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## AG NDSU FIELD DAYS SET

The [North Dakota State University Research Extension Centers annual field days](#) are set. 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. NDSU's 15th President David Cook will be attending this year's field day events.

The dates and locations for the field days are:

- July 11 – Central Grasslands Research Extension Center – Streeter  
(10 a.m.-3 p.m. CDT)
- July 12 – Hettinger Research Extension Center – Hettinger  
(5-7 p.m. MDT followed by supper)
- July 13 – Dickinson Research Extension Center – Dickinson  
(8 a.m.-Noon MDT agronomy with lunch, 1-3 p.m. horticulture,  
5 p.m. supper)
- July 13 – Williston Research Extension Center main site  
(4-8 p.m. CDT agronomy and horticulture)
- July 14 – Williston Research Extension Center irrigated tour – Nesson  
Research and Development farm, located 23 miles E of Williston on  
Hwy 1804 (8:30 a.m.-Noon CDT)
- July 18 – Agronomy Seed Farm – Casselton  
(5 p.m. agronomy tour, 7 p.m. supper CDT)
- July 19 – Carrington Research Extension Center – Carrington  
(9:15 a.m.-3:30 p.m. CDT)
- July 20 – North Central Research Extension Center – Minot  
(8:30 a.m.-Noon CDT)
- July 21 – Langdon Research Extension Center – Langdon  
(8:45 a.m.-Noon CDT)
- August 4 – CREC Oakes Irrigation Research Site – Oakes  
(8:30 a.m.-Noon CDT)
- August 9 – NDSU Horticulture Research & Demonstration Gardens – Fargo  
(3-7 p.m. CDT plants, local foods and outdoor spaces)
- September 10 – NDSU Horticulture Research Farm near Amenia  
(10 a.m.-3 p.m. CDT trees and ornamentals) Pre-registration required



### CANOLA SEED TREATMENTS WANING WHILE FLEA BEETLES PEAKING

Extension Entomology and county Extension Agents have received many complaints of economic flea beetle feeding damage in canola and even replanting of fields (see Around the State – Northeast and North Central). Insecticidal seed treatments are waning, and growers have made rescue foliar insecticide applications to stop further feeding damage. **It is imperative to scout your canola fields daily for seed treatment failure and economic flea beetle damage. Foliar insecticide application is warranted when 20-25% defoliation has occurred on seedlings through the 6-8 leaf stage.** Please see [last week's Crop & Pest Report article on flea beetles](#), and for more information on flea beetles and foliar control, please consult NDSU Extension Publication [E1234 \(revised\)](#) - *Integrated Pest Management of Flea Beetles in Canola* and [E1143-22](#) - *North Dakota Field Crop Insect Management Guide* for a list of insecticides for flea beetle control registered for use in canola.

**Q: What does insecticide seed treatment failure look like?**

**A: Increase feeding damage and flea beetles actively feeding on previously unscathed seedlings.** The photos below tell the story. The first photo was taken in our insecticide seed treatment trial at seven days after emergence, and shows 1-2 leaf seedlings with only minor pitting on the cotyledons and no actively feeding flea beetles. The second photo shows the same treatment only three days later! The cotyledons and true leaves are severely pitted, and there are flea beetles actively feeding. Note that there are several crucifer flea beetles in the photo. This is another indication that seed treatment efficacy is failing, because crucifer flea beetles are controlled more effectively by seed treatments than striped flea beetles.



*Insecticide seed treatment effective at 7 days after canola emergence on left and the same seed treatment no longer effective at 10 days after canola emergence. Photo by Patrick Beauzay, NDSU Extension*

**Q: How long will an insecticide seed treatment last, and will I have to make a foliar rescue treatment?**

**A: It depends on several factors.** Time from planting to emergence, plant growth, and flea beetle pressure all affect how well a seed treatment performs. In our trial, we saw seed treatments no longer controlling flea beetles at 10 days after canola emergence, and time from planting to complete seedling emergence was another 10 days. Keep in mind that our trial experienced heavy feeding in a very small area, and had a fairly long emergence period, so what you



see for seed treatment efficacy in your fields may be different. However, based on the complaints we've received, what we saw in our trial matches closely to what growers are experiencing.

**Q: Does the addition of Lumiderm or Buteo Start to the neonicotinoid in the seed treatment provide additional protection against flea beetles, and if so, for how long?**

**A: Yes, but probably not for long.** In our trial, all insecticidal seed treatments had the same level of economic feeding injury at 10 days after emergence. However, neonics combined with Lumiderm (cyantraniliprole) or Buteo Start (flupyradifurone) did exhibit less feeding injury and more advanced growth at seven days after emergence compared to the neonics alone. We'll be taking growth stage notes and yield data, so our final results will be shared over the winter meeting season. Adding Lumiderm or Buteo Start might well buy you more time to make a foliar rescue application - flea beetles can do a great deal of damage in a short amount of time. Also, if flea beetle pressure is light, the addition of Lumiderm or Buteo Start to the neonic might allow the canola to outgrow flea beetle feeding and a rescue treatment might then not be necessary. That's speculation of course, and more research needs to be done on that front.

**Q: What good did a seed treatment do for me if I still have to make a foliar insecticide application?**

**A: Seedlings were protected in the early plant growth stages, resulting in more advanced plant growth.**

Seedling damage caused by flea beetles will delay growth, flowering, and maturity - the more severe the damage, the more growth stages are delayed. If you've got protection early, this potentially translates to flowering and seed development prior to high heat in late summer, which could then translate to increased yield potential. Severe flea beetle feeding can also cause stand loss, which can result in yield loss if the plants can't compensate for stand loss.

[Patrick Beauzay](#)

Research Specialist, Extension Entomology  
State IPM Coordinator

[Janet J. Knodel](#)

Extension Entomologist

## FIRST CEREAL APHIDS ARRIVE IN ND

The first cereal aphids were detected by Tommy Crompton, Fargo NDSU Extension IPM scout, in barley in Ransom County (SE), and by Breanna Hosman, Dickinson REC NDSU Extension IPM scout, in wheat in Morton County (SW). Thorough field scouting is required to effectively track aphid population growth, and it is **most important from stem elongation through the early dough stage of wheat**. Look at the undersides of leaves, wheat heads (when present) and the bases of the plants for tiny  $\frac{1}{8}$  inch cereal aphids. We typically scout 50 plants total per field by walking a 'W' pattern. In the field, inspect 5 sites and 10 plants per site. The majority of the 133 wheat fields and 8 barley fields scouted had no aphids. See maps on next page.

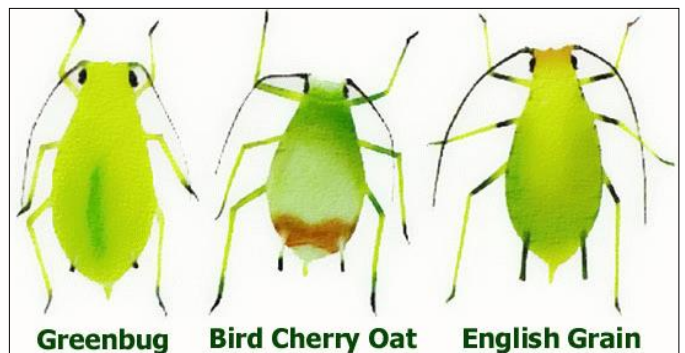
Three species of cereal aphids are common in ND including:

**Greenbug** - pale green with darker stripe down back.

**Bird Cherry Oat Aphid** - olive green, brownish patch at the base of cornicles.

**English Grain Aphid** - bright green with long black cornicles.

None of these aphids are known to overwinter in North Dakota; they migrate to the region from the South in late spring. The greenbug is the most injurious because it injects a toxin with its saliva during feeding. The English grain aphid is the most common aphid seen in small grains. Its population grows rapidly when feeding on wheat heads. The bird cherry oat aphid feeds primarily on leaves in the lower part of the small grain plant. These aphids transmit barley yellow dwarf virus. When aphid



**Greenbug on wheat**  
(Patrick Beauzay, NDSU)

populations are high, the disease can spread through small grain fields. **At greatest risk are later planted fields which attract migrating aphids that are moving from more mature fields.**

**Cereal Aphid Threshold Update:** Research from Idaho (Johnston and Bishop, 1987, Journal of Economic Entomology 80: 478-482), South Dakota (Voss et al., 1997, Journal of Economic Entomology 90: 1346-1350) and Sweden (Larsson, 2005, Crop Protection 24: 397-405) demonstrated that the greatest risk of yield loss from aphid feeding is from vegetative through heading stages. However, new research has shown that economic losses can occur through the early dough stage. Beyond early dough, yield loss is unlikely to occur. High aphid numbers also generate copious amounts of honeydew, which leads to sooty mold growth and in turn reduces photosynthesis. The following thresholds at different crop stages were derived from the above referenced studies using current control costs and crop market values. Further validation of these thresholds is required to test different varieties under different environmental conditions in North Dakota.

To protect small grains from yield loss due to aphid feeding, we recommend the following **growth stage based cereal aphid thresholds**:

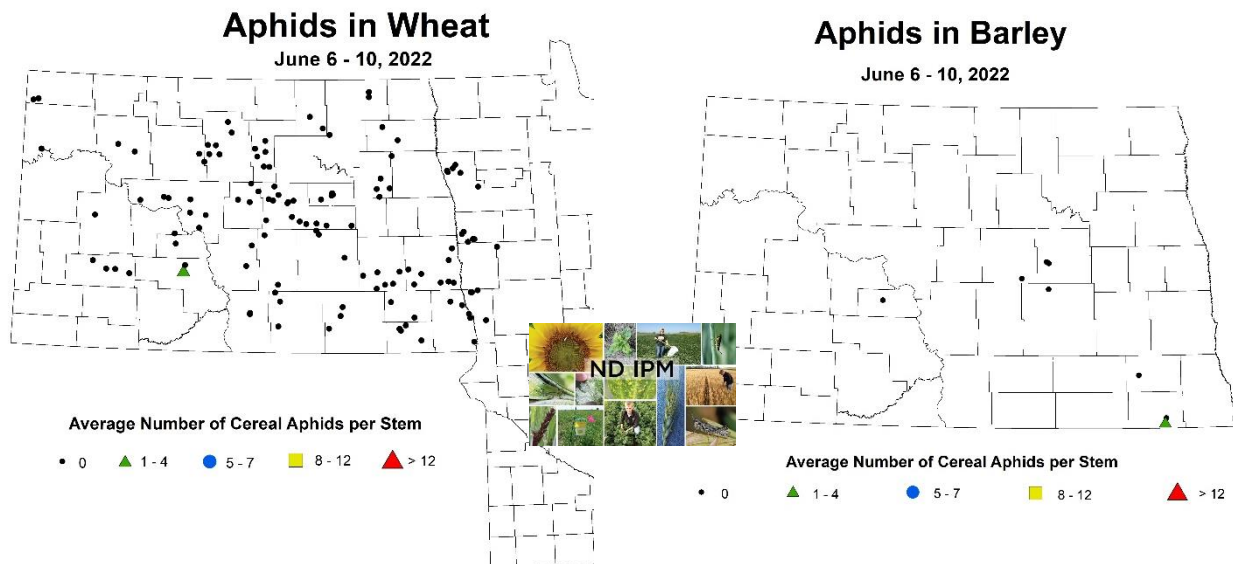
For vegetative through head emergence - 4 aphids per stem

From complete heading through the end of anthesis - 4-7 aphids per stem

From the end of anthesis through medium milk - 8-12 aphids per stem

From medium milk through early dough - >12 aphids per stem

Aphid populations at or above the thresholds during these growth stages may result in economic injury to plants.

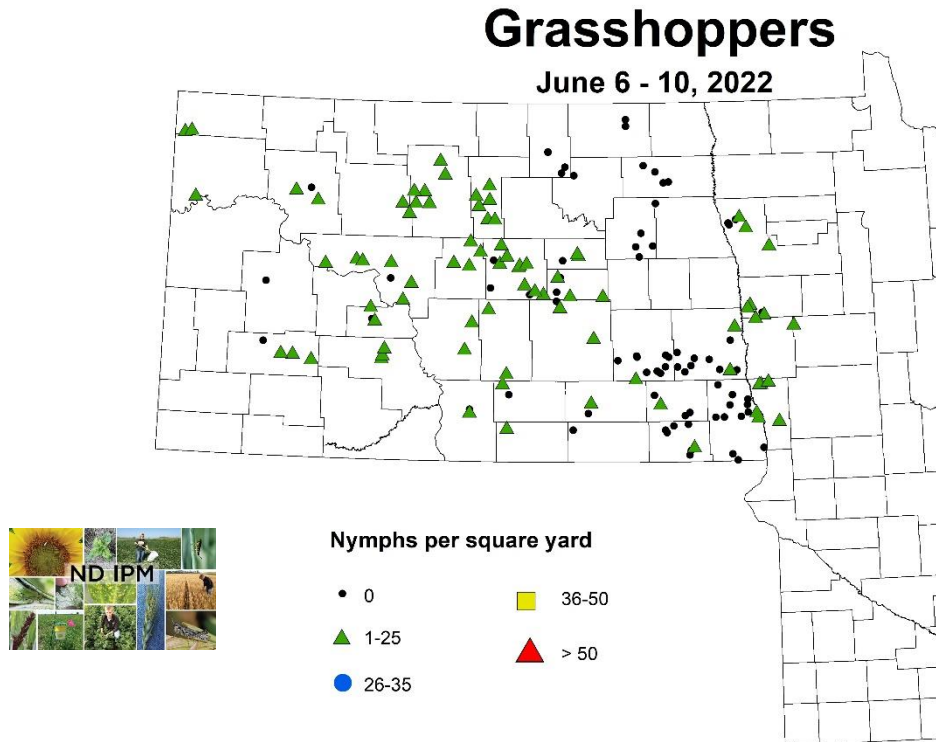


## GRASSHOPPERS STILL EMERGING

Grasshoppers nymphs (immatures) are still emerging as one can find 1<sup>st</sup> to 2<sup>nd</sup> instar nymphs in fields. However, the weather forecast for late week is for hot temperatures above 90°F, which will increase the speed of grasshopper development. There are usually 5 to 6 nymphal stages and the length of time from egg to adult is 40 to 60 days. Knowledge of grasshopper instar identification is useful because it gives a rough indication of how far the hatch has progressed. **Once fourth and fifth instar grasshoppers are present, egg hatch is winding down.** As nymphs mature, they become more mobile and also feed more.

This week's IPM scouting report indicates that grasshopper nymphs were common and present in about 55% of 165 fields scouted including wheat, barley and soybean. However, all fields were below the economic threshold of 50-75 nymphs per square yard. Good news for now.

Please see [last week's Crop & Pest Report article on grasshoppers](#), and for more information on grasshoppers and foliar control, please consult NDSU Extension Publication [E1143-22](#) - *North Dakota Field Crop Insect Management Guide* for a list of insecticides for grasshopper control



[Janet J. Knodel](#)

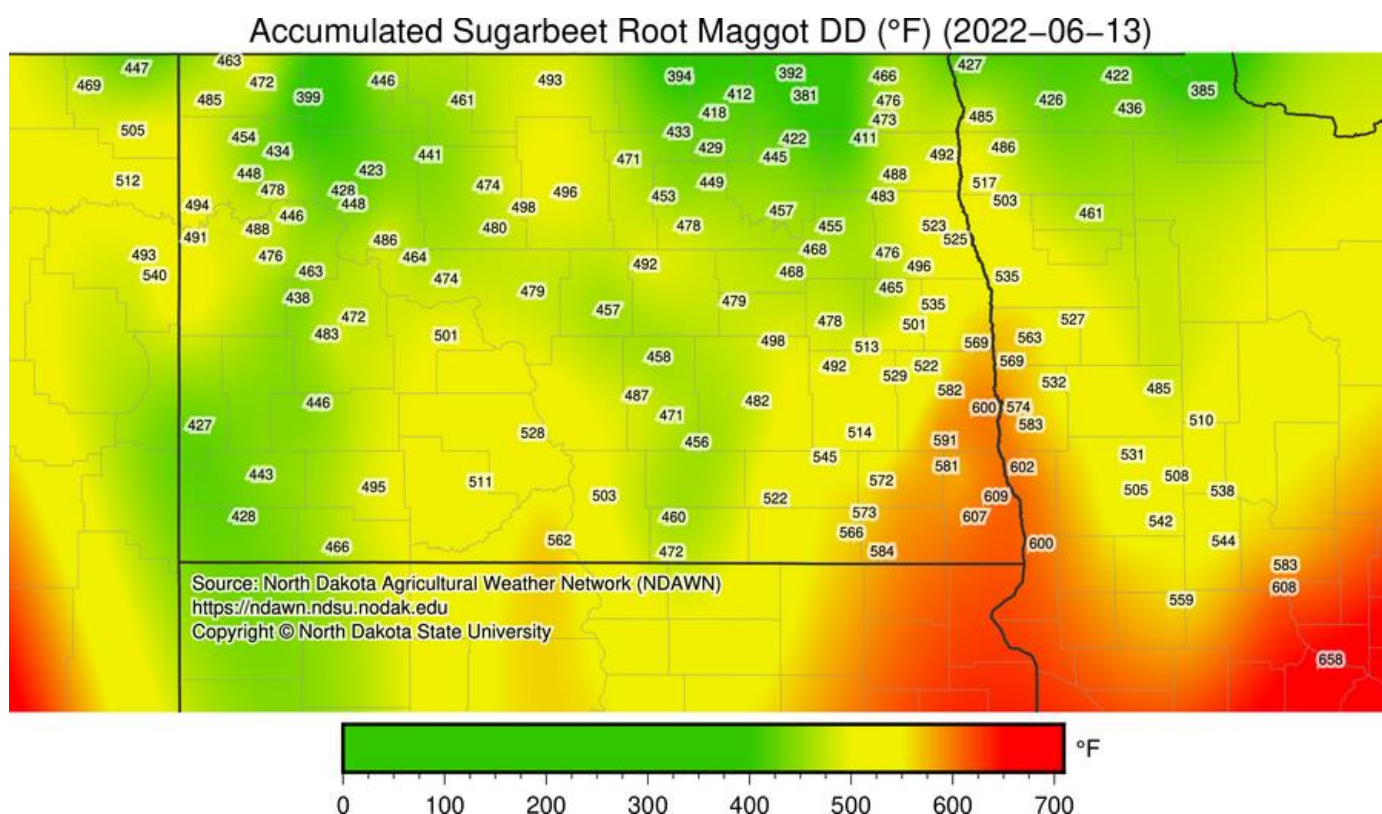
Extension Entomologist

### SUGARBEET ROOT MAGGOT ALERT: FLY ACTIVITY TO HIT HIGH LEVELS IN NEXT 2 TO 5 DAYS

Sugarbeet root maggot (SBRM) fly activity has increased significantly throughout much of the Red River Valley (RRV) in recent days. NDSU is partnering with the American Crystal Sugar Company again this year to monitor fly activity in growers' sugarbeet fields in North Dakota and Minnesota. This year, the SBRM monitoring program is conducting fly counts in about 125 RRV sugarbeet fields throughout the entire RRV sugarbeet production area.

The most severe outbreaks have been observed near the following communities: Auburn, Buxton, Crystal, Drayton, Glasston, Grand Forks, Hensel, Oakwood, Reynolds, St. Thomas, and Thompson, ND, as well as Climax, Donaldson, East Grand Forks, Eldred, and Sabin, MN. Other areas with moderately high fly counts include Ardoch, Bowesmont, Cashel, Cavalier, Hamilton, Hoople, Nash, and Voss, ND, and Ada, Angus, Argyle, Climax, Crookston, Helma, and Warren in Minnesota. Fly counts from both NDSU and ACSC monitoring routes, are posted every Monday, Wednesday, and Friday evening at: <https://tinyurl.com/SBRM-FlyCounts>. **NOTE:** this monitoring project is aimed at providing a general idea of where potential root maggot fly hot spots are developing throughout the growing season. Sugarbeet growers and crop production advisors are encouraged to do their own monitoring in fields for which they may have concerns.

A map of the accumulated root maggot DD units for all locations within the RRV is presented in Figure 1. Peak fly activity typically coincides with the first rain-free, warm (about 80°F), low-wind (< 10 mph) day on or after the accumulation of about 651 degree-day (DD) units.



**Figure 1. Map of sugarbeet root maggot DD accumulations for the Red River Valley sugarbeet production area** (Courtesy, North Dakota Agricultural Weather Network [NDAWN]).

Although high SBRM fly activity has already developed at several locations, major increases are expected in the central and northern RRV between Thursday, June 16 and Tuesday, June 21, with fields in the more northern areas peaking slightly later than those further south. An updated forecast for periods of high SBRM fly activity and expected peaks at four representative RRV locations, based on current DD accumulations and the extended weather forecast, is presented in Table 1.

<b>Table 1. Accumulated degree-day (DD) units and peak fly activity predictions for the Red River Valley</b>			
<b>Location</b>	<b>Total DD June 13</b>	<b>High Fly Activity Period</b>	<b>Maximum Likelihood of Peak Fly *</b>
Fargo, ND	600	June 15-17 (+80°F, dry, and low winds)	June 16
Ada, MN	560	June 16-18 (+80°F, dry, and low winds)	June 17
Grand Forks, ND	548	June 18-20 (+80°F, dry, and low winds)	June 19
St. Thomas, ND	554	June 19-21 (+80°F, dry, and low winds)	June 20

\*Maximum likelihood for peak fly activity is based on extended weather forecasts for wind speed, air temperature, and precipitation.  
 Peak fly in current-year beets usually coincides with the first rain-free, calm/low-wind day to reach 80°F after the accumulation of 650 DD.

**CONTROL:** Growers and crop management advisors are advised to keep in mind that, although root maggot fly emergence is slightly behind normal, many late-planted fields are substantially further behind normal than the maggots. Those fields will be especially vulnerable to attack by SBRM larvae. Growers in hotspots or high-risk areas for SBRM infestation should plan to apply a postemergence insecticide, especially if an insecticidal seed treatment or a low to moderate rate of a soil insecticide was used at planting. This is especially the case for late-planted or replanted fields, because plants in those fields will be atypically small and vulnerable to attack by root maggot larvae.



Growers choosing to use a **granular** postemergence insecticide should have already applied it by now; however, adequate control may still be achievable by applying granules immediately, or at least 3 days before peak fly if the application is made shortly before an expected rain. Postemergence **liquid** insecticides work best if applied close to (i.e., 2-4 days before, during, or within 2 days after peak fly activity. As such, growers expecting to use a liquid spray should monitor fields closely during the next week to 10 days for potential fly activity resurgences. Growers in the southern RRV who need to apply a postemergence liquid spray should do so as soon as possible, and granular insecticides are probably not a viable option at this time. Those in the central and northern RRV should plan to spray fields between Friday (June 17) and Sunday (June 19). For more information, monitor local agricultural media sources (radio, *The Crop & Pest Report*, and the “Fly Counts” web page (address listed above) for further updates on root maggot control and other insect pest management topics.

Remember to always READ, UNDERSTAND, and FOLLOW all label directions and precautions. It is illegal to use a pesticide in a manner inconsistent with its label. For more guidance on postemergence control strategies, consult the “Insect Control” section of this year’s [Sugarbeet Production Guide](#).

[Mark Boetel](#)

Research & Extension Entomologist



## ON THE LOOKOUT FOR ROOT ROT

Early season root rots may begin to appear in multiple crops. However, it can be difficult to determine if plants are impacted by root rots or other ailments, and even more difficult to identify which root rot(s) are cause the problem. This article gives you a few thoughts to consider when root rots are a concern.

### Weather:

Roots rots are commonly caused by two groups of organisms, oomycetes (such as *Aphanomyces*, *Pythium*, *Phytophthora*, downy mildews) and fungi (such as *Rhizoctonia* and *Fusarium*). The oomycetes are favored by very wet soils, while *Fusarium* and *Rhizoctonia* can cause issues even without much water. Each root rot pathogen has a preferred temperature range as well, which can range from very cool to hot. Understanding which pathogens are favored by the environment in your field will often give you a short list of potential suspects.

### Pattern:

When root rots impact crops, they are generally not evenly distributed across a field. Root rots tend to be more commonly found in patterns where the environment is similar. This can take many forms, such as a large low spot in a field or several plants dying in a row. Pattern in the field is an important factor to consider.

### Disease history:

Many root rot pathogens will survive in the soil for several years. Root rot pressure in the past is often an indication of the present/future.

**Management tools:**

Crop rotation, seed treatments and variety selection (resistant, tolerant or susceptible varieties) may impact the severity of your disease and the pathogen(s) that are causing it. Notably, no management tool is bulletproof, but they can make a difference. Taking into consideration your management tools will help you identify what problem you are seeing, and potentially, what options you should consider in the future.

**Symptoms and signs:**

Get close! A shovel, a light, a knife and a magnifying glass are all helpful when identifying root rot. Root rot symptoms can be subtle and overlooked. When you dig the plants are the seeds rotting and the seedlings damping off (an indication of *Pythium*)? Do you see a black lesion creeping up the soybean stem which starts at the soil line (and indication of *Phytophthora*)? Do you see a reddish canker on tap root (an indication of *Rhizoctonia*)? Is the inside of the stem a color it shouldn't be? The closer you get, the more likely you are to identify the problem. Notably, there may be multiple pathogens causing rot in the same field or plant.

**Take resources with you:**

A good resource is very helpful in the field. NDSU has created disease diagnostic card sets for:

- Dry edible bean (<https://www.ag.ndsu.edu/publications/crops/dry-edible-bean-disease-diagnostic-series>),
- Field pea (<https://www.ag.ndsu.edu/publications/crops/pea-disease-diagnostic-series>),
- Lentil (<https://www.ag.ndsu.edu/publications/crops/lentil-disease-diagnostic-series>),
- Soybean (<https://www.ag.ndsu.edu/publications/crops/soybean-disease-diagnostic-series#section-3>) and
- Sunflower. (<https://www.ag.ndsu.edu/publications/crops/sunflower-disease-diagnostic-series>).

These diagnostic series focus on the diseases in our state (and region). They are designed specifically to help you identify the diseases, and include high quality images and brief information on favorable conditions, symptoms and signs, and other important factors to consider.

**Submit a sample:**

NDSU's plant diagnostic laboratory can help you determine the cause of a root rot problem. If that is an option, we invite you to follow the instructions on the website and submit a sample (<https://www.ndsu.edu/agriculture/academics/academic-units/plant-pathology/plant-diagnostic-lab>).

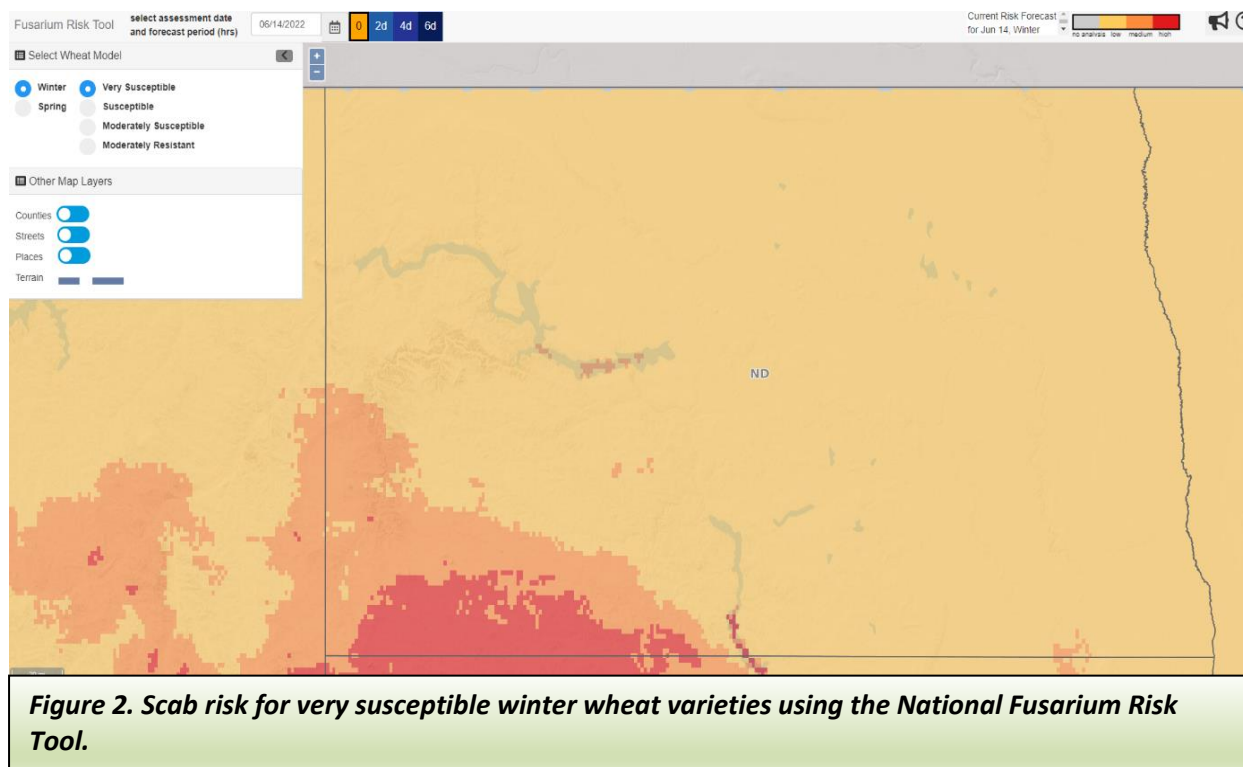
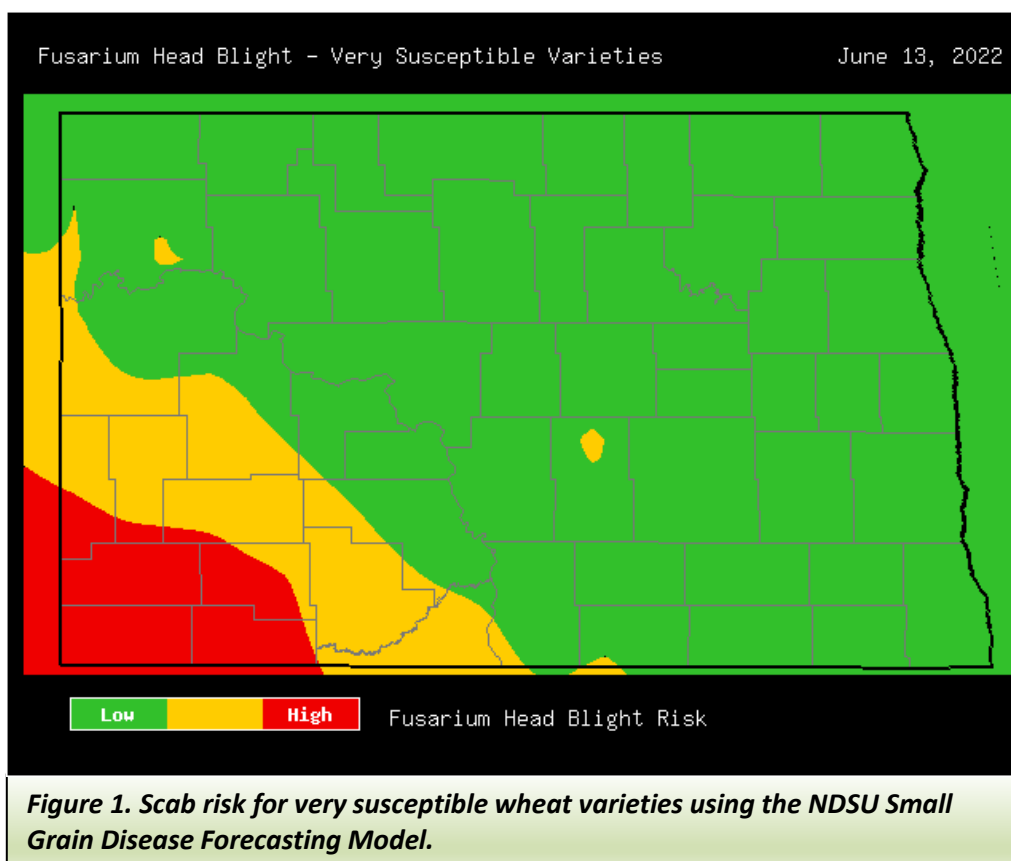
[Sam Markell](#)

Extension Plant Pathologist, Broad-leaf Crops

**FUSARIUM HEAD BLIGHT (SCAB) RISK IN WINTER WHEAT**

There are some reports of winter wheat starting to show awns and we are likely only a few days away from heading and then flowering. The current scab risk projected for the state is greatest for susceptible and very susceptible winter wheat varieties (variety rating of 7 to 9 as reported in [A1196-21 North Dakota Hard Red Winter Wheat Variety Trial Results for 2021 and Selection Guide](#)) in southwest ND (Figures 1 and 2). I would expect scab risk to remain elevated for southwest ND in the coming days and we may see other pockets of scab risk appear with recent rain events. There are two models available to help predict scab risk in a heading to flowering wheat crop and they can be accessed at <https://www.ag.ndsu.edu/cropdisease> (NDSU Small Grain Disease Forecasting Model) and <https://www.wheatcab.psu.edu/> (National Fusarium Risk Tool).





**OBSERVATIONS IN SMALL GRAINS**

The IPM scouts have been busy surveying small grain fields and disease observations have been minimal. Most photos that I have received are the result of an abiotic (non-living) cause such as environmental conditions, a genetic response, or a physiological leaf spot. To help differentiate between an abiotic leaf spot and common foliar diseases (i.e.: tan spot), look at patterns in the field (one plant, many plants, or entire field), previous crop history (wheat following wheat has greatest disease risk), and general characteristics of the lesions (color and borders around lesions). For example, in Figure 1, both images are a result of leaf spots caused by an abiotic cause. The white irregular spots and the bleached center with a very dark border do not resemble characteristics of the common foliar disease of tan spot. Tan spot will often begin as small black to brown spots (size of a pin-head) and then gradually progress into necrotic (dead) spots with a yellow halo.



**Figure 1. Leaf spots on wheat leaves that are not caused by a plant pathogen (Photo: Breanna Hosman – Dickinson REC IPM Scout)**

[Andrew Friskop](#)  
Extension Plant Pathology, Cereal Crops

**MANAGING OF RHIZOCTONIA DAMPING-OFF, CROWN ROT AND ROOT ROT OF SUGARBEET**

*Rhizoctonia solani* causes Rhizoctonia damping-off and root rot diseases of sugarbeet. These diseases are soil borne and once present in a field can be a problem for many years. Damping-off results in death of seedlings especially when soil temperature and moisture are high at planting. Crown rot typically results in death of plants and root rot may also result in death or significant reduction in root yield of unthrifty plants. Crown rot occurs when infected soil gets into the crown of plants after a heavy rainfall event or through cultivation. Infection of roots occur when soil temperature becomes favorable (>62°F) but symptoms are not observed until the plants ability to absorb moisture and nutrients become comprised resulting in wilting. Growers at some cooperatives have to destroy fields with more than 50% incidence of Rhizoctonia root rot since infected roots do not store well in long term storage. Crop rotation with non-host crops, use of resistant varieties, early planting into cool soils, and fungicides used as seed treatments or targeting the soil near the roots that get in contact with the pathogen when applied foliarly are strategies used to manage the disease.

In infected seedlings, there is wilting followed by death because of infection of the hypocotyl at the soil line (Figure 1). In older plants, the most common symptom is wilting of the leaves, starting with the oldest leaves (Figure 2). Leaves may or may not become yellow. Severely infected plants typically become desiccated and withered before harvest (Figure 3). Some infected plants may survive but damaged roots will be of lower quality. Root rot symptoms are easily observed on infected plants at or just below the soil line (Figure 4), and sometimes lower on the tap root (Figure 5). Rotations with crops, such as wheat and barley, which are not host of *R. solani* AG 2-2 IIIB or AG 2-2 IV, will help to reduce the amount of inoculum in the soil. Since the pathogen is more severe in wet conditions, draining and leveling of fields with help in disease management. Fields with a history of Rhizoctonia crown and root rot should be planted to a variety with good disease resistance. The fungicides azoxystrobin (Quadris or AZteroid) or Priaxor at labeled rates, applied in a 7-inch band before infection takes place provide effective disease control. It is best to apply fungicides when plants are at the 4-6 leaf stage and before they close rows so that the fungicide gets into the soil and close to the roots to prevent infection. Timing application just before a rain event, or before a scheduled irrigation where this is available, will help to get the fungicide in a position to protect the roots.



**Figure 1. Damping-off of seedlings with infection of the hypocotyl just below the soil level.**



**Figure 2. Wilting of oldest leaves first and some yellowing of leaves of plants infected with *R. solani*.**





*Figure 3. Foliage of infected sugarbeet plants become dry and withered in August and September.*



*Figure 4. Rhizoctonia root infection at or just below the soil line.*



*Figure 5. Rhizoctonia root infection on the lower part of the root.*

[Mohamed Khan](#)

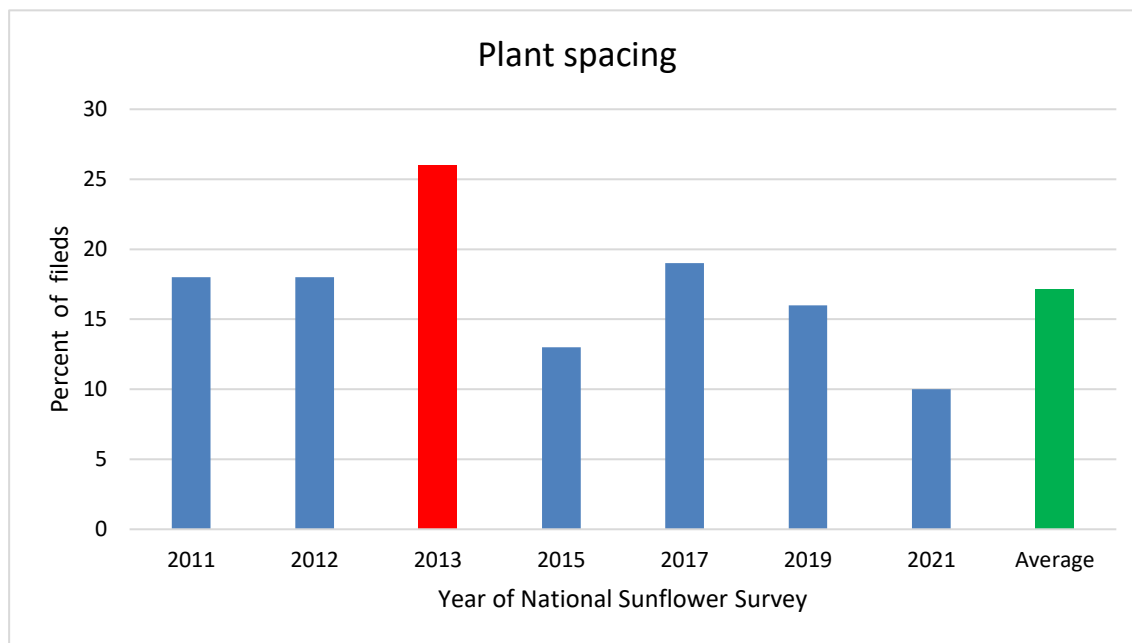
Extension Sugarbeet Specialist  
NDSU & U of MN  
701-231-8596



### PLANTING SUNFLOWER WITH ATTENTION TO DETAILS

As planting of sunflower is nearing the end, it is tempting to rush and plant the last acres quickly. However, paying attention to details is very important to obtain the desired sunflower yields.

Poor seedbed conditions and planting issues may result in uneven stands of sunflower. The National Sunflower Survey, which includes North Dakota fields, pointed out that stand establishment was a major problem in sunflower production. Plants too far apart, too close together, doubles, and large gaps in the rows were common in 17% of the 1245 surveyed fields (Figure 1), and can result in reduced yield potential. Based on observations from 2006 to 2017, the average yield of fields without limiting factors was 2,171 pounds per acre and the fields with plant spacing issues had a significantly lower yield of 1,732 pounds per acre (about 20% lower) ([Hansen, 2020](#), page 68).



**Figure 1. Plant spacing as the most limiting yield factor in percent of the fields surveyed, as reported during the [National Sunflower Surveys](#). Based on 155 fields in 2011, 211 (2012), 209 (2013), 201 (2015), 172 (2017), 133 (2019), and 164 (2021) = 1245 total observed fields since 2011.**

Paying attention to planter calibration and planter speed can assist in achieving a successful, uniform sunflower stand. Seed companies often have plate recommendations for all seed sizes. Variances in per-pound seed count and/or seed shape can result in significant seeding error if you do not calibrate the planter properly. Recalibrate every time when switching to a different hybrid, and even using different seed lots of the same hybrid. Sunflower should be planted at a depth of 1.5 to 2.5 inches. If you're planting deeper, increase the seeding rate. In general plant about 10-15% above the desired final population as not all seeds will develop into an established plant. Aim for a final population of about 20,000 plants per acre for oils, and for the confection in-shell market that stresses seed size, 17,000-18,000 plants per

acre. Sunflower needs to have good seed to soil contact. Because sunflower seeds have a woody hull, closure of the furrow is important. At planting, check to make sure all the residue is properly cut. Hairpinning – pushing plant residues into the seed slot instead of slicing through it – tends to be more a problem with air drills, particularly when seeding into no-till. Getting a good stand and quick emergence is essential for a late planted crop to maximize the solar radiation interception.

[Hans Kandel](#)

Extension Agronomist Broadleaf Crops



### REDUCED SOIL NITRATE-N THIS SPRING 2022 COMPARED TO FALL 2021

Having just passed my 28<sup>th</sup> anniversary as Extension Soil Specialist at NDSU, this is the first season where I have seen spring soil nitrate-N sample values much lower than those taken in the fall. One call from a consultant in the east-Valley/beach ridge region related that fields that had soil 2-foot nitrate-N values from 80-100 pounds N/acre in the fall now had 40 pounds of N/acre and less. In my personal experience, in regions where 2-foot soil nitrate-N values last fall were 80-100 pounds N/acre, the values were about 40 pounds N/acre this spring. From the nods of several colleagues during our weekly Extension conference call this week, I am not the only NDSU researcher who has experienced this most unusual decline.

Within the past 50 years, this is the first time that fall to spring nitrate-N values have varied considerably. It is unknown whether the reduction in nitrate-N values from fall to spring is due to leaching/denitrification, or tie-up with residue decomposition or immobilization as non-exchangeable ammonium. I suspect it is a combination of both loss and tie-up/immobilization. But with this experience in front of us, it is very important with crop prices as high as they are to take unusual actions to address a possible N shortfall in small grains, corn, sugarbeet, sunflower and canola.

1. Be aware that the N credit taken due to a fall N test may be larger than it should be.
2. If you were wise enough to put out an N-sufficient strip to compare to the rest of the field, that is a good indication of N status of the rest of the field. Using a drone sensor or ground sensor, it should be possible to track N status to determine the need for additional N fertilizer at top-dress/sidedress (A topic that will be covered in next week's *Crop & Pest Report*).
3. Although little work has been conducted on the pre-sidedress nitrate test (PSNT) in North Dakota, it has been researched in South Dakota, Minnesota and Iowa. Agvise Laboratories has committed to a 24-hour turn-around for PSNT samples submitted. The 0-12 inch depth samples should be express-shipped to the lab in a cooler because the soil nitrate value will increase if the sample becomes warm/hot sitting in a pickup or at a UPS warehouse.

If growers and their consultants use the PSNT test, use of a zone sampling for PSNT with multiple cores per zone (at least 10) is strongly recommended. The downfall of the PSNT method would be going out in to a random field area, taking one core and treating the field as if that core was representative (I have personally seen someone doing this).

Additional information regarding the PSNT can be found at:

<https://www.agvise.com/wp-content/uploads/2017/06/Late-spring-soil-nitrate-test-ISU-2017.pdf>

<https://blog-crop-news.extension.umn.edu/2017/06/tips-for-accurate-pre-sidedress-nitrate.html>

<https://extension.sdstate.edu/sites/default/files/2019-09/S-0003-20-Corn.pdf>

[Dave Franzen](#)

Extension Soil Specialist  
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### DO NOT EXPECT EXTENSION TO DICAMBA CUTOFF DATE

The late soybean planting and emergence this year has led to a few questions about the cutoff date for applying approved dicamba products (Engenia, Tavium, Xtendimax) in Xtend or Xtendflex soybean. The questions partly stem from the fact that we had a 10 day extension in 2020, so folks are wondering if we can expect an extension to this year. **The bottom line is that the cutoff remains June 30<sup>th</sup>, and I would not expect that to change.** There are a few reasons why we are very unlikely to see any extensions this year, but perhaps most prominent is that there are no less than 3 current court cases related to these products, which places increased scrutiny on the products at the federal level. EPA indicated in 2021 that they would not accept requests for extensions and in fact, rejected 24c labels from North Carolina, Oklahoma, and Texas. In December 2021, EPA announced to all state department of agricultures that the policy would be enforced in 2022 as well. Given the increased scrutiny, I would not anticipate any in-season modifications to the dicamba labels. With 14 days until the cutoff, this means that anyone who wishes to apply these products should plan accordingly.

[Joe Ikley](#)

Extension Weed Specialist

[Andrew A. Thostenson](#)

Pesticide Program Specialist

### LEAFY SPURGE: EARLY CANDIDATE FOR WEED OF THE YEAR?

The late planting season has led to many questions about what to expect for annual weed control in cropland. Early observations indicate 2022 may end up being the year of kochia and grasses in cropland. However, most of my phone traffic over the last week or two has focused on one particular noxious weed: leafy spurge. I think my favorite observation sent my way is also one that aligns with what I have observed in the southern part of the valley: “Leafy spurge is crazy this year.” I conducted a quick informal survey of NDSU folks across the state, and the general consensus is that leafy spurge infestations are up in most areas of the state, while a few others reported status quo for acreage. I know I have noticed a lot of spurge in my general traveling routes on I-29 from Fargo to Grand Forks, and I-94 from Fargo to Jamestown. This includes several new infestations along both interstates, comprising of about 1 to 10 individual flowering plants.



*Leafy spurge flowering (Quincy Law, NDSU, Dept. Plant Sciences)*

The increased observations/questions about leafy spurge has led to the natural question: why is it so bad this year? Since the drought last year was compared to the drought of 1988 by many folks, I reached out to Dr. Rod Lym, our Professor Emeritus who spent his career researching leafy spurge and other noxious weeds. He offered a few gems of wisdom, but the most direct was “leafy spurge increased dramatically following the 1988 drought.”

Here’s my summary of the rest of his comments: The best-case scenarios in 1989 were areas that continued to spray in 1988 despite the hot, dry conditions. At best, infested acres stayed stagnant. Those who chose to forego spraying in 1988 were met with large increases in leafy spurge acres in 1989. Leafy spurge continued to spread during the drought with little to no competition to keep it in check. One interesting note was that flea beetles were just being established in the late 1980’s. The wet cycle that followed the late 1980’s appeared to help flea beetle populations. However, populations can decline in dry years, as the larvae need to find feeder roots within a few hours, and these are located deep below the soil surface in dry conditions. Dr. Lym speculates that flea beetle populations will be reduced this year due to last year’s drought.

For more information of leafy spurge management, please see Extension publications W866: Integrated Management of Leafy Spurge (<https://www.ag.ndsu.edu/publications/crops/integrated-management-of-leafy-spurge/w866.pdf>), W1183: Leafy Spurge Control Using Flea Beetles (<https://www.ag.ndsu.edu/publications/crops/leafy-spurge-control-using-flea-beetles-aphthona-spp/w1183.pdf>), and W765: Leafy Spurge: Identification and Chemical Control (<https://library.ndsu.edu/ir/bitstream/handle/10365/5376/W765-2006.pdf?sequence=4&isAllowed=y>).

[Joe Ikley](#)

Extension Weed Specialist

#### **WATERHEMP CONTROL WITH ULTRA BLAZER IN SUGARBEET**

EPA approved our requested for Section 18 Emergency Exemption approval use of Ultra Blazer for postemergence control of glyphosate-resistant waterhemp on sugarbeet in Minnesota and North Dakota in 2022. One Ultra Blazer (UPL, King of Prussia, PA) application per season can be used at a rate of 16 fl oz/A (0.25 lb active ingredient) on sugarbeet at the 6-leaf stage or greater. Ultra Blazer should be applied with a non-ionic surfactant at 0.125% v/v in 10 to 20 gallons of water carrier since coverage is essential for control. Target waterhemp less than 4-inch tall. Ultra Blazer can only be tank-mixed with glyphosate and ammonium sulfate (AMS).

The emergency exemption expires on July 31, 2022. No applications of Ultra Blazer should be made under the emergency exemption after the expiration date. Pre-Harvest Interval (PHI) = 45 days.

Drs. Gunsolus, Sarangi, and Ikley have confirmed PPO inhibitor resistant waterhemp in Minnesota and North Dakota. In North Dakota, Dr. Ikley conducted a survey of late-season pigweed escapes. Redroot pigweed, Powell amaranth, waterhemp, and Palmer amaranth samples were submitted from 16 counties in North Dakota. The National Agricultural Genotyping Center (NAGC) verified genetic confirmation of resistance following greenhouse screening for resistance.

Ultra Blazer is not our primary waterhemp control strategy in sugarbeet. We position Ultra Blazer for control of escaped waterhemp following glyphosate, ethofumesate, S-metolachlor, Outlook, and/or Warrant application. We use other integrated control strategies including inter-row cultivation, use of the Weed Zapper, and hand-pulling in sugarbeet.

Please contact your Agriculturalist, Ag-retailer, Crop Consultant, or me if you are interested in learning more about Ultra Blazer in sugarbeet.

[Tom Peters](#)

Extension Sugarbeet Agronomist  
NDSU & U of MN





### SCOUT FOR SPRUCE SAWFLY

In previous years, yellowheaded spruce sawfly larvae have been observed at about 830 Growing Degree Days (base temp 40°F). The southern 2/3 of the state has reached that threshold, and the northern third will reach that by the end of the week. The larvae feed on first- and second-year needles of all spruce species and can be very destructive. Sometimes whole needles are eaten; in other cases, the needles are damaged to the point where the ends dry out and turn a pink/brown color (see photos). Most of the damage has been seen in central and western North Dakota.



*Larvae of the yellowheaded spruce sawfly. Notice that the tip of the needle in the lower right of the photo has been completely chewed off, reducing the needle to half its original length. Photo taken near Minnewaukan, ND (Scott Knoke).*



*These needles were damaged by the yellowheaded spruce sawfly larvae. The insects damaged these needles but did not consume them completely, resulting in brown/pink, dried-out needles. Photo taken in Richardton, ND (Joe Zeleznik).*

Larvae feed for 30-40 days and are most susceptible to insecticides for the first two weeks of their development. Carbaryl and acephate are both labeled for sawfly control. For a small infestation, simply picking the larvae off the tree by hand and destroying them may be easier, and is equally effective. A strong jet of water may also help reduced sawfly populations on trees.

When using insecticides, be sure to read, understand and follow all label directions.

[Joe Zeleznik](#)

NDSU Extension Forestry Specialist





## AROUND THE STATE

### NORTH CENTRAL ND

Small, widely scattered showers was the norm over the last week. In most cases, it didn't stop farmers from planting across the region. Potentially, a new system could bring additional mid-week moisture, but a significant warmup appears to be a part of the forecast. At the NCREC, 0.19" of rain was observed since last Monday (June 6<sup>th</sup>). The following are precipitation observations across the area as noted by local NDAWN stations from June 6<sup>th</sup> through June 13<sup>th</sup>: Bottineau: 0.05"; Garrison: 0.02"; Karlsruhe: 0.46"; Mohall: 0.03"; Plaza: 0.12"; and Rugby: 0.02".

Calls into the Extension Crop Protection office have really focused on three insects. Canola flea beetle continues to emerge. In some cases, growers are utilizing foliar insecticides for control. In at least one location, it was noted to Dr. Prochaska that a replant was required due to extensive flea beetle damage. Grasshopper nymphs are being observed at crop edges by some area farmers. Luckily, numbers are below economic threshold and have not required a spray application. Cutworms are also being observed in local fields. Scouting will be important for all three of these pests.

Articles in last week's NDSU *Crop & Pest Report* provide information on economic thresholds and possible control treatments, should they be warranted.

Crops are growing well in the region, but weeds are taking advantage of the good soil moisture, and in some cases, of the inability of the farmers to do pre-emergence control due to the wet conditions. Spring wheat is found in a wide range of stages in the region, but mostly are in the 2-3 leaf stage to tillering. Canola stage is found ranging from seedling to rosette (2.1 to 2.6) stages. Flax is found in stages 1 to 5. Corn is ranging from V1-V6 stage. Soybeans is found in VC to V4 stages.



**Figure 1. From top left, clockwise: spring wheat; corn under corn stubble; corn; and dry beans.**

[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**

The plantings progressed at a rapid rate compared to last week with 80-85% acres completed across the NE region. Depending on the county, there are still 10-15% of acres that are not planted and could end up as prevent plant (PP) acres. The rain showers received on Monday night and Tuesday morning amounted to 0.30 to 1.56 inches across the region making the above stated percentage of PP acres a possibility more than ever. Some sugarbeet acres had to be replanted due to crusting issues. Early planted crops are emerging and are at the following growth stages: Small grain fields are greening up ranging from 2-leaf to 4-tiller stage; Corn and sugarbeets range from 2-4 leaf stages; Soybeans and dry beans are just emerging; Field peas are reaching the tendrill stage.

Majority of the research trials and foundation seed acres have been planted at the Langdon Research Extension Center (LREC). The NDAWN stations at Langdon and Wales recorded a rainfall of 1.11 and 0.86 inches respectively in the last seven days. Small grain and field pea trials are emerging at the station. No disease issues were reported on small grains yet. However, at the research center barley trials, we noticed some physiological leaf spotting and heat scald symptoms on the leaves (Figure 1). Note that these symptoms are caused by abiotic factors and no disease pathogens are involved. Canola flea beetles are causing heavy feeding damage in many areas forcing producers to apply foliar spray and even replant canola fields in certain areas. The late planting dates of canola and the peak emergence period of beetles coincided to create the perfect recipe for this situation. Producers are frustrated with the lack of enough protection from insecticide seed treatments (Figure 2). The first sight of grasshopper nymphs has been observed by our IPM scout in this region. Barley thrips have also been observed in the Langdon center research trials. Alfalfa stands are looking very good reaching knee high. Pastures are recovering slowly with this ample amount of moisture.



***Figure 1. Barley plants showing physiological spots and heat scald symptoms at the Langdon Research Extension Center***





**Figure 2. The Striped and Crucifer flea beetles feeding on a canola seedling and a heavily damaged canola seedling in Cavalier County. (Photo Courtesy: Nancy Feil, IPM Scout, LREC).**

[Anitha Chirumamilla](#)

Extension Cropping Systems Specialist  
Langdon Research Extension Center

### **SOUTH-CENTRAL/SOUTHEAST ND**

According to NDAWN, the region's rainfall during April 1-June 13 ranges from 6.2 inches (Linton; Emmons County) to 14 inches (Brampton; Sargent County), with the Carrington REC receiving 11.9 inches. Some acreage still being planted include dry bean, sunflower and annual warm-season forages.

Winter rye is flowering and winter wheat growth stages range from flag leaf to heading. Mid-May seeded small grain are tillering and corn has 4 leaves (V4 stage). Row crops planted the first week of June rapidly emerged due to warm soil temperatures and abundant moisture. With cooperative weather, post-emergence herbicide application will be a common field activity for small grain and corn. Pastures and hayland have recovered well from last year's extreme conditions. Haying has commenced primarily with winter rye but also with cool-season grasses and alfalfa.



**V4-stage corn planted May 16 at the Carrington REC**



Upcoming June educational field events at the Carrington REC:

- Durum Day – June 22; 10 a.m.
- Crop Management Field School – June 24; 9 a.m.

See the following website for information: <https://www.ndsu.edu/agriculture/ag-hub/research-extension-centers-recs/carrington-rec/events>

[Greg Endres](#)

Extension Cropping Systems Specialist  
NDSU Carrington Research Extension Center

## SOUTHWEST ND

Continued moisture has kept most in the region out of the fields. According to NDAWN from June 6<sup>th</sup> to June 13<sup>th</sup> Dickinson received 1.18 inch, Dunn received 0.53, Hazen 0.25, Beach 3.22, Amidon 2.04, Bowman 2.58, Hettinger 2.37, Mott 2.11, Mandan 0.49, and Carson 1.03. Winter rye in the region is headed out and beginning to flower, winter wheat is from boot to heading. Fungicide applications should be considered if taking the crop to grain, however much of the winter seeded cereals in the region will likely be cut soon for forage. Most fields are looking great, however weeds and insect populations including grasshopper nymphs continue to climb. There are pockets that have been hit by some severe weather and there is some standing water still in low spots. The forecast is showing some high winds followed by some high temperatures that should dry things out a bit and really make growth boom.

Mark your calendars for Wednesday July 13<sup>th</sup> for the Dickinson REC Agronomy Field Day. The morning will start at 8 am mountain time with weed and insect ID at our main office (1041 State Ave, Dickinson ND) and the tour will end at noon with a lunch. Topics include soil acidity, grain bin safety, wheat disease and more! CEU's have been requested for CCA's. That afternoon we will also host a horticulture tour. More info can be found at the NDSU Dickinson REC website.

<https://www.ndsu.edu/agriculture/ag-hub/research-extension-centers-recs/dickinson-rec>



*Winter wheat in Dickinson on June 14<sup>th</sup> 2022.*

[Ryan Buetow](#)

Extension Cropping Systems Specialist  
NDSU Dickinson Research Extension Center



## WEATHER FORECAST

## The June 16 to June 22, 2022 Weather Summary and Outlook

Last week in this report I had mentioned that a major warm up was expected to move into the northern plains, but probably after that forecast period. Temperatures were above average this past week (Figure 1), but these next 7 days, as hinted to last week, look to be well above average. Temperatures in the 90°F are expected this weekend with some localized triple digits possible. Western North Dakota will record its warmest temperatures on Saturday and eastern North Dakota into western Minnesota recording the highest temperatures Sunday and Monday. By next Tuesday temperatures will return to more seasonal levels for all areas.

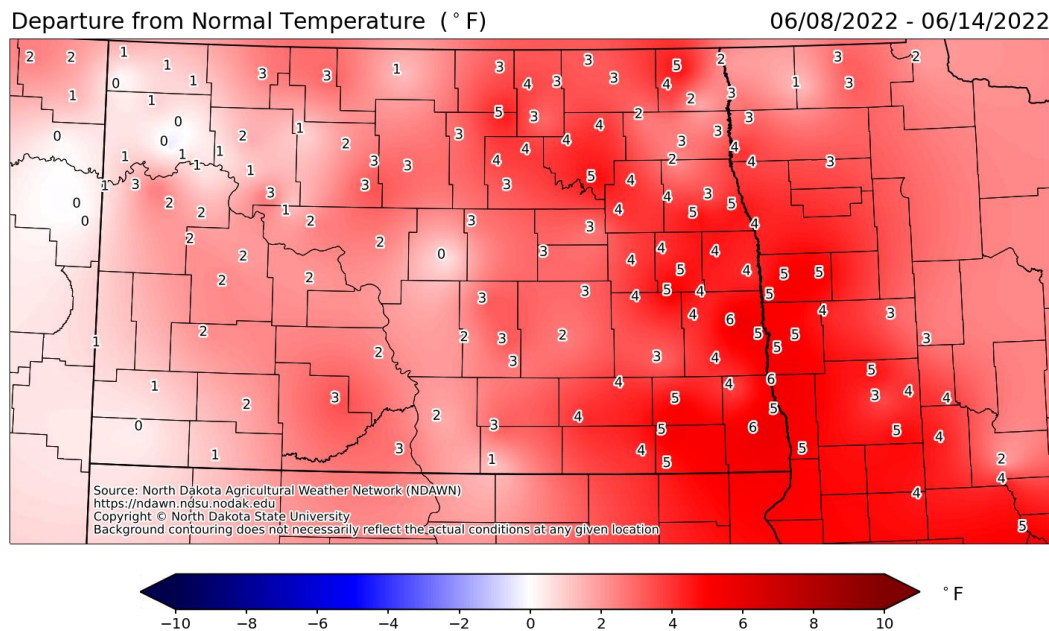


Figure 1. Departure from Normal temperature at NDAWN stations for the period of June 8-14, 2022

All NDAWN stations with the exception of Brorson in Montana recorded rain this past week (Figure 2). There will probably be at least some hit and miss showers, especially across the northern one-half of North Dakota into northwestern Minnesota today (Thursday), otherwise, most areas not recording much until next week. It will be the transition back to cool air that will probably trigger off some storms next Monday and Tuesday.

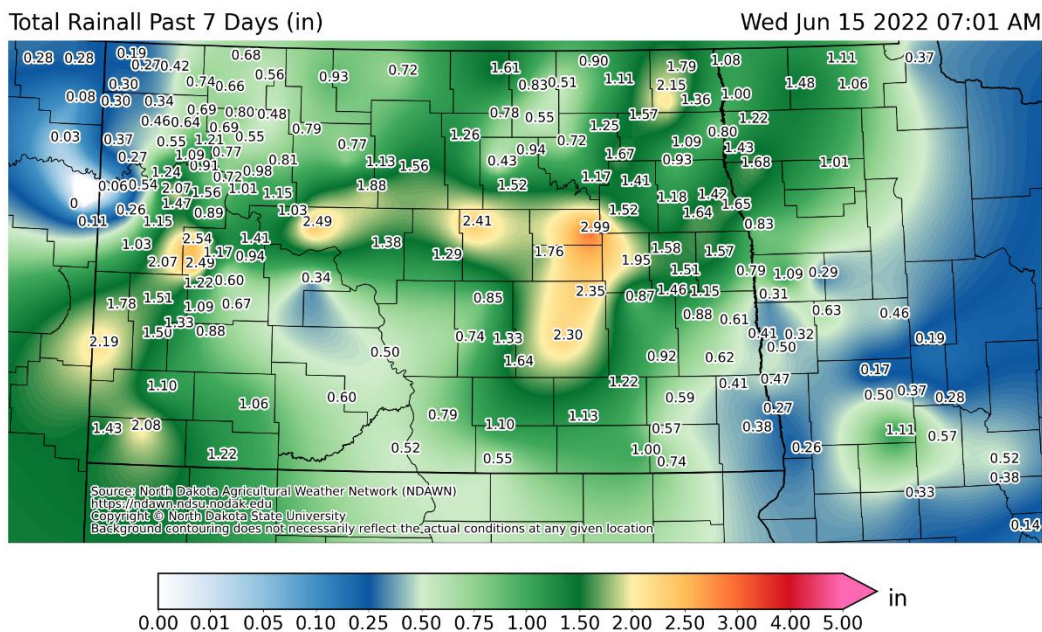


Figure 2. Total rainfall for the 168-hour period ending at 7:00 AM on June 15, 2022 at NDAWN stations

Figures 3 and 4 below are forecasted Growing Degree Days (GDDs) base 32° (wheat and small grains) and 50° (Corn and Soybeans) for this forecast period. Because temperatures will be well above average, GDDs will exceed even last week's totals at most locations. A reminder that GDDs top off with a maximum temperature of 86°F meaning totals will be lower than you may think with temperatures in the 90's F.

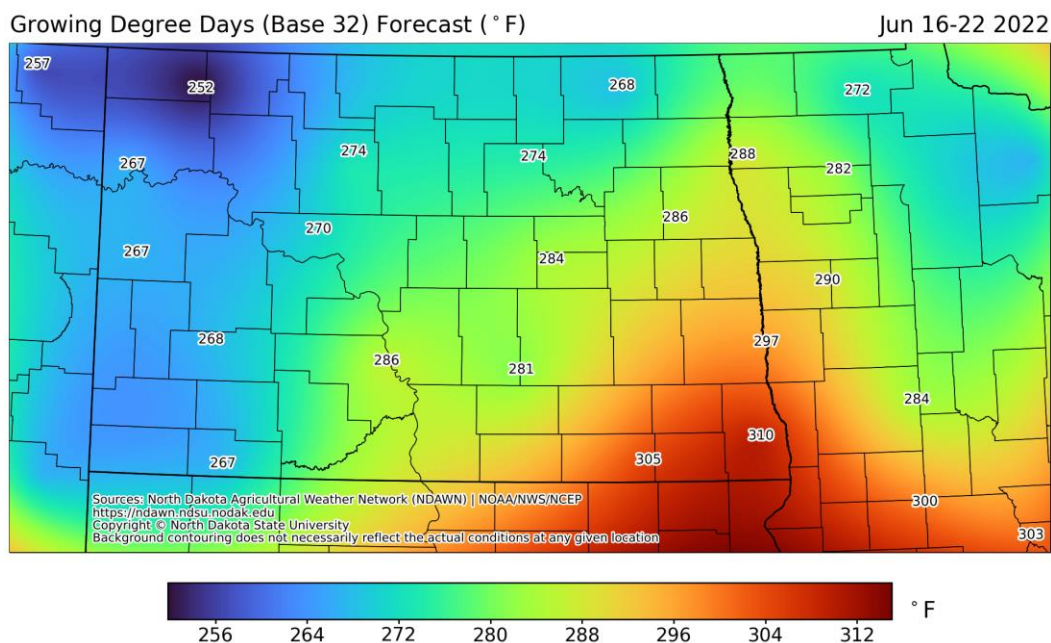


Figure 3. Estimated growing degree days base 32° for the period of June 16 to June 22, 2022.



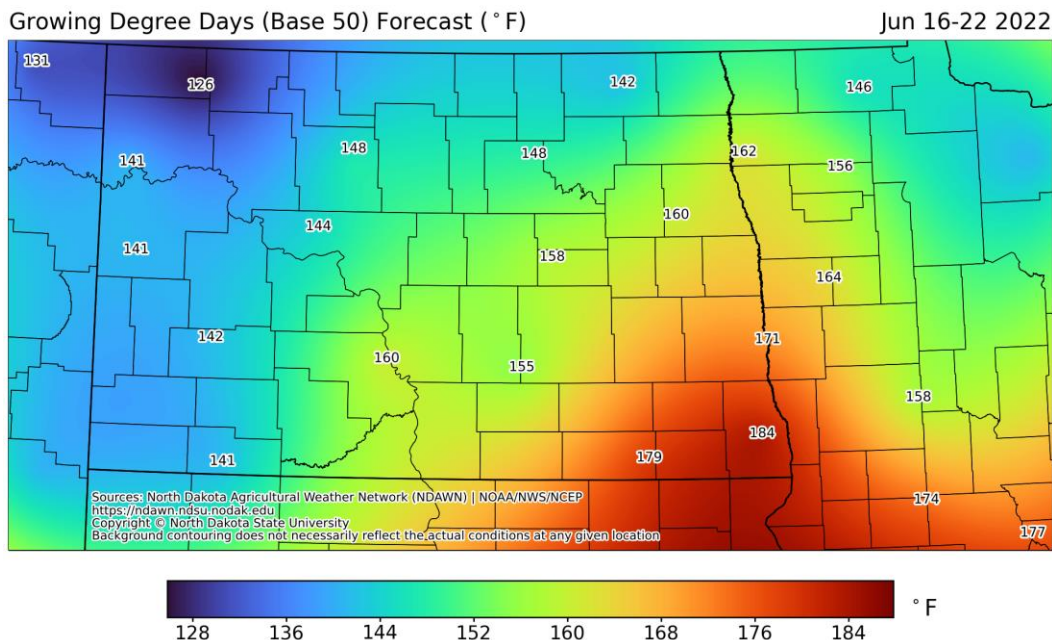


Figure 4. Estimated growing degree days base 50° for the period of June 16 to June 22, 2022.

Using May 15 as a planting date, the accumulated growing degree days for wheat (base temperature 32°) is given in Figure 5. You can calculate wheat growing degree days based on your exact planting date(s) here:

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

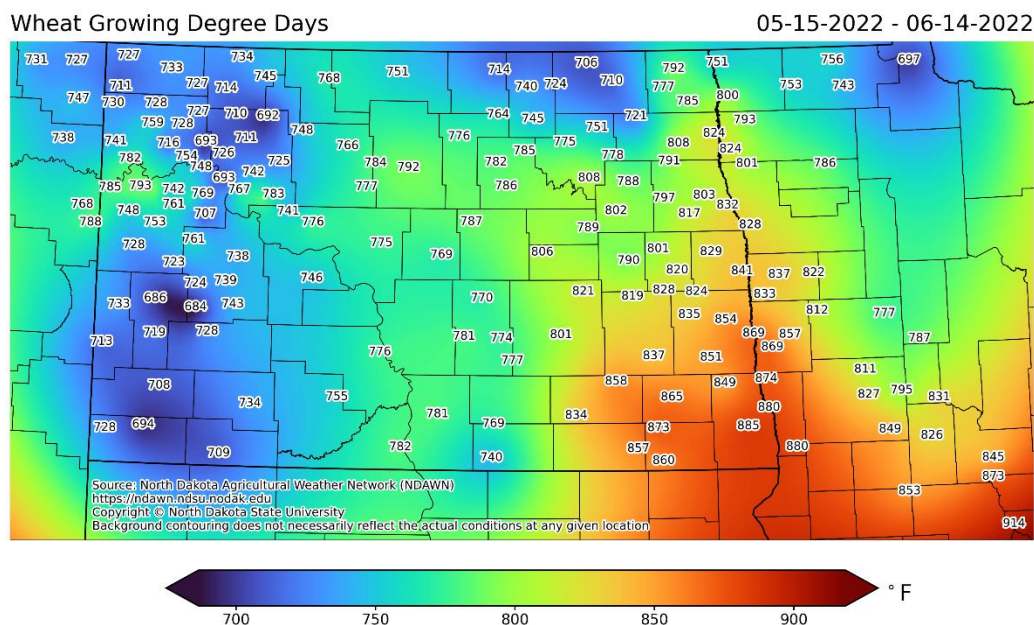
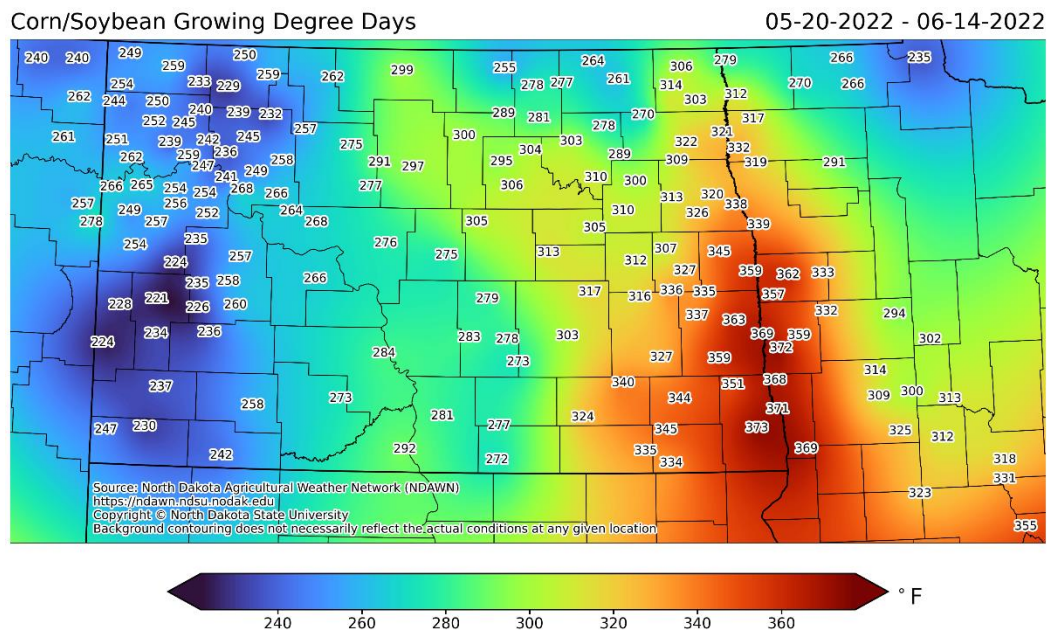


Figure 5. Wheat Growing Degree Days (Base 32°) for the period of May 15 through June 14, 2022.

Using May 20 as a planting date, the accumulated growing degree days for corn (base temperature 50°) is given in Figure 6. You can calculate corn growing degree days based on your exact planting date(s) here: <https://ndawn.ndsu.nodak.edu/corn-growing-degree-days.html>.



**Figure 6. Corn Growing Degree Days (Base 50°) for the period of May 20 through June 14, 2022.**

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

[Daryl Ritchison](#)

Meteorologist

Director of the North Dakota Agricultural Weather Network (NDAWN)

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