GET READY TO SCOUT FOR CUTOFFORMS

As newly planted crops start to emerge, it is time to start routine scouting for cutworms. Approximately 32 cutworm species are economic pest species of field crops in North Dakota. Cutworms damage plants in the larval stage (caterpillar) and cause plant injury by cutting stems near the soil line, chewing on the foliage and reducing plant stands. Cutworms often will move down a row as they continue to feed on plants. Cutworms can do significant feeding injury during the early growth stages (seedling through 4-6 leaf stage) of field crops.

There are three types of cutworms in North Dakota based on their biology:

1) Overwinter as a partially grown larva, usually one of the first cutworms to cause problems during crop emergence from early to mid-May. (e.g., dingy cutworm). The larval stage lasts for 8-9 months for these species since they overwinter as young larvae.

2) Overwinter as eggs, which hatch in mid to late May (e.g., red-backed cutworm and darksided cutworm). Larval feeding injury by these cutworms normally occurs in late May to mid-June, and can last three to four weeks depending on temperatures.

3) Migrate as adult moths called ‘miller moths’ into North Dakota from southern states (e.g., black cutworm).
Routine scouting for cutworm larvae is best in the evening, since they feed at night and hide underneath clumps of soil and debris during the day. If you find cut off plants, dig around these plants about two or more inches deep, and search for cutworms. When disturbed, cutworms curl up into a ‘C-shape.’ Row crops, such as soybean, canola, lentils, field peas and sunflowers, are more susceptible to cutworm damage than small grains, because cut plants do not grow back (grains compensate by tillering).

All cutworm species are lumped together for the action thresholds. If cutworms are at or above the action thresholds listed below for different field crops, then a ‘rescue’ foliar insecticide application is warranted. An evening application is recommended to target the peak feeding of cutworms at night, but be sure to monitor for temperature inversion and do not spray during an inversion.

- Alfalfa – 4 or more larvae per square foot (new stands – only 2 larvae per square foot)
- Canola – 1 larva per square foot
- Corn - 3-6% of the plants are cut and small larvae (<3/4 inch) present
- Peas / Lentils – 2 to 3 larvae per square meter
- Small grain – 4 to 5 larvae per square foot
- Soybean - 1 larva per 3 feet of row or 20% of plants are cut
- Sugarbeet - 4-5% cutting of seedlings or 3-5 larvae per square foot
- Sunflower - 1 larva per square foot or 25-30% of plants cut

You can often find both small and large larvae of the same or different cutworm species while scouting. If the majority of the larvae are small, <½ inch, they still have a lot of crop feeding to do before maturity, so an insecticide treatment will be necessary when you are at or above the action threshold. If you are finding a mixture of some small cutworms, many large cutworms and some pupae, it may be too late for a foliar insecticide application since the majority of the larvae are mature (done feeding) and/or pupating (a non-feeding life stage). Remember most cutworms are difficult to kill, so they require the mid- to high labeled rates of an insecticide for effective control. A low rate of insecticide may not provide the kill needed and you may need to respray a field with high densities of cutworms. Another advantage of using the mid- to high labeled rates of insecticides is that you get a longer residual of 7-10 days for most pyrethroid insecticides.

For insecticides registered for cutworm control by field crops, please consult the 2020 North Dakota Field Crop Insect Management Guide E1143.

Janet J. Knodel
Extension Entomologist

CANOLA

The average North Dakota canola yield for the last 12 seasons was 1,700 pounds per acre. The yield potential varies by year, based on environmental conditions (Figure 1). Some farmers report canola yields in the range of 2,000 to 3,000 pounds per acre, when weather conditions and excellent crop management come together. Below are a few crop management suggestions.

- Select a hybrid that has a proven high-yield potential in University and company trials. Obtain data from trials from several locations in your growing region. Results from the 2019 NDSU canola variety trials can be found at http://www.ag.ndsu.edu/varietytrials/canola.
- Field selection is important. Canola does well following small grains or fallow in a rotation. With canola in a crop rotation, there should be at least a two-cropping-year wait before canola is seeded again. Avoid crops such as...
sunflower, dry bean and other Sclerotinia (white mold)-sensitive crops in close rotation with canola. Select fields that are free of troublesome weed problems.

- Plant seed with a high germination percentage and with good seedling vigor. Planting seed treated with an insecticide and fungicides for seedling protection is recommended.
- About 25% of the canola acres in North Dakota have been seeded as of May 17. Canola is a cool-season crop and should be seeded as soon as possible. Research shows that yield potential may be reduced with delayed planting. This mostly is a result of the increased potential of high temperatures during flowering. Hot conditions during flowering shorten the time the flower is receptive to pollen, as well as the duration of pollen release and viability. This can decrease the number of pods that develop on the plant and the number of seeds per pod, resulting in lower canola yields.
- Canola should be planted into a firm seedbed and at a uniform depth. The recommended seeding depths are 3/4 to 1 inch. A seeding rate of around 600,000 live seeds per acre (14 live seeds per square foot) should result in an established plant stand of 10 to 12 plants per square foot (435,000 to 522,000 plants per acre), which would be adequate for high yields. Four plants per square foot are considered a minimum stand for canola. Hybrids differ in the number of seeds per pound.
- Canola responds well to applied fertilizer. Nitrogen (N), phosphorus (P) and sulfur (S) are the key nutrients for high yields. Always have a soil test done to help you know how much fertilizer to apply. Consult the NDSU fertilizer recommendations at https://www.ag.ndsu.edu/publications/crops/fertilizing-canola-and-mustard/sf1122.pdf
- Control weeds as early as possible because a lot of competition early during the growing season can reduce yields very quickly. Monitor for any late-emerging weed flushes that were missed during the first herbicide application.
- Monitor for any flea beetle or other pest problems, especially the first three weeks after crop emergence. Be prepared to apply an insecticide if the seed treatment does not hold long enough or the insect pressure is too great.
- As the canola gets near the bud or early bloom stage, start monitoring the NDSU canola disease risk map website at https://www.ag.ndsu.edu/sclerotinia/ for Sclerotinia stem rot (white mold) potential. Be prepared to get a fungicide applied to the crop when the Sclerotinia risk map indicates a high risk for the disease.

![Graph showing average canola yield from 2008 to 2019 in pounds per acre](https://www.ag.ndsu.edu/publications/crops/fertilizing-canola-and-mustard/sf1122.pdf)

**Figure 1.** North Dakota state average canola yield from 2008 to 2019 in pounds per acre.

*Source: North Dakota National Agricultural Statistics Service.*
FROST DAMAGE IN ALFALFA: WHAT TO DO AFTER IT?

Last week (May 11 and 12), air temperature descended to 19°F for as long as 3 hours in some locations in North Dakota (see NDAWN map from 12 May 2020). Alfalfa in areas in blue color were exposed to temperatures below 25°F for 3-6 hours. Literature indicates that frost damage in alfalfa will occur when alfalfa plants are exposed to temperatures below 25°F for at least two hours. Frost damage depends on many factors additionally to air temperature such as soil moisture, soil type, field location, residue on surface and more. The severity of the damage will vary in each location.

Alfalfa stems can take much lower temperatures than leaves. A hard frost will cause the alfalfa stems to bend over with a “shepherd’s hook” or act as a lazy stem (Figure 1). If after a few days the stems straighten back up, the stem is uninjured and will resume growth with no yield penalty. If the stem does not straighten up after a frost, it has been killed and will start to dry out. If most or all stem tops are damaged and stand is less than 10 inches tall, do nothing. The growing points have been killed but new alfalfa stems will develop from the crown and axillary buds and resume growth. This might delay the first cutting.

Figure 1. Alfalfa frost damage.
If less than 30% of stem tops show wilting/browning from frost, do nothing. Some yield reduction of first cutting may occur but it will recover completely on second cutting. If stand is over 12 inches tall and has more than 30% of stem tops with frost damage, harvest and allow to regrow. Be aware that frosted alfalfa hay might have high nitrate content and cause toxicity to animals.

In new seedings, some damage may have occurred, but usually alfalfa seedlings have excellent frost tolerance. Wait 3 to 5 days after the frost before assessing the damage. If plants do not recover from the initial wilting and die back to the ground, the plant is dead. At least one set of leaves must have escaped damage for the plant to recover. If more than 20 plants per square foot remain, stand will survive in good shape. If stands are lower, consider reseeding.

Marisol Berti
Forage, Cover Crops and Biomass Production
NDSU Department of Plant Sciences

CORN PLANTING AND EMERGENCE

Planting corn this season has been challenging with only 20% of the planned corn acres planted to date. Moreover, the extraordinarily cold weather in early May has delayed germination and emergence. Typically, we expect corn to emerge after about 125 growing degree day (GDDs) have accumulated. Sadly, there have been 9 days so far in May (based on Fargo NDAWN station) that produced 2 or fewer GDDs. This compares to the normal rate of 8-10 GDDs per day. Scouting emergence issues in early planted corn fields is advisable this year due to the extra time (days) needed for corn to emerge because of this cold weather and because of concerns about imbibitional chilling injury and freeze injury to germinating seeds. Temperatures this next week, on the other hand, look ideal for corn germination and emergence. Growing degree accumulations are predicted to be well above average (17 per day compared to 10 or 11 per day). Corn planted today (May 18th) should emerge in just over a week. When using GDD to predict when corn should emerge and to help schedule early scouting, consider the following (adapted from Broeske and Lauer, 2020) : 1- Normally emergence occurs after 125 GDDs; 2- In no-till systems add 30 to 60 GGDs due to these soils being cooler than tilled soil at a given air temperature; 3- When planting deeper than 2 inches add 15 GDDs per inch of extra seeding depth; 4- For early planting dates this year add 10-25 GDDs; 5- For planting dates after May 18 this year, subtract 50 GDDs; 6- For dry conditions 30 GDDs.

Air and soil temperatures are currently favorable for corn planting, but many fields are still too wet. Given that the optimum date for corn planting will soon pass, the desire to plant before soils dry further is compelling. Wet soils compact easily, and sidewall compaction can occur in soils that are wet and/or have been compacted. Roots have
difficulty in penetrating and developing normally into compacted sidewalls. Furthermore, seeds may not be adequately covered when the seed-tee cannot be closed by the press wheels. Consider using one (or both) spiked closing wheel to aid in covering seeds in this type of situation.

Reference:

Joel Ransom
Extension Agronomist, Cereal Crops

FORTUNATE TO AVOID FROST DAMAGE IN MOST SUGARBEET PRODUCTION AREAS
During the period of May 7 through 12, air temperature was below freezing and dropped to as low as 21° F in the northern Red River Valley and 24° F in the southern Red River Valley.
Sugarbeet at the cotyledonary stage are typically most able to tolerate a few hours of frost. Older plants typically are able to survive to 28 or even 26 F. Newly emerged seedlings (Figure 1) and 2- to 4-leaf stage sugarbeet are most susceptible when exposed to frost. Fortunately, most sugarbeet production areas in North Dakota and Minnesota did not have frost damage. Overall, about 2000 acres were damaged by frost and will have to be replanted.
In the northern and central Red River Valley, most of the acreage had late planting which meant that seedlings had not emerged at the time of the frost. Those seedlings are now emerging and are healthy (Figure 1). The southern Red River Valley had beets at the cotyledonary stage which were able to tolerate the frost with minimal damage. The fact that most of the soils were wet and there was a slight wind during the coldest period were important factors in reducing the areas impacted by the relatively low temperatures.

(See figures on next page)
BEST PRACTICES FOR HIGHEST PROFITS IN SUGARBEET

The sugarbeet crop, when properly managed, can be one of the most profitable crops in our rotation in North Dakota and Minnesota. Some of the best management practices for highest sugarbeet profits are as follows:

Field selection: Since sugarbeet is usually the most profitable crop in the rotation, you should select your best fields for sugarbeet. Ensure there is proper drainage or else the environment will become favorable for soil-borne diseases later in the season. Prepare a good weed free seedbed and fertilize in the fall or spring based on a soil test.

Variety selection and seed protection: Select the best variety available based on the disease history of the field. When ordering seeds, make sure seeds are treated with fungicides such as Kabina, Systiva and Vibrance that will give protection against Rhizoctonia damping-off; Tachigaren that will give protection against Aphanomyces damping-off; and insecticidal seed treatments that will control common insects such as sugarbeet root maggot and wireworms. Fields with a history of sugarbeet root maggot will also need a granular insecticide at planting as well as protection just before peak fly activity.

Seed spacing and population: Plant seeds about 4 1/2 to 4 5/8 inches apart to get about 175 to 200 evenly spaced plants per 100 ft of row.

Weed Control: There are limited options for weed control in sugarbeet so one has to be careful and strategic. Since all growers use crop rotation, use herbicides that are more available in rotating crops to control herbicide resistant weeds. In the sugarbeet crop, start weed control early – start with a weed free seedbed, use a pre-emergent or soil incorporated herbicide where possible. For post emergent herbicide applications, start when weeds are small and
continue until row closure; if necessary, use mechanical weed control and/or labor to keep the weed and weed seed population as low as possible.

Managing Rhizoctonia: For fields with a history of Rhizoctonia, use a Rhizoctonia resistant variety and apply azoxystrobin at planting and or/ at the 4- to 6-leaf stage just before a rainfall.

Managing Cercospora leaf spot: After row-closure, fields should be scouted and fungicide mixtures applied starting at first symptoms or when the disease is first reported in the factory district. Growers should mix fungicides with two modes of action and apply in 20 gallons of water per acre at 14 day intervals in dry conditions and at 10 to 12 day intervals during wet conditions.

Proper harvest: Set up harvester to ensure all beets are harvested. Be prepared to harvest and transport a bumper high quality sugarbeet crop!

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

SOYBEAN CYST NEMATODE DISTRIBUTION IN NORTH DAKOTA

Between 2013 and 2019, over 4,000 SCN soil samples have been submitted by North Dakota growers using the Soybean Cyst Nematode (SCN) sampling program operated by NDSU Extension. The North Dakota Soybean Council has financially supported the SCN sampling program by covering the cost of the laboratory fees when growers used pre-marked bags, which are available at the County Extension Offices in the fall. We thank the NDSC for their support.

What is SCN?

SCN is a nematode, a microscopic worm, that feeds and reproduces on root tissue. The two crop hosts in our region are soybeans and dry beans, but several weeds can also be SCN hosts. Once a female worm infects the root and begin producing eggs, their body expands into a lemon-shaped structure called a cyst. Each female can produce a couple hundred eggs, and the life cycle can repeat 2 to 3 times in a growing season.

SCN is the top yield-robbing pest of soybeans in the US, causing over $1B in losses every year to the national soybean crop. SCN is notorious for causing yield loss before above-ground symptoms appear, making it difficult to detect. Consequently, soil sampling is the best way to detect SCN.

Where is SCN in ND?

Results of the statewide sampling program indicate the SCN is common in soybean fields in the SE part of the state (Figure 1 and 2). Although it occurs in many additional counties, SCN is generally less frequently identified and in lower numbers.

(Figures 1 and 2 are on the next pages)
Figure 1. Egg levels identified in North Dakota (2013-2019).
Figure 2. Egg levels identified in SE and EC ND (2013-2019).
How do I interpret the numbers?

When growers submit a soil sample for assessment of SCN to a laboratory, scientists microscopically evaluate the soil for nematode eggs, and present that number as eggs/100 cc soil (basically, how many eggs occur in about 3.3 ounces of soil). It’s an imperfect science (there can be false negatives and positives both), so interpretation of results are important.

In our maps:
- Black circles are negatives. It doesn’t mean you don’t have SCN for sure, but no eggs were found in a sample.
- Gray boxes (50-200 eggs/100cc) are very low levels, which could be real, or could be false positives (other nematodes produce eggs in soil too). I often suggest these are ‘inconclusive’, but it is critical you sample for SCN in the future.
- Green triangles (200-2,000 eggs/100cc) are low-level positives.
- Blue circles (2,001-10,000 eggs/100cc) are positives.
- Yellow squares (10,000-20,000 eggs/100cc) indicate high levels of SCN.
- Red pentagons (20,000+ eggs/100cc) are extremely high levels of SCN.

Yield loss becomes more likely as your egg levels increase, but it is notable that yield loss is possible at any level of SCN. Why? First, SCN can reproduce very fast and your numbers can go from 1,000 eggs/cc to 30,000 eggs/cc on a susceptible variety when the environment is favorable. Second, SCN is notoriously variable in fields and farms, and you will have both lower and higher spots in your field. The take home message? If you have SCN at any level, it is very important to manage it.

What can I do?

If you don’t know if you have SCN, sampling for SCN is the first and most important step towards management. This can be done in the spring (see the press release from The SCN Coalition) or most commonly in the fall. The NDSC and NDSU Extension are again supporting the SCN sampling program this fall, and more information will be available in future Crop&Pest Reports.

If you know you have SCN, spring sampling, followed again by fall sampling, can be a great way to determine if your management tools are working.

The management decisions for SCN are made before planting. However, crop rotation, genetic resistance and seed treatments are available for future seasons. For more information, visit www.thescncoalition.com and be on the lookout for more SCN information in future Crop&Pest Reports.

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Sam Markell  
Extension Plant Pathologist,  
Broad-leaf Crops

Guiping Yan  
Plant Nematologist

Berlin Nelson  
Soybean Pathologist
TIPS FOR SPRING SCN SOIL SAMPLING AND SEED SELECTION

Below is a news release from The SCN Coalition, a partnership of universities, companies and soybean checkoff organizations whose mission is to help growers manage SCN. The press release is timely. Given our harvest conditions in 2019, very little sampling for SCN was done in the fall. If time permits, spring sampling for SCN can provide valuable information about SCN. More information is available at www.thescncoalition.com and at the links in the article.

Sam Markell
Extension Plant Pathologist, Broad-leaf Crops

**NEWS RELEASE**

Waukesha, Wis. (March 3, 2020) – Soybean farmers who didn’t have time to pull soil samples for soybean cyst nematode (SCN) last fall have another opportunity this spring. “It was a long, late, wet harvest in 2019 for a lot of farmers, which unfortunately stretched into 2020 for some,” says Greg Tylka, nematologist at Iowa State University (ISU) and leader of The SCN Coalition. “While piggybacking on fall fertility testing is certainly practical, spring sampling before planting a soybean crop works fine too.”

SCN is the most damaging pathogen in U.S. soybeans, estimated to cost farmers more than $1 billion annually in lost yields. “You can be losing anywhere from 10% to 30% of yield without seeing any aboveground symptoms from SCN,” Tylka adds. “If you don’t know what your SCN numbers are in your fields – or know whether you have SCN-infested fields – soil testing is the first step.”

Tylka recommends waiting until the soil warms up and fields aren’t muddy before gathering soil cores. “Ideally, we’d like 20 cores from every 20 acres or so collected from the upper 8 inches of soil.”

As for where to put the probe, there are three approaches to soil sampling. According to Tylka, “You can zigzag your way through each 20-acre parcel. Or, you can collect soil cores from high-risk areas, such as high-pH spots, low spots, near fence lines and other areas where soil from other fields may have been introduced. Or you can pull samples from logical areas or management zones in the field.”

Several state soybean checkoff organizations offer free SCN testing, so check with yours. As for where to send the samples, a list of public and private testing laboratories that offer SCN testing is available on TheSCNcoalition.com.

**Income in SCN-infested fields can be $200 per acre more with Peking resistance**

Knowing your SCN numbers can also help farmers improve planting and management decisions this spring. That could be especially true for those who haven’t purchased seed yet because of the wet growing season and late harvest last year.

A 2019 ISU field experiment in southeast Iowa showed that planting Peking resistance could save up to $200 per acre. The experiment measured yield and SCN control of 67 soybean varieties with PI 88788 resistance (used in roughly 95% of all commercial varieties), two varieties with harder-to-find Peking resistance and three susceptible varieties in a moderately infested field.

“The SCN population in the field had elevated reproduction on PI 88788,” Tylka explains. “And the results show that income in SCN-infested fields was $200 per acre less with PI 88788 than with Peking resistance, based on a yield difference of 22 bushels per acre and $9 beans.”
A resistant soybean variety should allow less than 10% reproduction of the nematode population. In other words, a resistant variety should stop 90% of the SCN in a field from reproducing. But researchers across the Midwest are finding that a majority of SCN populations in farmers' fields have elevated reproduction on PI 88788 resistance. “That’s why The SCN Coalition has been sounding the alarm on SCN populations becoming ‘resistant to the resistance’ and recommending that farmers rotate sources of resistance whenever possible,” Tylka says. “If a Peking variety isn’t available and you can only get a variety with PI 88788 resistance, at least rotate the variety you plant, because not all PI 88788 resistance is created equal.”

**About The SCN Coalition**

The SCN Coalition is a public/checkoff/private partnership formed to increase the number of farmers who are actively managing SCN. Our goal is to increase soybean farmers’ profit potential and realize higher yields. Partners in The SCN Coalition include university scientists from 28 states and Ontario, grower checkoff organizations including the North Central Soybean Research Program, United Soybean Board and several state soybean promotion boards, and corporate partners including BASF, Bayer, Growmark, Nufarm, Pioneer, Syngenta, Valent and Winfield United.

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*Cutline: This map shows the percentage of SCN populations in a state/province with elevated reproduction (>10%) on PI 88788. This is based on the results of checkoff-funded surveys conducted in numerous states and in Ontario, Canada, to assess the level of reproduction (percentage) of SCN populations on pure PI 88788.*
GLYPHOSATE COMMERCIAL BRANDS ARE FORMULATION, SURFACTANT LOADING AND SALT SPECIFIC

You may have heard the mantra from Extension, use full glyphosate rates that will kill weeds. But what is the correct rate? Glyphosate is sold under many brand names in today’s environment and at different recommended rates. This communication is to remind you of several differences between commercial brands that may impact the use rate and cost including:

- Acid Equivalent per gallon
- Surfactant loading
- Salt formulation

Acid Equivalent (AE) is a measure defining glyphosate efficacy. Commercial glyphosate formulations range from 3 to 5 lb AE [or 4 to 6.1 lb active ingredient (AI)] per gallon. Glyphosate rate to control weeds (usually expressed as fluid ounces per acre) is adjusted depending on AE per gallon. AE may also affect the price per gallon so though you might initially pay less for products with a lower AE, you will likely have to apply them at a higher rate for effective control.

Adjuvants are compounds facilitating the action of glyphosate and are either included in the formulation or added with glyphosate in the spray tank. Branded glyphosate products may have no, partial, or full adjuvant loading. Unless prohibited by the product label, we recommend adding non-ionic surfactant with commercial glyphosate formulations at 1 qt per 100 gal water for full adjuvant load products, 1 to 2 qt per 100 gal water for partial adjuvant load products and 2 to 4 qt per 100 gal water for no adjuvant load formulations. Do not apply glyphosate brands formulated with surfactants (partial or full adjuvant formulations) to bodies of water because surfactant components are toxic to fish and other aquatic life.

Glyphosate chemically is a weak acid which equates to a weak negative charge. Salt is formed when glyphosate acid is added to a base that has a positive charge. The salt is disassociated at the site of action when product is absorbed within the plant tissues. Only glyphosate acid binds to the target enzyme and is responsible for herbicidal activities. The major salts in glyphosate products are potassium (K), isopropylamine (IPA), ammonium and trimesium. Different glyphosate salts have variable effects on stability in formulation, absorption, and translocation within the weed. However, researchers have not found noteworthy differences in weed-control attributed to glyphosate salt. Most reports suggest differences in weed control are inconsistent and do not support a single superior glyphosate-salt formulation.

POSTEMERGENCE HERBICIDE TREATMENTS IN SUGARBEET.

Plant 2020 will be a dichotomy of growth stages depending on region of the sugarbeet producing area. In general, sugarbeet growth stage is much more advanced in southern and west central Minnesota and the southern part of the Red River Valley (RRV). Contrast that to areas between Hillsboro, ND and Warren, MN were large tracts of acreage remain to be planted. However, broadleaf weeds are responding to rainfall and increasing air temperatures and will quickly need to be managed.

Soil applied herbicides are highly recommended for fields to be planted, especially in areas where waterhemp is identified as the most important weed control challenge in sugarbeet. Soil applied herbicides should be applied preplant or preemergence depending on the Producers appetite for risk of activation. We know waterhemp has emerged as far north as St. Thomas. Thus, it is highly recommended herbicides be applied preplant unless rainfall is imminent after application. Likewise, kochia is emerging and will continue to do so in response to tillage.

Broadleaf weeds are our most important weed control challenges in sugarbeet. Our five most important weeds are waterhemp, common ragweed, common lambsquarters, giant ragweed, and kochia. In addition, some areas identify biennial wormwood or redroot pigweed as their most important weed control challenges. Glyphosate should be included
in every postemergence application since nearly 100% of sugarbeet production uses Roundup Ready sugarbeet seed. Glyphosate can be mixed with Stinger for control of ragweed species and biennial wormwood. Stinger is active on four weed families, composite, legumes, buckwheat, and nightshade family weed species. Stinger has very little activity on pigweed species or common lambsquarters. We recommend producers mix ethofumesate (Nortron, Ethotron, Ethofumesate 4 SC) with glyphosate and Stinger. NDSU / UMN research conducted over multiple environments has reported at least a 15% increase in waterhemp control when 4 to 6 fluid ounces ethofumesate is mixed with glyphosate since ethofumesate has been found to alter cuticular waxes and increasing herbicide absorption.

Glyphosate alone or mixtures should be applied with ammonium sulfate (AMS). AMS enhances glyphosate absorption and translocation and deactivates antagonist hard water salts (Na, Ca, Mg, Fe). As spray droplet water evaporates, sulfate from AMS binds with antagonist salts and prevents binding with glyphosate. In addition, ammonium from AMS binds with glyphosate resulting in greater absorption and weed control. We also recommend a non-ionic surfactant (NIS) with glyphosate unless prohibited by the label. However, oil-based formulations like Stinger, ethofumesate or Betamix tank-mixed with glyphosate perform better with oil adjuvants (crop oil concentrate or methylated seed oil) than NIS. High surfactant oil concentrate (HSMOC) adjuvants have a higher surfactant concentration than COC or MSO and enhance oil solute herbicides without decreasing glyphosate activity.

Tom Peters
Extension Sugarbeet Agronomist
NDSU & U of MN

around the state

AROUND THE STATE

NORTH CENTRAL ND

Cooler temperatures at the start of last week may have slowed planting progress just a bit in the North Central region, however, warmer temperatures arrived the second half of last week allowing growers to get back in the field. Those temperatures are forecasted to continue warming into much of this week with many areas forecasted into the mid-80s. Currently, small grains are emerging throughout the area. Pulses should be emerging soon if they have not already started in some areas. Corn and canola planting are now underway at the NCREC. Here are some quick precipitation reports from the last week (starting May 10th): Minot: 0.05”; Bottineau: 0.34”; Garrison: 0.11”; Karlsruhe: 0.15”; Mohall: 0.25”; Plaza: 0.14”; and Rugby: 0.05”. Bare soil temperatures at the NCREC was observed at 65°F as of May 18th.

Canola flea beetle populations continue to be low at the NCREC trapping site. However, as temperatures warm and canola begins to emerge, those numbers will begin to rise making scouting more important. Please refer to the May 2nd issue of the Crop and Pest Report for more information on Canola Flea Beetles. A stray cutworm or two has been observed at the NCREC. As I have scouted some of the field areas around the NCREC, some dandelion, kochia, and foxtail have been observed.

TJ Prochaska
Extension Crop Protection Specialist
NDSU North Central Research Extension Center
NORTHWEST ND
A lot of crops were planted last week and most producers are past the half-way mark if not farther along. Most small grains and pulses have been planted and those growing sunflower, soybean, and corn are moving on to planting their warm-season crops. Now we just need some rain! A few scattered showers moved through Northwest ND over the weekend of May 16, but most places received less than 0.1”. The top soil is dry in most areas and strong winds and warm temperatures are only drying the surface out even more. Highs for this week are predicted to be in the 80’s with a chance for some showers and cooler weather over Memorial Day weekend.

Despite the good planting progress this spring, crop emergence is slow. Cool weather the past two weeks and dry conditions are making crops dependent on soil moisture alone for germination. Peas and lentils planted 3 weeks ago are emerging with the farthest along at 1 true leaf. Small grains planted about two weeks ago are just now emerging. Without significant rain, spotty stands are likely as crops struggle to get going.

Clair Keene
Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

NORTHEAST ND
A week of warmer temperatures and a rainstorm has mixed effects across the region. Rainfall was fairly uniform with NDAWN stations recording about between 0.76” to 0.88”. In the Langdon west to Rolla area, seeding progress is still very slow. We are waiting for the fields to dry up. Outside of this region, seeding progress is occurring where the fields are ready to go. Sporadic harvest of corn and canola is occurring along with burning of fields. I observed a spring wheat field emerged in Walsh County. Seeding of small grains, sugarbeets and corn are occurring. With a May 1st planting date, we are about 53 to 93 corn GDD below average. Flea beetles remain active.

Lesley Lubenow
Extension Cropping Systems Specialist
NDSU Langdon Research Extension Center

SOUTH-CENTRAL/SOUTHEAST ND
With warm air and soil temperatures and absence of rain, crop planting and development of emerged plants have accelerated. According to NDAWN, average daily bare soil temperatures are in the mid-50s to low 60s. Rainfall during May 1-18 ranged from 0.25 inch (Robinson) to 1.9 inches (Dazey and McHenry), with the Carrington REC receiving 1.1 inch.

Alfalfa regrowth is at <8-inch height. Winter rye and winter wheat are in the late tillering to early flag-leaf emergence stages, depending on last fall’s seeding date. Seeding progress with small grain and corn in the region continues to be variable, possibly nearing 50% of acres completed. Barley and spring wheat seeded late April are at the 2- to 3-leaf stages. Based on growing degree day units, corn planted on or before April 25 should be emerged.

Soybean planting continues and dry bean planting also is starting. Results from a recently evaluated database of NDSU soybean planting rate and row spacing field trials in eastern North Dakota indicate maximum yield was reached at 170,000 pure live seeds (PLS)/acre in narrow rows (12-14 inches). If planting in wide rows (24-30 inches), yield was greatest at 190,000 PLS/acre. These numbers can be used as a guide, but farmers should fine-tune their planting rates based on soybean seed and market prices, soil productivity, etc.

Foxtail has joined the list of emerged weeds.
SOUTHWEST ND

Planting progress continues. Many are in need of moisture as the top soil has been dry. Winds have been blowing topsoil away over the past week. Many of the earlier planted crops are beginning to emerge. Pea leaf weevil appears to be an issue again this year with reports of leaf notching on emerged peas.
WEATHER FORECAST
The May 21 through May 27, 2019 Weather Summary and Outlook

The long wait for warmer weather finally ended this past week. Temperatures ranged from a bit below to a bit above average this past week with most of the cooler temperatures occurring late last week (Figure 1). These next 7 days will overall average above seasonal normals, but not on all 7 days as there will be at least one chilly day in most locations. The coolest day will be on Saturday and/or Sunday depending on your location but the rest of the days are expected to be near or above average. These cooler days are expected mostly because of cloud cover and potential precipitation meaning no frost is expected during this period, but I have a feeling we will still experience at least one more morning with temperatures near freezing yet this spring.

Figure 3. Departure from Normal Average Temperature from May 13 to May 19, 2020 at selected NDAWN stations

Last week I had mentioned there was a possibility that the warm air as it surged into the area may stall and bring with it a band of heavier rain. There were two areas of heavy rain this past week. One across parts of South Dakota and especially southern Minnesota where anywhere from 2 to 4 inches of rain, with localized higher amounts fell. That system was expected to stay mostly to our south as it did. The second occurred to our north, especially in Saskatchewan where some localized 1 inch + amounts occurred. A piece of that disturbance did bring some very isolated 1 inch rains to northwestern North Dakota that impacted our Epping NDAWN (North Dakota Agricultural Weather) station but overall North Dakota was spared the heavier rain which allowed planting to continue or in other locations for significant drying to occur (Figure 2).
In the next week there will be three disturbances that will bring with it some rain. The first will be today (Thursday) in especially far western North Dakota. That same disturbance will also bring some hit and miss showers and thunderstorms to eastern North Dakota tonight (Thursday) into Friday. The second possibility looks to be Saturday into Sunday. The weekend storm should be more widespread and although amounts will vary greatly across the state, almost the entire region will at least have a chance of recording rain this weekend. The third chance looks to be coming toward the middle of next week. Even with these three disturbances, there should be many opportunities to get out in the field in the next 7 days and as previously mentioned outside of a day or two of cooler temperatures this weekend, overall the next week looks above average for temperatures.

The projected growing degree days (GDDs) base 32°, 44° and 50° for the period of May 14 through May 20, 2020 can be found in Figure 3.
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Janet Knodel
Co-Editor
Entomology
701-231-7915
Plant Sciences
701-231-7971
Soils
701-231-8881

Sam Markell
Co-Editor
Plant Pathology
701-231-7056
Weeds
701-231-7972
Ag Engineering
701-231-7261

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This publication will be made available in alternative formats for people with disabilities upon request (701) 231-7881. This publication is supported in part by the Crop Protection and Pest Management Program [grant no. 2017-70006-27144 / accession 1013592] from the USDA National Institute of Food and Agriculture.

NDSU Crop and Pest Report  http://www.ag.ndsu.edu/cpr/