GOOD BUGS II WORKSHOP

Come learn about farming and integrating beneficial insects for natural pest control, a Conservation Biocontrol Short Course! On Wednesday, August 15th, the course will be offered in Grand Forks County at the Larimore Dam Rec Area. Additionally, the course will be offered a second time at the Carrington Research Extension Center on Thursday, August 16th. Both offerings will start at 9 am at their respective locations.

Participants will learn about supporting beneficial insects that provide natural pest control during this full-day short course. Conservation biological control is a science-based pest management strategy that seeks to encourage beneficial insects back into cropping systems for natural pest control, ultimately rewarding farmers with economically-viable pest management systems. A representative from the Xerces Society will overview conservation biological control and beneficial predators and parasitoids that attack insect pests. Participants will learn how common farm practices can impact beneficial insects and how to assess and create farm habitat for beneficial insects. This workshop is sponsored by Conserving Natural Resources, Xerces Society, USDA Natural Resources Conservation Services, Soil and Water Conservation Society and NDSU Extension.

Please register at: http://www.ndswcs.org/

Please note, there is a small fee for registration and it is limited to 50 per site. Lunch and snacks will be provided. If you have any questions, please contact Dr. Travis Prochaska via email Travis.Prochaska@ndsu.edu.

TJ Prochaska
Extension Cropping Systems Specialist
NDSU North Central Research Extension Center
RED SUNFLOWER SEED WEEVIL INCREASING

The USDA NASS reports that 54% of the sunflowers were blooming in North Dakota as of July 30th compared to only 31% last year (USDA NASS News Release).

Economic threshold levels of red sunflower seed weevils (RSSW) were present in blooming oilseed sunflowers in southeast ND (Cass County), and southwest ND near Dickinson (Stark County). Please send me your field reports including locality and numbers.

Scouting should continue until the economic threshold is reached or most plants have reached 70% pollen shed. At 70% pollen shed, plants are no longer susceptible for egg laying or significant damage. On older flowering plants (after R5.7), larvae of RSSW (and banded sunflower moth larvae) will be feeding inside the seeds and protected from the insecticide. By then, much of the feeding damage has already occurred and no foliar insecticide is recommended then.

SCOUT FOR BERTHA ARMYWORM IN CANOLA

Mature bertha armyworm larvae were found feeding on the pods of canola in northcentral McHenry County (Source: Kristine Keller, Farmers Union Oil of Velva, Butte, Drake and Anamoose). Older larvae reach a length of ¾ to 1½ inch and are velvety brown to black with a yellowish band along each side of the body. As leaves dry, these larvae begin feeding on pods or flowers. The greatest risk of crop injury occurs in August as the worms are mature. Larvae chew holes in the pods, eat the seeds and cause premature shattering. Mature larvae eat approximately 85% of the plant materials consumed during their larval development. Larvae feed at night and often hide underneath leaf litter and clumps of soil during the day, which makes them difficult to see when scouting.

The Economic Thresholds is an average of 20 to 32 larvae per square yard with insecticide + application costs of $6.50 to $10 per acre, respectively. However, thresholds may need to be lowered if larvae are feeding on maturing pods at high population densities.

Fields above the economic threshold level should ideally be sprayed once the hatch is complete and when larvae are small about ½ inch. Apply a well-timed insecticide in early morning or late evening when larvae are actively feeding. High volumes of water should be used for good coverage of the dense canola canopy. Insecticides that are registered to control bertha armyworm on canola are listed in 2018 North Dakota Field Crop Insect Management Guide E-1143. When larvae are mature, 1½ inch long, they are close to the pupal stage, which is a non-feeding, resting stage. So, no insecticides are necessary this late in the insect’s development and the feeding damage is already done.

Please see the NDSU Extension publication on Bertha armyworm in Canola: Biology and Integrated Pest Management E1347 (revised) for more information.
SUMMER FLEA BEETLES FEEDING ON CANOLA PODS

The summer population of flea beetles has emerged in large numbers this year. Flea beetles are being observed in maturing canola fields (North Central ND; Source: Brady Schmaltz, Arthur Companies), Brassicas crops being used as cover crops (i.e., radishes) and in backyard gardens. For canola, there is no established Economic Threshold for flea beetle feeding injury on pods. Flea beetle feeding injury on pods is usually most significant on late-planted canola and on the upper pods. Fortunately, the lower pods of canola are the primary pods that provide most of the canola yield. However, flea beetle feeding injury on pods can result in poor seed fill, premature pod drying, or pod shattering. If the canola is mature, pass the 5.2 growth stages (when seeds in lower pods have turned translucent to green), then yield will probably be less impacted by flea beetle feeding. In a flea beetle trapping study of freshly swathed canola, the number of flea beetles per trap decreased dramatically after 7-days of drying in swath. Flea beetles are mobile insects and fly around to find ‘greener’ canola fields (late-planted) for summer feeding.

Insecticides registered for flea beetle control with a short, 7 day Pre-Harvest Interval (PHI) include: Delta Gold (deltamethrin), Declare (Gamma-cyhalothrin), Warrior II and generics (lambda-cyhalothrin), and Mustang Maxx (zeta-cypermethrin). Insecticides that are labeled to control flea beetles on canola are listed in 2018 North Dakota Field Crop Insect Management Guide E-1143.

SOYBEAN APHIDS INCREASING SLOWLY

Based on recent counts from southeastern ND, soybean aphids are slowly starting to increase. A few fields that were scouted this week in Barnes and Cass Counties, had one or two plants with 100-150 soybean aphids per plant. The remaining plants were all very low, <10 aphids per plant. Therefore, we still have a ways to go to reach the Economic Threshold of an average of 250 aphids per plant with 80% of plants infested, and increasing aphid populations. The soybean crop ranges from R2 (full bloom) through R4 (full pod set) crop stages, so we are getting closer to the R6 (full seed set) crop stage where there is minimum impact on yield from soybean aphid feeding injury.

Continue to scout fields for soybean aphid populations and stay tuned for more reports. Maps are posted weekly on the NDSU IPM website.
PROTECT POLLINATORS - WISE INSECTICIDE USE

Bees are in trouble in the United States and other areas of the world. Native bee species are declining in numbers due to habitat loss, pesticides and other factors. Approximately one-fourth to one-third of European honey bee colonies in the U.S. die each year despite the best efforts of their attentive beekeepers.

An Integrated Pest Management (IPM) approach should be used to promote judicious use of pesticides for pest control only when needed and to implement scouting, use of economic thresholds and non-pesticide pest management strategies, such as cultural, biological control or host plant resistance.

Remember, most of our insecticide used in field crops are broad-spectrum insecticides. Any broad-spectrum insecticide can kill ‘all’ insects, including bees and natural enemies of the targeted insect pest. Choose the least hazardous formulation of an insecticide product for bee safety (Table 1).

Application is recommended in the late evening (after sunset) or when temperatures are below 55 °F, when most bees are not actively foraging. Remember, some bees such as bumblebees forage in cooler temperatures (up to 50 °F) and are actively foraging in the early morning, much longer than honeybees.

Use short-residual insecticides. If possible, ‘spot’ treat instead of broadcast spraying to minimize the area treated with insecticide, especially for edge insect pests, such as young grasshoppers that do not move very far from their egg hatching sites.

Remember to use all pesticides in a manner consistent with the label. Always read, understand and follow the pesticide’s label directions in regards to pollinator protection. Some pesticide labels require applicators to notify beekeepers 48 hours prior to applications to blooming crops (or if flowering weeds are present in fields).

Pesticides that have the honeybee hazard icon (on right) on the label indicate that this product is highly toxic to bees and specific application restrictions apply to protect pollinators. An example of an acutely toxic substance to bees is the active ingredient imidacloprid or chlothianidin in the neonicotinoid insecticide group, IRAC 4A (systemic insecticides).

Finally, know and communicate with your local beekeepers if you need to spray flowering sunflowers or other flowering field crops for insect pests. Please PROTECT honeybee colonies by notifying beekeepers before an insecticide application (at least a 48 hours notice), so they can move or cover up their hives before the application.

To find beekeepers, see the North Dakota Bee Map on the North Dakota Department of Agriculture website. Zoom in on the area of interest to find names and contact information of local beekeepers. Please read our North Dakota Pollinator Protection Plan from the North Dakota Department of Agriculture.

A NDSU Extension YouTube video is available on Protect Bees from Pesticide Poisoning.

Janet J. Knodel
Extension Entomologist
SOYBEAN PROGRESS

The soybean crop has developed rapidly during the summer of 2018. If a 0.9 maturity group soybean was planted on May 20 near Fargo, the accumulated growing degree-days (GDD) on July 30 were 1481 GDD compared with the 1274 normal accumulated GDD for the same date. At this time, there are about 16 percent more accumulated heat units compared to the long-term average. Heat units push the soybean plant towards maturity. The soybean maturity application called ‘soybean growing degree days’ at the North Dakota Agricultural Weather Network (https://ndawn.ndsu.nodak.edu/soybean-growing-degree-days.html) predicts a 0.9 maturity variety, mentioned above, to be physiological mature on August 26. Physiological mature means that 95% of the soybean pods will have the mature color. It will take 10 to 14 days to further dry down the grain before it can be harvested. The predicted date of physiological maturity will change slightly depending on the temperatures from today until maturity. If we will have below average temperatures, the maturity will be delayed by a few days. To get a prediction graph within the growing degree model, one needs to select the maturity group of the soybean planted, seeding date, and nearest weather station. The soybean growing degree model also indicates the normal first frost date for the selected weather station.

Soybean Accumulated GDD for Fargo, ND

![Soybean Accumulated GDD for Fargo, ND](https://ndawn.ndsu.nodak.edu/soybean-growing-degree-days.html)
GOSS’ WILT UPDATE IN THE STATE

Reports of the bacterial disease Goss’ leaf blight and wilt have been received over the past couple weeks. The corn disease survey in 2017 identified Goss’ wilt in over 30% of the fields and it is likely that the disease may be common again this year, especially in areas of the state that received severe weather (i.e.: rain, wind, hail, etc). Although there is very little that can be done during the growing season, it is important to properly identify Goss’ wilt and avoid unnecessary fungicide applications. This article will review the key diagnostic features of the disease, risk factors and management options.

Symptoms and Signs

One of the first symptoms noticed in a field is leaf tip burning. This symptom can also be caused by drought stress, wind damage or nutrient stress (Figure 1). Close examination of the leaf is needed for field diagnosis of this disease. Goss’ leaf blight lesions will be water-soaked (greasy), irregular and have freckles within the lesion (Figure 2). Lesions will also exude bacterial ooze given lesions are shiny appearance. The disease...
is often noticed in pockets or on a field edge bordering a previous corn crop (Figure 3) or that held infected corn residue from last year’s corn harvest.

**Risk Factors**

Factors that increase risk for Goss’ wilt include growing a susceptible hybrid, having a short rotation away from corn (bacterium survives 10-12 months), reduced tillage, irrigation, and events that injure corn plants. Often times, Goss’ leaf blight is noticed after corn leaves are injured from hail, strong winds, or sand blasting as it provides an entrance for the bacterium. The injury in combination with warm and humid weather will favor disease development.

**Management**

The best management tools for this disease include the use of resistant hybrids, crop rotation, and tillage (where appropriate). Often times I receive questions on the efficacy of hydrogen peroxide, copper-based products or citric acid on Goss’ wilt. Although I have not tested these products in North Dakota on Goss’ wilt, research conducted in Nebraska, Indiana and Illinois suggest that these products are not a viable management option.

Andrew Friskop
Extension Plant Pathology, Cereal Crops

*Figure 2. Goss’ leaf blight lesion with water-soaking and freckles.*

*Figure 3. Goss’ wilt on a field edge bordering a soybean field that was previously corn (Photo credit – Sam Haugen, Grand Forks County Agent).*
SOIL SAMPLING SEASON BEGINS FOR 2019 CROP YEAR

With the beginning of winter wheat, rye and some spring wheat harvest, it is time to consider soil sampling for the 2019 crop year. The following are important to consider:

1. Sampling time

   For soil nitrate, there is no perfect, stable time. Some years past, I investigated the effect of sampling time on soil nitrate values from August through April and found that at some sites, values decreased, some stayed the same, and some increased. There was no relationship between trend and rainfall. Any time is as good as any other time. Some of you have noticed that NDSU Nitrogen (N) recommendations carry a ‘plus or minus 30 lb/acre rate’ to final recommendations. This is part of it. However, it is very important to have a soil test number on which to base an N rate. If you do not have a number from a specific field (each field has a personality of soil fertility), then what you have is a not-so-educated guess.

   Also, for Phosphorus (P), soil pH, Electrical Conductivity (EC - salt index), Calcium Carbonate Equivalent (CCE), Organic Matter (OM), zinc and chloride, anytime is a good time. I would sample for P and soil pH (and K) in an unworked field whenever possible, so the 0-6 inch sample core is consistent. Achieving consistent core depth with a worked field is very difficult, and in some cases, impossible.

   Soil test Potassium (K) values vary through the season. Work conducted in Illinois, and now work conducted here shows that highest K values are in early spring. As the season progresses, K values decrease, achieving their lowest values in August through mid-September, then increase until freeze-up. Sampling anytime is OK, but note when K sampling was last conducted, and then sample the same time of year for K next time. Sampling time for K is important. The soil test K values vary slowly with K fertilization, so probably every two years is good enough, although I would not argue with anyone wanting to sample every year.

2. What crops should have nitrate sampling?

   Traditionally, all crops that are N yield dependent (small grains, corn, beets, potato, sunflower, canola, flax) require a soil test for nitrate-N. However, based on the high residual nitrate values before soybean last fall, I would also consider a nitrate soil test before soybean in the eastern 50 miles of the state in Iron Deficiency Chlorosis (IDC) country. High soil nitrate (greater than 50 lb N per acre) can increase the severity of IDC to soybean and a grower needs to know if it is present.

3. How to sample

   The days of a composite soil test should be over. There is enough equipment around owned by farmers or their suppliers that knowing how a field varies in fertility from boundary to boundary is manageable and economically advantageous. Zone sampling should be the rule in this state. The only part of a field where a grid of more than 1 sample per acre should be used is the area where high rates of manure have been applied within the past 20 years. A 2.5 acre grid is not a substitute for a good zone sampling and a 2.5 acre grid will not identify the fertility patterns within most fields. It works in Iowa because all of their variability has the same fertilizer recommendation; it’s all in the high range. In this state, variability is much larger and the variability is in soil test ranges requiring different rates.

4. Sampling in low pH soils

   As addressed in an earlier 2018 Crop and Pest Report, the number of acres in North Dakota with soil pH values near or below 5 continues to increase, particularly in no-till fields that have had N applied to or near the surface for many years. When sampling these fields, it is important to sample the 0-2 inch depth, and the 2-6 inch depth for pH. Application of liming materials, such as beet lime will go onto the soil surface, and knowledge of pH with depth will not only provide information on whether a surface application will be effective, but the farmer can track pH progress after lime application.
5. Trends of Organic Matter Following Movement to No-Till

I smile when I read that a farmer increased organic matter a full point one or two years after transition to no-till. This is not possible. What happened is that whoever is taking the soil sample pushes the soil probe through the no-till residue, which is not really organic matter, and the residue becomes part of the soil sample result. Growers transitioning to no-till must insist that their soil sampling people get out of the truck, kick the residue aside and then sample the cleared area with a 0-6 inch core. That will provide a real trend in real organic matter.

Dave Franzen
Extension Soil Specialist

...around the state...

NORTH CENTRAL ND

Pulse growers continue to monitor for pea aphid and chickpea growers continue to monitor for Ascochyta in the area. Some desiccation is being considered in the North Central area in Pulses as harvest nears. Small grain (winter wheat) harvest began on a small scale this past week.

The Minot NDAWN station will be replaced during the next week or so. Until that time, I would refer disease forecast models to the next closest NDAWN station.

As we look into the month of August – the Good Bugs Workshop will be offered once again. In this full-day short course, participants will learn about supporting beneficial insects that provide pest control. Conservation biological control is a science-based pest management strategy that seeks to encourage beneficial insects back into cropping systems for natural pest control, ultimately rewarding farmers with economically-viable pest management systems. Participants will learn how common farm practices can impact beneficial insects and how to assess and create farm habitat for beneficial insects.

One session will be offered in Larimore, ND, at the Larimore Dam Rec Area and Campground on August 15th. The second will be hosted at the NDSU Carrington Research Extension Center on August 16th. For registration or questions on the event, please contact TJ Prochaska at travis.prochaska@ndsu.edu or connect with him at the NCREC by calling 701.857.7682. Registrations received by August 1st will receive the early bird pricing of $25. All registrations accepted after August 1st will $40. These workshops are approved for 6 CEUs in Pest Management (NDCCA).

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

Crops are starting to turn color in Northwest ND. Most farmers I've spoken with say they are about 1 to 2 weeks away from starting wheat harvest. At the Williston REC, winter wheat harvest started last week and pea trials are getting harvested now. Our production pea and lentil fields will likely get desiccated later this week and harvested next week. Production wheat fields will get harvested in the next 1 to 2 weeks.

I attended the Loyal to the Soil Field Day held in Minton, SK by farmers Derek and Tannis Axten last Monday. About 100 people attended and many young farmers were there, with many from ND! The interest in intercropping was high and we saw fields with chickpea + flax, barley + fababean, durum + fababean, and pea + canola. For ascochyta management in chickpea + flax, Derek has one field that only received one fungicide application and another where he has not applied any fungicide but has sprayed compost tea as a foliar application twice. I’m looking forward to following-up with him after harvest and hear how his chickpeas did.

Clair Keene
Extension Cropping Systems Specialist
NDSU Williston Research Extension Center

NORTHEAST ND

The need for a good rain shower has developed over the past week. Pinto beans and soybeans are showing moisture distress in scattered areas across the northeast. Barley harvest has started.

For insect concerns, soybean aphids are isolated and in small numbers when found. Banded sunflower moth levels are still high in pheromone traps. This pest can be a concern for late-seeded sunflowers, which have just started to bloom in the region. Grasshoppers are noticeable, but be aware of IPM thresholds of 8 to 14 adults per sq. yard in a field or 21 to 40 adults per sq. yard in the field margin. Following IPM thresholds will save time and money especially when there isn’t a lot of working room in projected crop profits.

No new concerns have developed in the disease realm. Dicamba injury to soybeans have been observed in low amounts in the northeast region. Granted, there is less acreage using this technology here than in southeast ND.

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

SOUTH-CENTRAL

The region’s NDAWN station data indicate the following rainfall amounts:
* April 1 to July 30 - 5.4 inches (Harvey) to 14.6 inches (Streeter), and 8.6 inches at the Carrington REC (CREC).
* July 1 to 30 - 0.9 inch (Harvey) to 7.7 inches (Oakes), and 2.7 inches at the CREC.

Our current dry period is good for early season crop harvest and haying but not to maintain yield potential in row crops. NDAWN data indicates corn emerged on May 15 and soybean emerged May 20 used 0.2- to 0.24-inch of water per day during July 24-30. Row crops are showing soil moisture stress generally in Sheridan and Wells counties, and in field areas with poorer soils throughout the region.
Harvest continues with winter cereals, field pea and barley, and has begun with spring wheat. Early planted corn is in the blister to milk stages (R2-3). Based on NDawn growing degree day units (GDDU) accumulated from May 1 planting date through July 30, the region’s corn has accumulated 1435 GDDUs (Wishek) to 1650 GDDUs (Lisbon and Oakes), which continues to be well ahead of the long-term average for the same period. Soybean and dry bean are in seed development stages, and sunflower are shining with yellow during pollination.

Upcoming CREC crop tours:
*Barnes County off-station - corn and soybean (Fingal area): August 8; 8 a.m.
*Row Crop - corn, dry bean and soybean (CREC): August 23; 4 p.m.

SOUTHWEST ND
In the month of July, NDawn observed 2.72 inches of rain in Hettinger, 1.2 inch in Bowman, 3.97 inches in Carson, and 0.89 inch in Mott. According to NDawn Dickinson has received 2.87 inches of rainfall from July 1st to July 31st, however over half of that fell in the first 2 weeks of the month. Some parts of the region could use moisture with some cornfields in the area looking drought stressed. Many small grain fields are approaching maturity. Some sunflowers in the area are beginning to flower.
WEATHER FORECAST

The August 2 through August 8, 2018 Weather Summary and Outlook

Temperatures were well below average at most of the North Dakota Agricultural Weather Network (NDAWN) stations during the period of July 25 through July 31, 2018 (Figure 1). With the second half of July mostly on the cool side, the month as a whole finished near or slightly below normal for temperatures. That was a noticeable departure from what was recorded during both May and June as both of those months finished with above average temperatures.

![Figure 1. Temperature Departure from Average for the period of July 25 through July 31, 2018](image)

There were some widely scattered thunderstorms in the region this past week on a few days with most of the NDAWN station not recording much precipitation (Figure 2). In fact, several NDAWN recorded little or no precipitation from July 25 through July 31, 2018. South central and southeastern North Dakota into west central Minnesota recorded above average rainfall in July, but most of the rest of the area recorded below average rainfall during July.
The past couple of weeks the temperatures have mostly been below average. The next couple of weeks will see temperatures recover back to average or even above average. There will be several cold fronts moving through with a day or two of cooler air, similar to what we experienced yesterday and what eastern North Dakota and western Minnesota are experiencing today (Thursday). Yet, overall a warmer period is expected for the first 10 days of August. The transitional periods from warmer to cooler will of course be our main thunderstorm opportunities. This weekend and toward the middle of next week looks to be the best time periods for rainfall. This time of year, widespread rain events are less likely, meaning most of the rain we get in the near term will come from scattered or isolated thunderstorms. Therefore, typical of August, a trend toward drier conditions in many areas will be the trend for the first part of this month. The projected growing degree days (GDDs) Base 50°, 44° and 32° for the period of August 2 through August 8 is presented in Figure 3.
Using May 5 as a planting date, the accumulated wheat growing degree days (Based 32°) through July 31, 2018 is presented in Figure 4. You can find your exact GDDs for your planting date(s) at: https://ndawn.ndsu.nodak.edu/wheat-growing-degree-days.html

Figure 4. Accumulated Wheat Growing Degree Days from May 5 through July 31, 2018

Using May 10 as a planting date, the corn accumulated growing degree days (Base 50°) through July 31, 2018 is presented in Figure 5. You can find your exact GDDs for your planting date(s) at: https://ndawn.ndsu.nodak.edu/corn-growing-degree-days.html

Figure 5. Accumulated Corn Growing Degree Days from May 10 through July 31, 2018

Daryl Ritchison
Meteorologist
Interim Director of the North Dakota Agricultural Weather Network