NDSU Field Days: July 2019

Flea Beetles Still Active in Canola

Scout for Alfalfa Weevil Larvae

Cover Crop Seeded into Sunflower

NDAWN Potato Blight App

Wheat Disease Update

Fallout from the Acid Surface Soil Problem in Western No-Till Fields

Project Safe Send

Postemergence Applications in Enlist and Xtend Soybean

Growth Stage Cutoffs for Herbicide Applications in Corn

Worms in my Trees

Bur Oaks, Bugs and Birds

Around the State

North Central ND

Northwest ND

Northeast ND

South-Central/Southeast ND

Weather Forecast

NDSU FIELD DAYS: JULY 2019

Plan to attend a nearby NDSU Field Days to learn the latest in new crop varieties, agronomy, soil science, pest issues and more!

July 8: Central Grassland REC, Streeter, N.D. 4-7 PM

July 9: Hettinger Research Extension Center – Hettinger, N.D. 5-7 PM

July 10: Dickinson Research Extension Center – Dickinson, N.D. 8:30 -noon

July 10: Williston Research Extension Center (dryland crops and horticulture) – Williston, N.D. 3 PM

July 11: Nesson Valley Irrigation Field Day – Williston, N.D. 8:30 AM

July 15: Agronomy Seed Farm – Casselton, N.D. 5 PM

July 16: Carrington Research Extension Center – Carrington, N.D. 9 AM - noon and 1 - 3 PM

July 17: North Central Research Extension Center – Minot, N.D. 9 AM - noon

July 18: Langdon Research Extension Center – Langdon, N.D. 8 AM - noon

Aug 15: Oaks Irrigation Field Tour – Oakes, N.D 9 AM - noon
FLEA BEETLES STILL ACTIVE IN CANOLA

Feeding injury from *Phyllotreta* flea beetles is still being reported in spring-planted canola fields located in northeast and north central areas of ND. Due to the severe damage caused by flea beetles, some fields were sprayed three times for control or even replanted. The cool, wet weather was not favorable for the insecticide seed treatments registered against flea beetles. Canola seed sat in the cold, wet ground and did not effectively absorb the systemic insecticide since the plant was not actively growing. Flea beetles are strong flyers and can find the newly emerged canola fields, the most susceptible stage to feeding injury. Once the crop reaches the 4-6 true leaf stage, it can usually outgrow the flea beetle feeding damage. The good news is that we are near the end of adult longevity for flea beetles. They typically start to die off in mid- to late June. As they age, their appetites also decline. Currently, there is no forecasting model that predicts outbreaks of *Phyllotreta* flea beetles in the spring and their potential for damage to the canola crop.

Some growers have noted that canola planted with a cover crop or inter-seeded with a grain crop had less feeding damage this year. Past research comparing no-till to conventional tilled fields found lower population densities of flea beetles in the no-till fields, probably due to the cooler microenvironment, which is less preferred by flea beetles.

SCOUT FOR ALFALFA WEEVIL LARVAE

Larval feeding is at the peak period based on the degree day (DD) accumulations (see map; base development temperature of 48F) for alfalfa weevils in North Dakota. Peak feeding occurs from 504 - 595 accumulated DD when larvae are mature (3rd to 4th instars).

Accumulated Base 48 Insect Degree Days (°F) (2019–03–01 – 2019–06–17)
Although adult weevils will feed on the foliage and cause some defoliation, larval feeding causes most of the defoliation. Mature larvae are about ¼ inch long with a black head capsule and a green body with a white stripe.

Fields should be scouted weekly up through the first cutting. Walk a “W” pattern or by selecting random sites in the field, with a minimum of five sampling sites per field.

At each sampling site in the field, select a minimum of 30 stems and cut them off at the base. Invert the cut stems into the 5-gallon pail and vigorously beat the plants in the pail to dislodge the larvae.

Count and record: 1) the number of stems sampled, 2) the total number of larvae counted and 3) the height of the alfalfa at the sampling sites. Repeat this procedure for all sampling sites within the field. When finished, total the number of larvae found and divide by the total number of stems sampled to calculate an average number of larvae per stem for the entire field. Then, calculate average plant height for the field.

Several factors must be considered when making alfalfa weevil management decisions. Plant height, estimated yield, crop market value, management costs and plant injury based on the number of larvae per stem must be considered. Threshold numbers in Table 1 are the average number of larvae per stem sampled in the field using the 30-stem sampling method. These economic thresholds apply prior to the first cutting only.

If you are at economic threshold for alfalfa weevils in alfalfa grown for hay, the most cost-efficient management is to cut the alfalfa early before economic loss occurs. This also preserves our parasitic wasps that attack alfalfa weevils, reducing populations naturally.

<table>
<thead>
<tr>
<th>Plant Growth Stage (Height)</th>
<th>Treatment Cost</th>
<th>Crop Value ($/ton)</th>
<th>Management Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$50</td>
<td>$75</td>
</tr>
<tr>
<td>50% bud or greater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early bud (&gt;20 inches)</td>
<td>$7/acre</td>
<td>4.0</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>$8/acre</td>
<td>4.6</td>
<td>3.1</td>
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<tr>
<td></td>
<td>$9/acre</td>
<td>5.2</td>
<td>3.5</td>
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<tr>
<td></td>
<td>$10/acre</td>
<td>5.8</td>
<td>3.8</td>
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<tr>
<td></td>
<td>$11/acre</td>
<td>6.3</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>$12/acre</td>
<td>6.9</td>
<td>4.6</td>
</tr>
<tr>
<td>Late vegetative (16-20 inches)</td>
<td>$7/acre</td>
<td>3.8</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>$8/acre</td>
<td>4.4</td>
<td>2.8</td>
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<tr>
<td></td>
<td>$9/acre</td>
<td>4.9</td>
<td>3.2</td>
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</tbody>
</table>

Table 1. Recommended economic thresholds for control of alfalfa weevil larvae for North Dakota prior to the first cutting. [Average number of larvae per stem using the 30-stem sampling method.]
<table>
<thead>
<tr>
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<tr>
<td></td>
<td></td>
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<td>$12/acre</td>
<td>6.7</td>
<td>4.4</td>
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<tr>
<td>Mid-vegetative (10-15 inches)</td>
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<td></td>
<td>$8/acre</td>
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(Source: NDSU Extension E1676 Integrated Pest Management of Alfalfa Weevil in North Dakota)

Janet J. Knodel
Extension Entomologist

COVER CROP SEEDED INTO SUNFLOWER

Soil erosion is generally observed more with row crops than with close-growing small grains. Sunflower stubble, if cut below one foot, is not very effective as a snow trap due to its limited surface cover. There has recently been an increased awareness among agronomists and producers of the importance of protecting soil from wind and water erosion. Cover crops have become increasingly important in farming systems and can boost soil fertility and reduce soil erosion. Top soil preservation and the maintenance or building of organic content in the soil are important management strategies to increase soil health. Some potential benefits of interseeding a cover crop mixture, including a legume, in sunflower, are dinitrogen fixation, soil erosion control, improved snow trapping, improvement of the soil structure and organic matter content, and fodder or green manure production the year after the legume establishment.
Clearly, from the producer's perspective, the primary crop component (sunflower) should yield near its potential, when planted at its optimum plant density. It is important to give the primary crop (sunflower) a head start and plant the cover crop from the **V4 to V8** growth stages. Planting too late in the season, from V8 to bloom, will not provide enough light for the cover crop establishment. A secondary planting window is near the end of the season, when the sunflower is starting to lose its lower leaves (approximately starting at R6 and beyond). In the fall, cover crop selection is limited to cool season or winter hardy plant species such as winter rye. In North Dakota, the rate of sunflower development is mainly influenced by temperature. Therefore, **cumulative growing degree days** are a valuable means to estimate growth stages (for instance the appropriate V-stages for interseeding).

The primary crop will receive full sunlight at the top of the canopy. However, the secondary crop will have long periods of dim light with short exposure to near full sunlight caused by holes in the canopy when upper leaves move. Cover crop leaves below the sunflower canopy will be exposed to differing levels of solar radiation, due to the change in sun's angle during the day and over the season affecting growth. Shading by sunflower influences the photosynthesis and dinitrogen fixing ability of the interseeded legume. For most cover crops, shaded conditions reduce growth.

In a study at two locations for two seasons, four legume cover crop species were interseeded into two sunflower hybrids. The legumes and seeding rate were: hairy vetch at 29 lb/acre, sweetclover at 9.5 lb/acre, alfalfa at 16 lb/acre and black lentil at 22 lb/acre. The cover crops were seeded the same day as the sunflower and at the V4 and V10 growth stages. Seeding the cover crop at the same time of sunflower resulted in a yield reduction of the sunflower compared to the control (without cover crop) and is not recommended. Sunflower yield with cover crops interseeded at the V4 or V8 was not reduced. In late October, cover crop biomass samples were taken and oven dried (Figure 1). On average, the biomass produced when the cover was seeded at the V4 sunflower growth stage was double compared with seeding at the V10 growth stage. Hairy vetch had significantly more biomass compared with sweetclover, alfalfa, or black lentil when the cover crop was seeded at the V4 growth stage. However, hairy vetch is difficult to chemically kill and can become a weed in the following season.

![Cover crop interseeded into sunflower at the V4 growth stage.](image)

**Figure 1.** Dry matter of four cover crops interseeded into sunflower at the V4 or V10 growth stage, expressed in pounds per acre.
Lessons learned:

Black lentil can be seeded at the same time as sunflower or slightly later. Other legumes needed to be seeded after the V4 of sunflower in order not to negatively influence the sunflower yield. Delaying planting of the cover crop beyond the V4 will reduce the amount of cover crop biomass produced. Use hairy vetch only if you have a plan to control the crop so it will not become a weed. Although only four cover crops were used in the trial, it is anticipated that various cover crops and cover crop mixtures may work in interseeding into sunflower.

Hans Kandel
Extension Agronomist Broadleaf Crops

Black lentil and sunflower seeded on the same day. The sunflower yield was not reduced, and 1237 lb per acre of dry matter was measured at the end of the season in October.
In 2019, the Potato Blightline will be available only through the newly released NDSU NDAWN Potato Blight app or on the NDAWN webpage (https://ndawn.ndsu.nodak.edu/potato-late-blight.html). This app was released last year to provide field-specific information of when environmental conditions are favorable for early blight and late blight by entering in key individual field information, such as planting date, emergence date and row closure. The NDAWN Potato Blight app is available on Apple and Android phones and tablets (z.umn.edu/potatoapp). Blightline messages and alerts will be sent through this app to potato growers in North Dakota, and alerts also will be available on the NDAWN webpage. Unfortunately, many of the Minnesota sites will not work for the blight model, but they do have current weather information and can be used for spraying decisions. A video tutorial on how to use the app can be found at z.umn.edu/appvideo. Please remember to send late blight samples to us for confirmation so we can alert growers when late blight has been found. Please let us know if you have any questions on the app.

Andy Robinson
NDSU/U of M Extension Potato Agronomist

Gary Secor
NDSU, Plant Pathologist
WHEAT DISEASE UPDATE

IPM Survey
The IPM scouts have been busy visiting wheat fields over the past two weeks and tan spot was recorded in 24% of the fields in North Dakota. Although the growing season started with great conditions for tan spot, the hot weather at the end of May inhibited disease development. Recently, cool wet weather (rain and morning dew) has increased the risk for tan spot, especially for fields that were planted near wheat residue. Tan spot risk will be less in wheat fields that: used a less susceptible variety; planted after a broadleaf; used a conventional tillage system; and were sprayed with an early-season fungicide (tank-mixed with herbicide).

Fusarium Head Blight (Scab) Risk in Winter Wheat
Winter wheat fields are approaching flowering stages, which is the most opportune time for the Fusarium fungus to infect. Scab risk for susceptible winter wheat varieties remains low for most of the state. The national model indicates one pocket of moderate risk for susceptible varieties in LaMoure and Dickey counties (Figure 1). With rain in the forecast for several areas of the state, scab risk for winter wheat may increase. Make sure to use the USWBSI National FHB forecasting model (http://www.wheatscab.psu.edu/) and the NDSU Small Grain Disease Forecasting Website (https://www.ag.ndsu.edu/cropdisease) to help estimate scab risk in your fields.

Figure 1. Tan spot incidence (% of plants with tan spot) in wheat fields scouted in ND and MN form May 31-June 14.

Andrew Friskop
Extension Plant Pathology, Cereal Crops
FALLOUT FROM THE ACID SURFACE SOIL PROBLEM IN WESTERN NO-TILL FIELDS

The most common problem for our crops in acid soils (pH < 5.2) is aluminum toxicity. In wheat, the symptoms are poor growth starting early in the season and the roots will be knobby and severely stunted. During the past week, we found that another consequence of acid surface soils can be manganese (Mn) toxicity in canola. The sparse literature on this topic comes from Canada and Australia, where sources indicate that canola is particularly susceptible to Mn toxicity when soils have pH < 5.5. The following images were taken the week of June 16 about 5 miles SW of Minot.

In the two images, the symptoms may appear similar to S deficiency and K deficiency, but application of those fertilizers with either ammonium sulfate or muriate of potash in two separate areas resulted in no improvement to the canola 2 days after watering them into the soil. According to Foy et al. (1981, Agronomy Journal), screening of cultivars for Mn toxicity should be performed on soils with a pH of 5 to 5.5, which is low enough for Mn solubility to result in toxic conditions, but not low enough that Al would interfere with the screening. The pH of the surface 6 inches of soil in the area photographed was 4.94, indicating the problem is Mn toxicity, with minimal Al interference. The plant analysis of this canola resulted in tissue Mn values over 1,000 ppm, which is at least 20 times the normal value. Aluminum values were over 200 ppm, indicating slight to moderate toxicity.

There are presently studies on remediation of surface acid soils through surface liming in long-term no-till fields being conducted by Ryan Buetow at Dickinson in cooperation with Chris Augustine at Minot.

Dave Franzen
Extension Soil Specialist
701-799-2565
PROJECT SAFE SEND

Farmers, ranchers, pesticide dealers and applicators, government agencies and homeowners with unusable pesticides can bring them to any of the Project Safe Send Sites listed below. Project Safe Send is a safe, simple and non-regulatory program that helps people safely and legally get rid of unusable pesticides free of charge. Since 1992, more than 10,000 people have brought in over 4.7 million pounds of pesticides to Project Safe Send.

The program accepts old, unusable or banned pesticides, including herbicides, insecticides, rodenticides and fungicides. For a list of accepted items, click on Accepted Pesticides. The collected pesticides are shipped out of state for incineration. Project Safe Send is funded through product registration fees paid by pesticide manufacturers.

People are urged to check their storage areas for any unusable pesticides and safely set them aside for Project Safe Send. If the containers are deteriorating or leaking, pack them in larger containers with absorbent materials. Free heavy-duty plastic bags are available from the North Dakota Department of Agriculture.

For more information on transporting your pesticides safely please view the additional information below.

Contact Jeremiah Lien at jjlien@nd.gov or 701-425-3016 to pre-register. A maximum of 20,000 pounds of pesticides per participant will be accepted.

2019 Project Safe Send Sites

8 am - 12 pm (local time) at North Dakota Department of Transportation (NDDOT) facilities

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Address</th>
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<tbody>
<tr>
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<td>Wyndmere</td>
<td>7775 Hwy 18</td>
</tr>
<tr>
<td>July 10</td>
<td>Ashley</td>
<td>520 7th St SW</td>
</tr>
<tr>
<td>July 11</td>
<td>Bismarck</td>
<td>218 S Airport Rd</td>
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<tr>
<td>July 12</td>
<td>Hettinger</td>
<td>121 1st St N</td>
</tr>
<tr>
<td>July 15</td>
<td>Dickinson</td>
<td>1700 3rd Ave W Ste 101</td>
</tr>
<tr>
<td>July 16</td>
<td>Tioga</td>
<td>425 2nd St SE</td>
</tr>
<tr>
<td>July 17</td>
<td>Minot</td>
<td>1305 Hwy 2 Bypass E</td>
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<tr>
<td>July 18</td>
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<td>July 26</td>
<td>Valley City</td>
<td>1524 8th Ave SW</td>
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</table>

This information was found on the North Dakota Department of Agriculture website.
**POSTEMERGENCE APPLICATIONS IN ENLIST AND XTEND SOYBEAN**

Postemergence herbicide applications have been in full swing for much of the state over the last week. Some questions have been rolling in about herbicide applications made in Enlist and Xtend soybean. Here are some of the more frequent questions and associated answers as of June 18th, 2019:

**Q1:** What products can I tank-mix with Enlist One, Enlist Duo, Engenia, Fexapan, Xtendimax, or Tavium?

Each of these products has a website of any and all approved tank-mix partners. This includes other herbicides, fungicides, insecticides, adjuvants, and anything but water. These websites are updated frequently as more products become approved for use. The websites should be checked within 7 days of making an application to see which products are approved for use.

**Q2:** I know I can’t use AMS with the dicamba products, what about Enlist One or Enlist Duo?

Certain AMS-containing products are approved for use with Enlist One and Enlist Duo. There is no blanket prohibition on using AMS with these two herbicides. However, the product must be approved and listed on the tank-mix websites. At this time, not all AMS-containing products are approved for use.

**Q3:** Dicamba and 2,4-D are both Group 4 herbicides that kill broadleaf weeds. Are these soybeans tolerant to both dicamba and 2,4-D?

No they are not. Enlist soybeans are still highly sensitive to dicamba-containing products. Dicamba soybeans are sensitive to 2,4-D containing products. A new publication from my colleagues at Purdue walks through the visual symptoms to expect from 2,4-D or dicamba exposure in non-tolerant soybean ([https://ag.purdue.edu/btny/weedscience/Documents/WS-56.pdf](https://ag.purdue.edu/btny/weedscience/Documents/WS-56.pdf)).

**Q4:** What about growth stage cutoffs or calendar date cutoffs?

For the 4 approved dicamba products, we have 3 cutoff stages to watch for. The federal labels for Xtendimax, Fexapan, and Engenia state that applications must end 45 days after planting, or when soybeans reach the R1 growth stage. Tavium has a growth stage cutoff of V4 soybean (instead of R1). In addition, North Dakota has a calendar date cutoff for all 4 dicamba products that states that the last application must end 2 hours before sunset on June 30th. Both Enlist One and Enlist Duo allow application through (but not later than) the R2 growth stage of soybean. At this time, there is no calendar date cutoff in place for either Enlist product. Please see Dr. Hans Kandel’s article in last week’s *Crop and Pest Report* to see anticipated arrival of these soybean growth stages based on planting date and GDD accumulations so far this season.

**GROWTH STAGE CUTOFFS FOR HERBICIDE APPLICATIONS IN CORN**

Side-dressing and herbicide applications are being made on many corn acres this week. Despite overall cool conditions this growing season, corn should be nearing the rapid growth phase in many fields. This is a good time for a reminder of growth stage and height-restriction cutoffs for postemergence corn herbicides. Some of the earliest cutoff timings are 8-inch corn for broadcast applications of 2,4-D, and any atrazine must be applied before corn reaches 12-inches in height. If corn is 12-inches or taller, the atrazine must be left out of the tank. See pages 18 and 19 in the 2019 NDSU Weed Control guide for height and growth stage restrictions of postemergence herbicides in corn ([https://www.ag.ndsu.edu/weeds/weed-control-guides/nd-weed-control-guide-1/wcg-files/4-Corn.pdf](https://www.ag.ndsu.edu/weeds/weed-control-guides/nd-weed-control-guide-1/wcg-files/4-Corn.pdf)).

Joe Ikley
Extension Weed Specialist
WORMS IN MY TREES

Calls on tent caterpillars, defoliation and webbing on trees are coming into my office from the Red River Valley area from Fargo up to Grand Forks. I’ve updated my previous 2016 article on forest tent caterpillars (Malacosoma disstria) and Eastern tent caterpillars (Malacosoma americanum). Larvae (caterpillars) are feeding on tree foliage this time of year. The eastern tent caterpillars make the webbed tents in the forks of tree branches, which are used as shelters and resting places. People consider the webbed tents unsightly in trees. The forest tent caterpillar does not make any webbed tents, but they wander around in masses of larvae and crawl over trees, picnic tables, patios, lawns, etc., which people consider extremely objectionable. Fortunately, they do not bite. Large numbers of forest tent caterpillars crushed on roads causes the roadway surfaces to become greasy and slippery. They infest many trees hosts: ash, aspen, basswood, birch, chokecherry, cottonwood, elm, maple, oak, pin cherry, poplar, and other hardwoods.

There is one generation per year for either species. Both overwinter as eggs. Larvae hatch in early spring. For the forest tent caterpillar, larvae are easily identified by the keyhole shaped spots along their backs and broad bluish lateral bands. For the eastern tent caterpillar, larvae are black and somewhat hairy with a whitish-yellow stripe down the middle of the back, narrow broken orange-colored subdorsal stripes, and lateral white and blue markings. In five to six weeks, the larvae pass through five larval instars and are about 2 inches long when mature. Then, they form silken cocoons to pupate. Adult moths will emerge from cocoons during early summer (late June or early July).

Damage: Defoliation is caused by larvae of both species. Light defoliation has little effect on tree health. Two or more years of moderate-to-severe defoliation by forest tent caterpillar is necessary to affect radial growth and cause branch and twig mortality. When populations of eastern tent caterpillars are high, whole trees can become covered with webbing and defoliated.

Pest Management: Bt (or Bacillus thuringiensis var. kurstaki; Dipel, Thuricide), a natural occurring soil bacterium, works well to control young caterpillars and conserves beneficial insects. Other insecticides available to homeowners include: acephate (Orthene), azadirachtin (Azatin), carbaryl (Sevin), esfenvalerate (Bug-B-Gon), malathion, permethrin, spinosad (Conserve), or other insecticides registered for trees. Always read, understand and follow the insecticide label directions.

Janet J. Knodel
Extension Entomologist
BUR OAKS, BUGS AND BIRDS

In several communities around the state, young bur oak trees are showing damage from woodpecker activity. The damage is highly variable, but at its worst, some trees have been mostly girdled or had the main stem killed. The birds are not to blame, however, as they have been searching for a tasty meal— insect larvae located within the bark. We believe the insect is a stingless wasp with the scientific name *Callirhytis flavipes*; it does not yet have a common name.

The birds seem to be focusing on young trees, those with stem diameters (at 4.5’ above the ground) from 1” to about 8”. Larger trees may be affected as well, but the damage on those trees seems to be less severe. Some trees have escaped with no damage at all, especially those trees with smoother bark. Nearby trees may have destruction up-and-down the entire stem. Examples of this problem have been seen throughout the eastern part of the state, as well as in the Bismarck-Mandan area. We haven’t heard of any problems in conservation (shelterbelt) plantings, but it is definitely a possibility.
In a heavily infested tree, the main leader can be killed, which then must be pruned out. The result is a tree with poor structure that is stressed and might not survive in the long term. Some trees have been attacked more than once and are damaged to the point that they must be removed. Unfortunately, the only recommendation we have at this point is to prune out dead branches. We’re continuing to monitor the situation and searching for solutions. While systemic insecticides might offer some level of control, no research on this topic has been published. A product called Tanglefoot Bird Repellent may deter birds from digging into the tree bark; however, since the birds don’t feed on the trees until winter, applying the product right now will not help.

This tree was infested with insects a few years ago, which were then fed on by woodpeckers. The dead leader and limbs caused by that first infestation were pruned from the tree, creating poor structure. Insects re-infested the tree again in 2013 and in 2016.

Joe Zeleznik
NDSU Extension Forestry Specialist

Lezlee Johnson
ND Forest Service
Forest Health Manager
AROUND THE STATE

NORTH CENTRAL ND

Some much-welcomed rain fell over the North Central region over the last week: Minot 0.49”; Rugby 0.96”; Bottineau 0.28”; Rolla 1.18”; Plaza 0.70”; Mohall 0.10”; and Garrison 0.40”. Not everyone got to share in the precipitation, however, continued chances are part of the 7-day forecast. Flea beetles feeding continues to be observed—remember to scout! Economic thresholds and scouting details were highlighted in last week’s Crop and Pest Report. Grasshopper nymphs are also impacting plots at the NCREC and area farms. Local growers are making their spraying applications—taking advantage of the calmer days.

Do you have an interest in learning more about beneficial insects and their impact on the farm? NDSU Extension, the USDA Natural Resources Conservation Service, and other area partners are teaming up to present Good Bugs III: Farming with Beneficial Insects for Pest Control – Conservation Biocontrol on Rangeland and Cropland short course. This course will be offered on June 26th at the Burleigh County SCD Menoken Farm. Both courses will begin at 9 am local time and conclude around 4 pm. Registration is $40. Registration is available at www.ndswcs.org. If you have any question, please reach out to TJ Prochaska at travis.prochaska@ndsu.edu.

TJ Prochaska
Extension Cropping Systems Specialist
NDSU North Central Research Extension Center

NORTHWEST ND

Farmers in Northwest ND are busy spraying for weeds and checking crops now that seeding has wrapped up. Conditions are still generally dry, especially in western McKenzie, Williams, and Divide Counties, but scattered thunderstorms and rain showers have moved through the area the past week. Rainfall has been extremely spotty and variable. Most places received 0.5-1.0” last Friday and/ or Saturday, but a few places didn’t get any rainfall greater than 0.1” out of the storms. Fields that have not received rain are starting to dry out in the lighter, sandier soils. The Williston REC NDAWN station recorded 0.7” on Friday and 0.1” Saturday, our first good rain since snowmelt. In the 5-day forecast, scattered thunderstorms are predicted for Friday and Saturday, June 21 and 22, in much of the Northwest, so hopefully more rain will fall. Here’s an update on crop progress at the WREC: early planted barley is flag leaf open to heads just visible; early planted wheat is jointing to flag leaf; later planted wheat is tillering to jointing; early planted peas have 4-5 nodes visible; and early planted soybean has 1-2 trifoliate leaves.

An on-farm field day on pipeline reclamation with perennial forages will be held north of Ray, ND on Thursday, June 20th from 10:00 am to 12:00 pm. Topics include species selection, basic alfalfa management, and using water infiltration to monitor soils. The field site is located at the intersection of 117th Ave NW and 70th St NW on the south side of the road. Directions from the Ray Cenex gas station are: 7 mi north on County Rd 17, then 1 mi west on 70th St NW. This event is free and open to the public. No registration is required. If you have questions about this event, please call Clair Keene at the Williston Research Extension Center 701-774-4315.

Clair Keene
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NORTHEAST ND
Flea beetle numbers have dropped. Last week, I had reports of hot spots in Northern Cavalier and Towner counties. Grasshoppers are emerging. A small amount of tan spot has been found on lower leaves.

Agronomically, crops benefited from recent rain events. Still a few dry pockets where rainfall was low. Canola growth is ranging from emerging due to replant to 6 leaf stage. Small grains look excellent. Soybeans are at the first trifoliate stage. I’ve seen a few fields with iron chlorosis symptoms.

Lesley Lubenow
Area Extension Specialist/Agronomy
NDSU Langdon Research Extension Center

SOUTH-CENTRAL/SOUTHEAST ND

According to NDAWN, the region’s total rainfall May 1 through June 17 ranged from 2.1 inches (Carrington) to 5.2 inches (Oakes). Previous ‘dry’ parts of this region (Eddy, Foster, Sheridan and Wells counties) received 0.5 to 1 inch of rain during the past week (June 11-17). The region’s corn growing degree day units accumulated from May 1 to June 17 range from 415 to just under 500, which is about one leaf or less growth less compared to the long-term average for the same interval.

Alfalfa is flowering and first cutting has begun. Winter wheat is in the flag to flowering growth stages. Spring small grain seeded during late April are jointing and early May planted corn is in the 4- to 5-leaf stages. The past week’s rain will help increase plant density of late-seeded row crops.

The picture is of paired rows in a pinto bean study at the Carrington REC that compares paired 7-inch rows (centered at 28 inches) with 21- and 28-inch rows, plus three targeted plant populations of 50,000, 70,000, and 90,000 plants per acre.

Greg Endres
Extension
Cropping Systems Specialist
NDSU Carrington Research Extension Center
WEATHER FORECAST
The June 20 through June 26, 2019 Weather Summary and Outlook

After a bit of warming in late May and early June, most of the North Dakota Agricultural Weather Network (NDAWN) recorded temperatures below average during the past week (Figure 1). This has been the trend for the past several months and the next several days should continue the trend of recording cooler than normal temperatures.

One of the reasons this past week was cooler than average was because it was mostly cloudy with periods of rain and thunderstorms. Although all NDAWN stations recorded some rainfall, with pockets over one inch (Figure 2), this is the rainiest period of the year in this area, meaning much of the region still ended up recording below average rainfall (Figure 3). Figures 3 and Figure 4 on the next page do not include what fell yesterday, (Wednesday, June 19) which did bring near or more than one inch of rain to some locations.
Figure 2. Rainfall for the period from June 13 through June 18, 2019

Figure 3. Percent of Average Rainfall for the period from June 13 through June 18, 2019
After a week with the upper-level wind coming from the northwest, the next several days the Jetstream will be coming toward the northern plains from the southwest. Many of you may recognize that a southwest Jetstream is the pattern that brings the most plentiful moisture to this region. In turn, not only did some areas see rain yesterday, there will be periods of rain and thunderstorms today through Saturday. The rain of course will not fall evenly, but almost all areas will be recording rain in the next 72 hours, or did yesterday. The northwestern portion of North Dakota, perhaps the driest part of the state, will have their best opportunity of rain coming on Friday into Saturday morning. Once we begin to move into next week, a ridge of high pressure aloft will develop over the north central portion of the United States, which should bring drier conditions to this area and warmer weather as well. Temperatures are expected to get back to average, or even a bit above average by the middle of next week as we approach the end of June.

Before that warm up occurs, temperatures will remain below average. My projected growing degree days (GDDs) for the next seven days for Base 50°, 44° and 32° is presented in Figure 4. Most of the region will record similar GDDs to what occurred last week.

![June 20 through June 26, 2019 Projected GDDs](image)

*Figure 4. Projected Growing Degree Days for the period of June 20 to June 26, 2019*

Using May 5 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](https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html)
Using May 15 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) on the NDAWN site.

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 on the NDAWN site.

Daryl Ritchison
Meteorologist
Director of the North Dakota Agricultural Weather Network
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