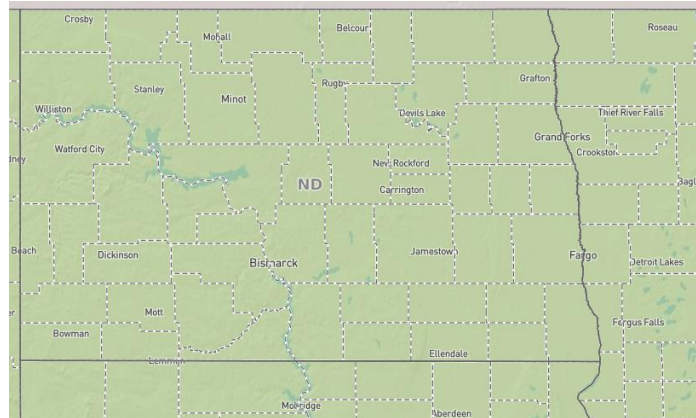
1. <https://www.ag.ndsu.edu/cropdisease> or
2. <http://www.wheatscab.psu.edu/>

### Do fungicides help with drought stress?

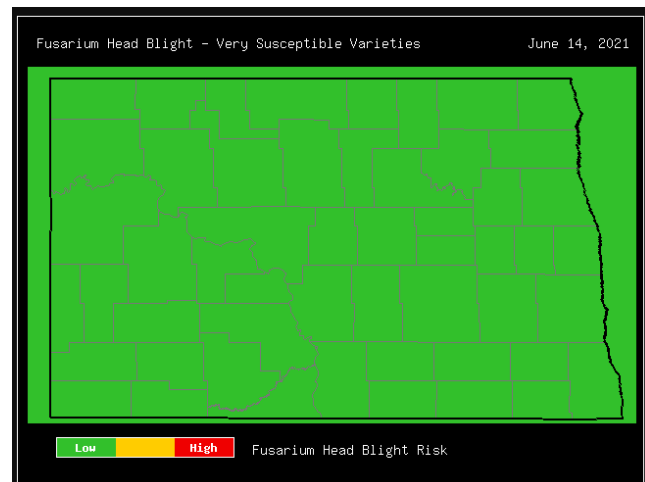
Producers have also contacted us with the question if fungicides help reduce water stress. A very thorough and well-designed study by Nason et al. (2007) evaluated the effect of our commonly used strobilurin fungicides and a triazole fungicide on water-use efficiency in soybean, wheat and barley. Their study indicated that fungicides improved water-use efficiency in well-watered plants. However, in water-stressed environments, fungicides actually decreased water-use efficiency (negative effect). This study supports once more that fungicides should be used for control of fungal diseases.

### Is there a yield benefit?

The greatest yield response from a fungicide occurs when fungal diseases are present. Fungicides do not alleviate drought stress, nor can they increase yield - simply put, fungicides protect yield. As the yield potential dwindles because of drought stress so will be the portion that can be saved with a fungicide should diseases have a chance to reach economically damaging levels. After all, 5% of 80 bushels is not the same as 5% of 30 bushels. To get an estimate on the yield response of a fungicide in a heat stressed, low scab risk crop and with no fungal leaf diseases present, we went back through some of the research data collected in Fargo. In trials conducted in 2012-2014, the research trials in Fargo had very low scab risk, but had either some leaf rust, stripe rust or fungal leaf spots present on the flag leaf. In these trials, the yield response from Prosaro, Caramba, or Folicur (generics) was approximately 3%. Those yield responses were likely the result of managing fungal leaf diseases in these trials. Given that 2021 has very low foliar disease pressure and low scab risk, we would expect an inconsistent and very low yield response if a fungicide is applied at early-flowering.



**Figure 1. *Fusarium* head blight risk for very susceptible spring wheat varieties as indicated by the National *Fusarium* Risk Tool. Note the low scab risk.**



**Figure 2. *Fusarium* head blight risk for very susceptible wheat varieties as indicated by the NDSU Small Grains Forecasting Model. Note the low scab risk.**





### **SIDEDRESS IN A DROUGHT**

There is a wide range of soil moisture and corresponding corn health across the state. In a tour today (Tuesday June 14, 2021) across the eastern 1/3 of the state, good soil moisture and excellent corn growth was observed in Richland County, but nowhere else. Further north, the drier the soil became and the more distressed the corn appeared. Corn growth stage was generally from V4 to V7. Corn that received the full N rate before/at planting has enough N to complete the season. There have been no excessive rain events that would lead to leaching or denitrification. The extremely dry soil this spring would lead to little N release from surface application of urea, so unless the soil actually blew away with the N, N should be sufficient to yield whatever the corn would be capable of with whatever moisture is available.

There are fields that in normal/wet springs perform best when side-dress is applied. Those fields may have received half to 2/3 of the total N preplant/planting this spring. The question is whether to apply the remaining half to 1/3 of the total N, reduce the rate, or abandon the side-dress totally.

If the field has moisture to a couple feet in depth, then application of the remaining N would make sense. If the soil is dry, then some N application might be warranted, but probably not the entire amount from the original recommendation. The corn N calculator assumes a corn yield response with a side-dress response of about 60% efficiency. However, in dry soil my field studies indicate that side-dress, especially if dribbled on the surface or otherwise surface applied would have an efficiency of as low as 16%. That makes the cost of side-dress N in relation to yield gained almost 4 times the N cost per bushel of the original N application. As a result, a side-dress of perhaps 30 pounds of N/acre would be the maximum under these conditions that would make economic sense. An application of 100 pounds of N/acre may increase the yield another 10 bushels per acre, but the cost to do so would exceed the cost of N applied. Certainly, unless it rains in excess late summer or into the fall, the residual soil N would be high. However, so much corn ground gets planted the next year to soybean or other legumes that these subsequent crops would not benefit from the N left over. Also, I think that in many operations there is not an over-abundance of excessive operating funds that one might risk this season, so reducing the side-dress rate in all but the most ideal circumstances would be the prudent course of action.

Corn under irrigation with fertigation capabilities should fertilize as planned, since water should not be a limiting factor if properly managed.

[Dave Franzen](#)

Extension Soil Specialist  
701-799-2565



### **SPLASH DAMAGE FROM GROUP 14 HERBICIDES**

One question posed by anyone who sprayed a preemergence herbicide this spring has been “is my herbicide still there?” The thunderstorms that moved through the state last week may have answered that question for some people who are scouting fields this week. While rating trials this week, we noticed some herbicide splash damage on our soybean trials near Prosper. These trials were planted in early May, and had ~0.75 inches of precipitation from planting through last Thursday. Then on Friday morning we got a hard, pounding rain at the site (0.68”). We noted necrotic

spotting on soybean and weed leaves in trials that had received a Group 14 herbicide at planting (flumioxazin or sulfentrazone). New leaves on affected crops and weeds lacked these necrotic spots.



***Necrotic lesions where rain and/or soil particles containing flumioxazin landed on emerged soybean leaves.***



***Common lambsquarters and some grass weeds with necrotic spots on older leaves. Note that new lambsquarters leaves lack necrosis.***

We will typically see some Group 14 injury on broadleaf crops somewhere across the state every spring. However, it is rare for the injury to first appear in the middle of June. In the case at Prosper, the herbicide had clearly not moved too deep into the soil profile since planting. Splashing rain and dirt moved enough of the herbicide onto leaf surfaces to cause injury. This type of injury will not affect yield, but it is worth noting since necrotic spotting on leaves of V2-V3 soybeans is typically not from a herbicide applied over a month ago at planting.

[Joe Ikley](#)  
Extension Weed Specialist





## around the state

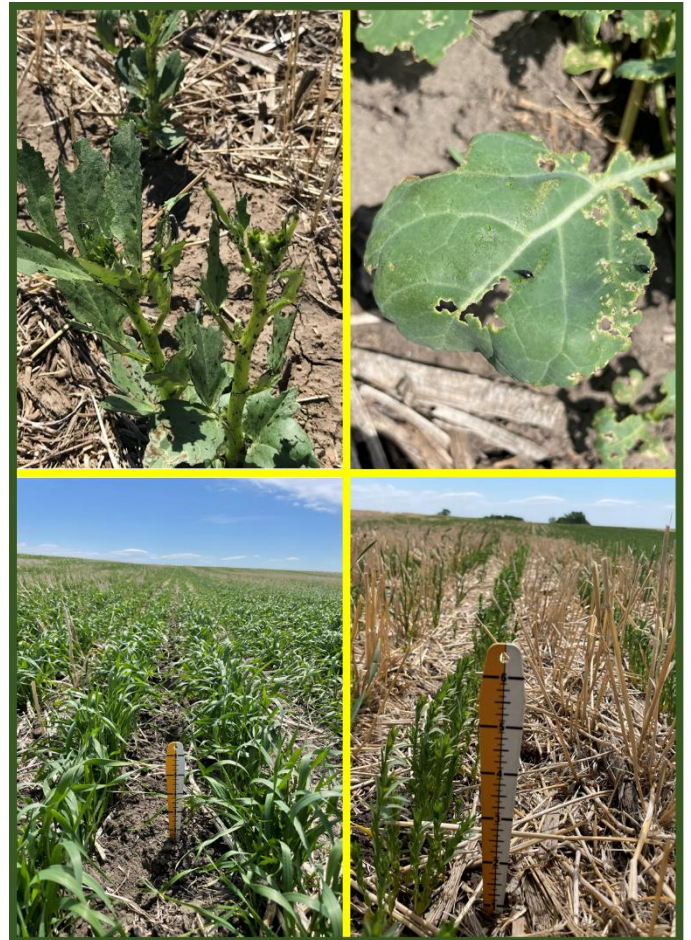
### AROUND THE STATE

#### NORTH CENTRAL ND

A break in the dry weather pattern was observed last week, but unfortunately, along with some scattered areas of hail and strong winds in parts of the North Central region. Areas that saw high levels of precipitation over a short period of time may not get the full benefits of the moisture as it drained off rather quickly. Here are some quick precipitation reports as observed by area NDAWN stations over the last week (beginning June 7<sup>th</sup>): Minot: 0.95" (NCREC: 0.93"); Bottineau: 2.03"; Garrison: 0.35"; Karlsruhe: 0.84"; Mohall: 1.84"; Plaza: 0.74"; and Rugby: 0.81". Additionally, the bare soil temperature at the NCREC is observed at 75 degrees F.

Canola flea beetle damage continues to be reported in some localized locations in the region. Grasshopper activity continues to be reported in the area as well. With drought conditions in play, it is important to continue scouting protocols at this time. The North Central Region scout also found small grain aphids in the region for the first time this year. Populations were very low at this time; however, aphids can flourish with temperatures in the 80s. Aphids can have a high reproduction rate around those temperatures, so scouting will become important in the coming weeks. For information on cereal grain aphids, please refer to [Dr. Janet Knodel's article in the June 10<sup>th</sup> edition of the Crop & Pest Report](#). Additionally, blister beetles were found in faba bean at the NCREC. Scouting of faba bean at this site indicated between 4 and 10 beetles per plant (Figure 1). No economic thresholds are established for blister beetle in faba bean.

Crops in the region vary greatly in terms of condition and growth stages being observed. Given the weather circumstances we are facing this year, the crops are in fair condition. Chickpeas, lentils and field peas are found in the field with growth stages varying from V6-V9 and a few already in flowering stage. Spring wheat is generally in good condition in the region with a wide range of growth stages being observed (Zadoks 5-25). Flax fields are found mainly in stage 5. We are observing corn and soybean fields with uneven emergence and growth stages (from seeds emerging to V4).



**Figure 1. From the top left clockwise: blister beetle damage observed in faba bean trials at the North Central REC on June 14<sup>th</sup>; canola flea beetle damage observed in Renville County; no-till**

[TJ Prochaska](#)

Extension Crop Protection Specialist  
NDSU North Central Research Extension Center

[Leo Bortolon](#)

Extension Cropping Systems Specialist  
NDSU North Central Research Extension Center

**NORTHEAST ND**

Most of the region got relief with much needed rains ranging from less than 0.5 inch to 3.5 inches. Crops are looking better than before. However, spotty and uneven emergences are a common sight in each and every field. Small grains are looking good in some areas. In other areas facing moisture stress, 6-10 inches tall wheat is starting to boot and heads are emerging. Top dressing and herbicide applications are in full speed. Heavy winds that followed the rains damaged several dry beans, soybean, corn, sugarbeet and canola fields. Producers are replanting them. Corn is emerging, as are potatoes. Most of the row crops have decent stands but can take more moisture. Heavy winds also blew a lot of top soil. Livestock producers are struggling with poor pastures, water quality and feed shortages. Not much disease is evident. Producers are spraying for canola flea beetles. Spider mites and grasshopper numbers are increasing. Spider mites found in soybeans along the edge of field. Soybean aphids were reported in Grand Forks county in V2 stage soybeans.

[Anitha Chirumamilla](#)

Extension Agent Cavalier County

**NORTHWEST ND**

Last week started out with hot temperatures across the Northwest followed by a series of severe thunderstorms that moved across the region the evening of June 10<sup>th</sup>. The storm dumped anywhere from 1" to 3" of rain in just a few hours and some areas received hail. The largest hail fell in eastern MT but pockets of larger hail, up to golf ball-size, fell in Williston and other spots. In Williston, damage was common on vehicles, roofs, and structures. Thankfully, most places reported pea-size or smaller hail. It then continued to rain overnight and most of Friday morning, adding another 1" to 2" to rainfall totals for the week. Approximate totals for the two days were 1.5" in Watford City, 2.5" in Williston, 4" in Ray, 2.5" in Crosby, and 4.5" in Bowbells. Unfortunately a lot of the rain that fell during the first wave of storms on Thursday likely ran off as it came down so quickly it did not have time to soak in.

Hail had the potential to damage soybean and canola crops which were in early development stages due to the drought. Small grains likely fared better with not too much damage reported. However, small grain fields have been pushed by the heat and drought and some damage was likely already done. At the WREC, pea is starting to flower though it is very short. Winter wheat is very uneven with plants in the field anywhere from tillering to in the boot, to head emergence starting. Later planted crops suffered some wind damage from sandblasting caused by the strong winds that preceded last Thursday's storms.

[Clair Keene](#)

Extension Cropping Systems Specialist  
NDSU Williston Research Extension Center

**SOUTH-CENTRAL/SOUTHEAST ND**

According to NDAWN, the region's first-half June rainfall ranges from 0.4 inch (Carrington and Zeeland) to 4.5 inches (Marion). Recent rain generally has helped improve row crop stands but plant density generally is less than targeted at planting time. The reduced plant stands certainly have potential to yield well but we need cooperative growing conditions. High wind that occurred last Friday (June 11) neutralized some of the positive effects of the rain besides damaging plants and eroding soil. Additional soil moisture is soon needed to salvage our small grain crop as it heads and begins seed formation.

Corn is in the 4- to 7-leaf stages; ears have been initiated and number of seed rows being determined. Corn damaged by the May 28 frost lost the lowest leaves and has ragged mid-leaves, but newest and future leaves are



developing normally (see picture). If corn plants are missing leaves, use growing degree day units (available on NDAWN) and the following rule-of-thumb to estimate corn growth stage: 120-125 units for plant emergence; then 80-85 units per leaf until the V10 (10 leaf collar) stage.

Established soybean, dry bean and sunflower plants can tolerate stress conditions for several weeks but ample soil moisture will be required for satisfactory yield as these crops move later into reproduction stages.

Weeds continue to be the most economically important crop pest but a growing list of insects need to be considered as our season advances.



*Corn at Carrington REC on June 14 previously damaged by May 28 frost.*

[Greg Endres](#)

Extension Cropping Systems Specialist  
NDSU Carrington Research Extension Center

#### **SOUTHWEST ND**

Most fields are showing symptoms of wind damage and sand blasting, too, in some cases. Now is a good time to look for signs of low pH, such as poor stands, phosphorus deficiency (purpling), or stunted roots and yellowing. If you are concerned about low pH, a 0-3" and a 3-6" sample for impacted zones would be beneficial. If pH in these zones is below 5.5 for either depth, nutrient tie-up is likely, aluminum toxicity is impacting root growth and water uptake, some herbicide breakdown may be impacted, and an application of lime is recommended. Low pH is going to be different than salinity (white spots in field), but it is possible to have both issues in the same field.

[Ryan Buetow](#)

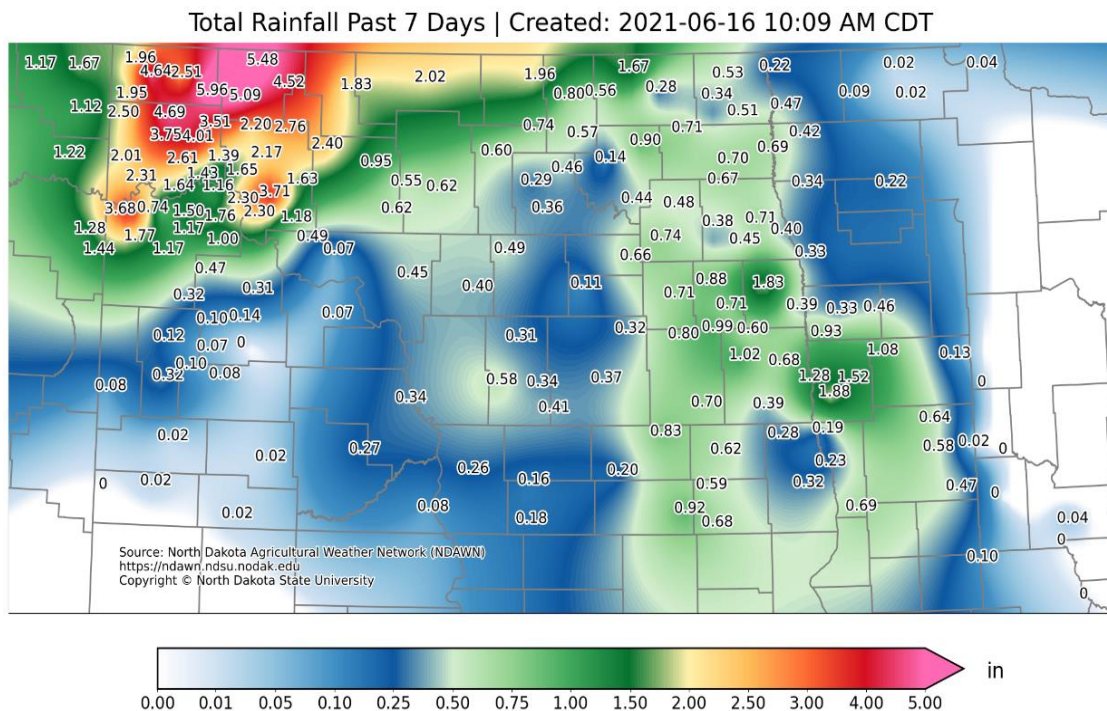
Extension Cropping Systems Specialist  
NDSU Dickinson Research Extension Center



## WEATHER FORECAST

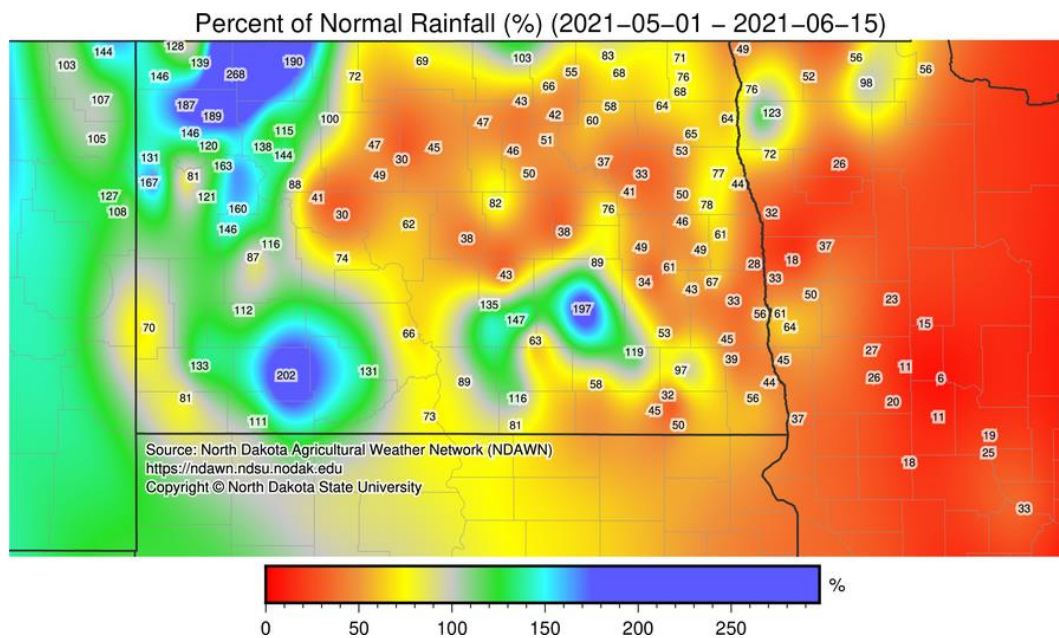
## The June 17 to June 23, 2021 Weather Summary and Outlook

The first half of June was the warmest or one of the warmest on record. Both Bismarck and Fargo recorded the warmest first 15 days of June on record, with Williston recording the second warmest and Grand Forks coming in as the fifth warmest. If you are curious, the previous record was back in 1988. The second half of this month looks cooler with some of the coolness definitely occurring during this forecast period. There will be several days with maximums in the 70s in this period, especially across northern North Dakota, with Monday perhaps even recording highs in the 60s across much of North Dakota into northwestern Minnesota. This cooler air will come in two waves, with a cold front moving through the area on Friday and another one late Saturday into Sunday morning. It appears that the second push of colder air over the weekend will bring with it the best opportunity for rain across the area. Speaking of rain, Figure 1 includes rain from the past 7 days ending at 10:00 AM Wednesday, June 16. Figure 2 gives percentage of average rain from May 1 through June 15, 2021.



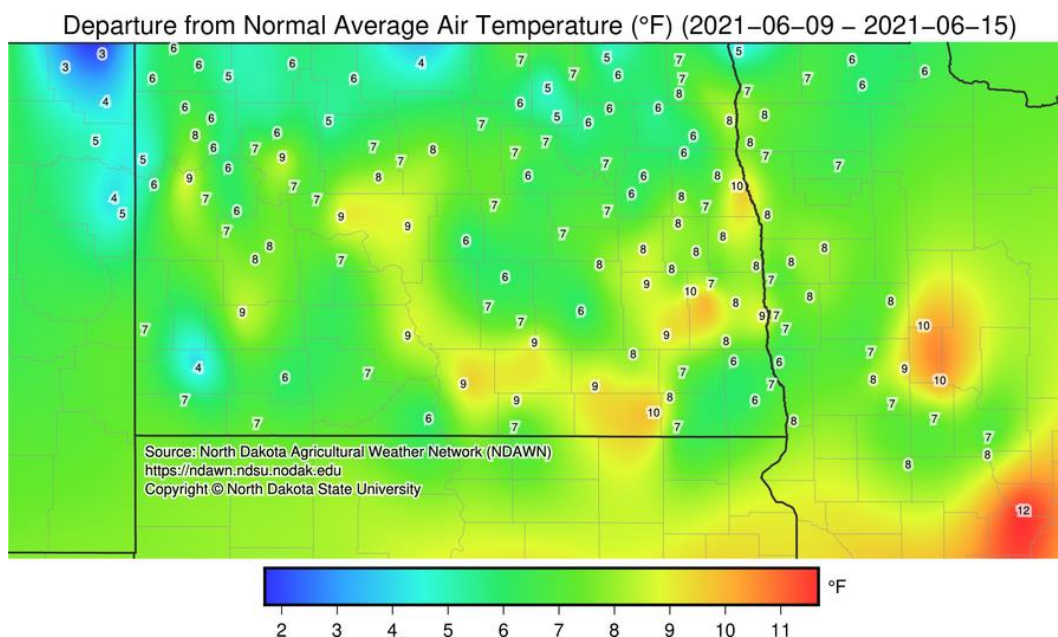
**Figure 1. Total rain at selected NDAWN for the 168 hours ending at 10:00 AM June 16, 2021**





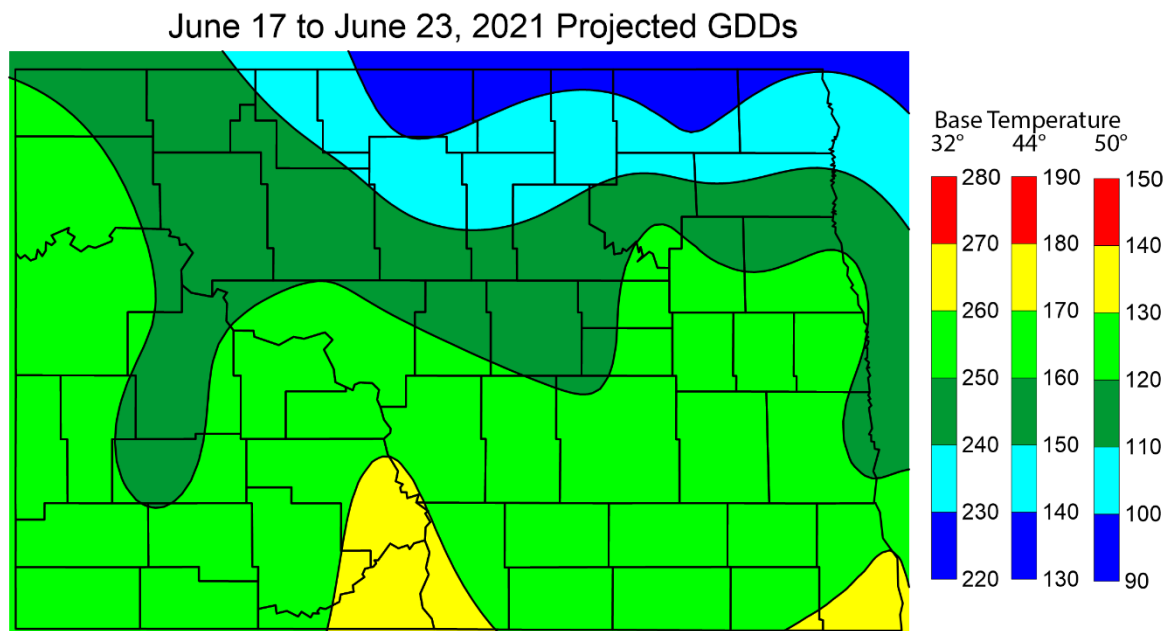
**Figure 2. Percent from average precipitation at selected NDAWN weather stations from May 1 through June 15, 2021**

With the first half of June being near or the warmest on record, it will surprise no one that this past week recorded temperatures well above average. The period from June 9 through June 15, many NDAWN (North Dakota Agricultural Weather Network) stations average temperature was between 6° to 10° above normal (Figure 3).



**Figure 3. Departure from average temperature at selected NDAWN weather stations from June 9 through June 15, 2021**

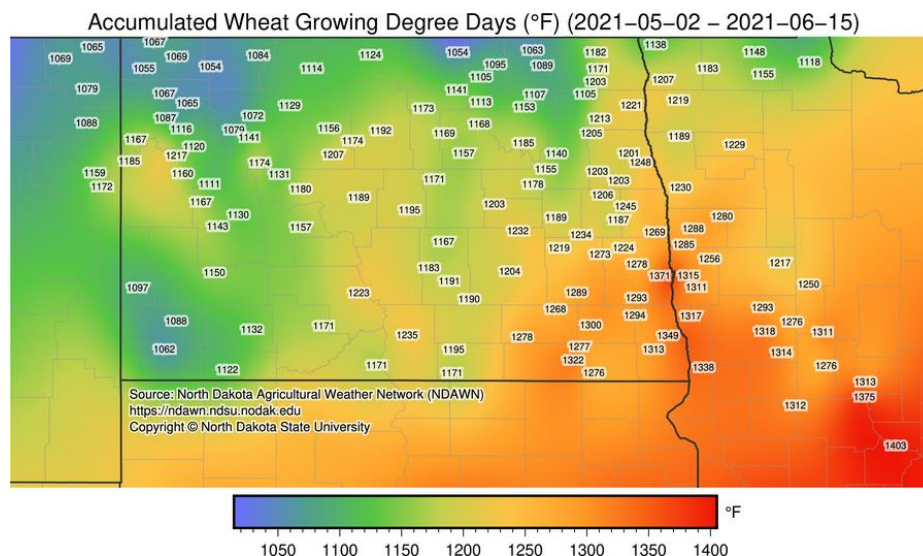
With cooler air expected in **the next 7 days**, growing degree days during this period will be below average for the time of year. The projected growing degree days (GDDs) base 32°, 44° and 50° for the period of June 17 through June 23, 2021 can be found in Figure 4.



**Figure 4. Projected Growing Degree Days, Base 32°, 44° and 50° for the period of June 17 to June 23, 2021**

Using May 1 as a planting date, 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:

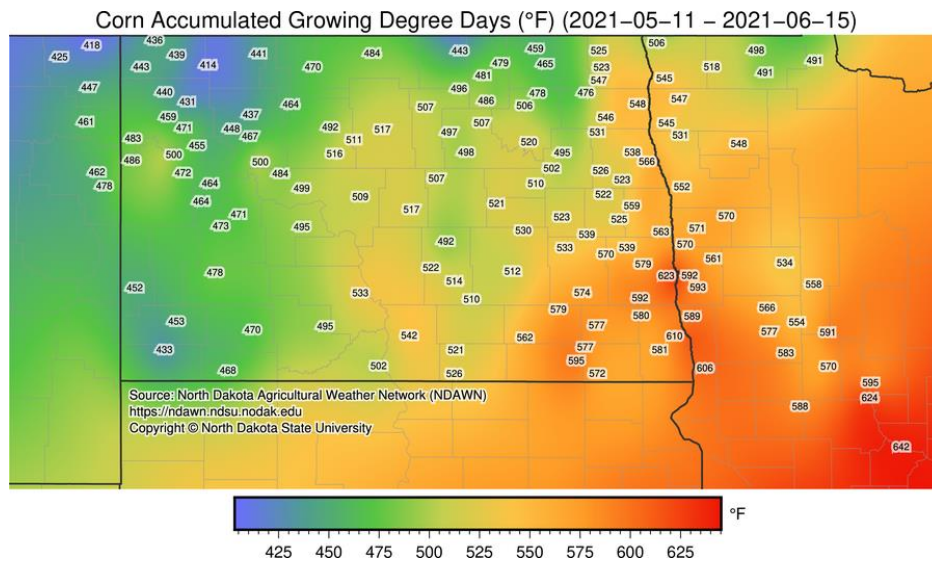
<https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html>



**Figure 5. Accumulated Growing Degree Days for Wheat (Base 32°) since May 1, 2021**



Using May 10 as a planting date, 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. Accumulated Growing Degree Days for Corn (Base 50°) since May 10, 2021**

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 your planting date(s) you set. That tool can be found here: <https://ndawn.ndsu.nodak.edu/soybean-growing-degree-days.html>

[Daryl Ritchison](#)  
Meteorologist

Director of the North Dakota Agricultural Weather Network

North Dakota State University  
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