# CROP MANAGEMENT FIELD SCHOOL – JUNE 23, 2011

NDSU Extension Service’s annual crop management field school will be offered Thursday, June 23, from 9 a.m. to 4:30 p.m. at the Carrington Research Extension Center. For more information, see the “AROUND THE STATE” article on page 14.

---

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCREASING WHEAT MIDGE POPULATIONS EXPECTED IN 2011</td>
<td>1</td>
</tr>
<tr>
<td>CANOLA PLANTING DATE</td>
<td>3</td>
</tr>
<tr>
<td>BROADCAST SEEDING SMALL GRAINS</td>
<td>3</td>
</tr>
<tr>
<td>WINTER WHEAT AND STRIPE RUST</td>
<td>4</td>
</tr>
<tr>
<td>NONCONVENTIONAL FERTILIZER ADDITIVES AND AMENDMENTS</td>
<td>5</td>
</tr>
<tr>
<td>PREEMERGENCE HERBICIDES IN CONVENTIONAL SUGARBEET</td>
<td>7</td>
</tr>
<tr>
<td>PROPER MANAGEMENT OF WATERHEMP – NOW IS THE TIME TO TAKE CONTROL</td>
<td>7</td>
</tr>
<tr>
<td>SPRUCE SPIDER MITE CORRECTION</td>
<td>9</td>
</tr>
<tr>
<td>BANDED ASH BORER FOUND IN NORTH DAKOTA</td>
<td>10</td>
</tr>
<tr>
<td>STORM-DAMAGED TREES</td>
<td>11</td>
</tr>
<tr>
<td>WEATHER &amp; CROP PHENOLOGY MAPS</td>
<td>15</td>
</tr>
<tr>
<td>AROUND THE STATE</td>
<td>12</td>
</tr>
</tbody>
</table>

---

# INCREASING WHEAT MIDGE POPULATIONS EXPECTED IN 2011

Soil sample tests in North Dakota indicate a dramatic increase in levels of overwintering wheat midge larvae (cocoons) for the 2011 season. One hundred eighty-one soil samples were collected from 19 counties to estimate the regional risk for wheat midge. The distribution of wheat midge in the 2011 forecast map is based on unparasitized larval cocoons found in the soil samples collected in the fall of 2010.

The 2011 forecast for wheat midge risk has increased significantly from 2010, especially in the northwestern and north-central regions of North Dakota. In 2010, wheat midge larval cocoons ranged from zero to 3,750 larval cocoons per square meter and averaged of 417 larval cocoons per square meter. In contrast, wheat midge cocoons sampled in 2009 ranged from zero to 750 midge larval cocoons per square meter, with an average of 129 larval cocoons per square meter.

Areas where populations of cocoons exceed 1,200 per square meter are at high risk for wheat midge infestation in 2011. These areas include isolated pockets in seven counties including the eastern half of Divide, most of Burke, northeastern Renville, southeastern Mountrail, western and eastern edges of Ward, western McHenry, and west-central McLean. If wheat is planted in these high risk areas, producers must be prepared to monitor their fields closely for wheat midge infestations, and include the cost of an insecticide treatment in their wheat production budget. Otherwise, undetected and uncontrolled infestations may result in significant yield losses and/or unplanned pesticide costs.

Wheat midge populations of greater than 500 to 1,200 larval cocoons per square meter have expanded into eight counties from five counties last year. Pockets were found in south central Bottineau, central Ward, central Cavalier, west-central Towner and north-central Walsh, in addition to the previously mentioned counties with a high risk. Areas where populations are above 500 larval cocoons per square meter also require close monitoring by wheat producers.

Wheat midge larvae feed on the kernel and negatively affect yield, grade and quality. If the wheat crop is heading during adult wheat midge emergence, wheat midge can cause severe injury to the kernels and yield loss can occur. Weather conditions prior to and during adult wheat midge emergence will play an important role in determining the level of economic damage. Conditions that favor midge development and outbreaks include high soil moisture in late June and warm, calm and humid conditions during the egg-laying stage in early to mid-July.
There also are several pockets of 201 to 500 larvae per square meter in most of the remaining counties, except in Eddy and Nelson Counties. Areas with more than 200 larval cocoons per square meter should be scouted to determine if an action threshold population level exists. However, these areas are considered lower risk.

With a moderate to high risk forecast for wheat midge infestation statewide, early planting and field scouting will be critical for controlling wheat midge infestations during the 2011 growing season. Early planting and selecting an early maturing variety of hard red spring wheat is one of the best preventative strategies to mitigate wheat midge populations and yield loss. The early planting of wheat prior to 200 growing-degree days (using a base of 40 degrees) can reduce midge damage because wheat will flower before peak midge emergence.

Early planting of wheat typically occurs before mid-May in most areas of North Dakota. Wheat is most susceptible from heading to 50 percent of the primary heads with anthers. Planting wheat between 200 and 600 degree days is in the high-risk window because the wheat midge emergence will likely coincide with heading. Producers who must plant during this high-risk window should stagger their planting dates. Late-planted wheat (after 600 degree days) will miss the peak emergence of wheat midge, but has the risk of frost damage and lower yields, or even greater losses due to barley yellow dwarf virus, a virus transmitted by cereal aphids.

Scouting should be conducted at night when temperatures are greater than 59 degrees and winds are calm (less than 6 miles per hour) during the heading to early flowering crop stages. The economic threshold is when the adult midge density reaches one midge per four to five wheat heads for hard red spring wheat or one midge per seven to eight heads for durum. The critical spray timing is from late heading to early flowering. Most insecticides labeled for wheat midge control can be tank-mixed with a fungicide if scab is a potential problem.

To aid in scouting and risk evaluation, a degree-day model has been developed to predict the emergence of adult wheat midge and is available on the North Dakota Agricultural Weather Network at http://ndawn.ndsu.nodak.edu/wheat-midgeedd-form.html.

The parasitic wasp, *Macroglenes penetrans*, also helps reduce wheat midge populations by killing the wheat midge larvae. The average wasp parasitism rate increased slightly from 13 percent in 2009 to 17 percent in 2010. Parasitism plays an important role in keeping wheat midge in check naturally most years, so we need to continue to conserve parasitic wasp populations when possible by spraying insecticides only when necessary. Avoid any late insecticide applications to minimize negative impacts on the parasitic wasps, which are active at that time.

The soil samples were collected by NDSU Extension Service agents and the wheat midge larval cocoons extracted by the NDSU Department of Entomology. The wheat midge survey is supported by the North Dakota Wheat Commission.
CANOLA PLANTING DATE

The date of planting canola is an important management decision. With the late start of the spring, producers need to consider all their crop options and know what the potential effects might be of a later than optimum planting date.

NDSU researchers have evaluated the effect of planting date on yield at different locations. Data presented in Figure 1 was collected for Carrington and Minot from 1998 and 2010 planting date studies, and for Langdon the average from 1989-1994, average from 1992-1995, and 2010 data was used to construct the graph. Yields were expressed as percent of the highest yield obtained in each separate experiment. The graph indicates that the yield potential decreased as canola was planted later in the season.

Figure 2 provides the trend line for yield potential of canola hybrids. The average canola yield for Carrington, Minot and Langdon from the official NDSU variety trials was computed for the period 1996 through 2010. The yields increased during this period. This can partly be explained by the genetic improvements obtained and the favorable growing conditions during the past few years.

Producers are encouraged to plant their canola as soon as possible in this delayed 2011 season. Keep in mind that respectable yields can still be obtained even with slightly delayed seeding, if the growing conditions are favorable for canola.

Fig 1. Percent of yield for canola planting date studies at Carrington, Langdon, and Minot ND.

Fig 2. Canola yield in pounds per acre for averaged yields of official canola variety trials at Carrington, Langdon, and Minot, ND.

BROADCAST SEEDING SMALL GRAINS

Wet soils in nearly every region of the state have significantly delayed small grain planting this year. Moreover, the wet and cloudy weather forecast for this week will hamper any drying and further delay planting. Recently, I have had a few questions about the effectiveness of broadcast seeding small grains in fields that are too wet for a conventional seeder. I am not aware of any information from replicated research that addresses this question – this
type of research does not lend itself to small plot work. However, broadcast seeding of small grains and canola has been successfully used in wet years to hasten the planting process when soils have been excessively wet. The following guidelines for broadcast seeding were gleaned from information provided by others who have had experience at the farm level with this approach.

1. Both airplanes and floaters can be used for distributing seed. One advantage of using a floater is that both fertilizer and seed can be broadcast at the same time. If fertilizer has not been applied, simultaneously applying fertilizer and seed could significantly reduce the time and cost of doing those operations separately.

2. To ensure a good stand, seed after being broadcast must be incorporated. Incorporation of seeds ensures that they will imbibe sufficient moisture for germination. Furthermore, seedlings emerging from seeds with at least a half inch of soil covering will develop a more optimum adventitious root system and will be less prone to lodging. Harrows (rotary, medium and heavy) and light cultivators have been reported to be used successfully to incorporate seed. Generally, establishing small grain crops by broadcasting with a plane without cultivation is not successful. Given the cost of the seed and the airplane rental, this approach is risky. If it is too wet to harrow after seeding, then it is probably too wet to broadcast seed.

3. Broadcast seeding works best in soils that were tilled in the fall. For fields with residue, more aggressive harrowing may be required to make sure that seeds are adequately incorporated.

4. Increasing the seeding rate by 10% to 20% is justified given that some of the seeds will not establish because of sub-optimal conditions (poor seed/soil contact) for germination.

Joel Ransom
Extension Agronomist for Cereal Crops
joel.ransom@ndsu.edu

WINTER WHEAT AND STRIPE RUST

I have not heard of any reports of stripe rust in winter wheat in North Dakota this spring, but a recent Montana Ag Alert (May 10, 2011, information provided by Mary Burrows, Montana State University Extension Plant Pathologist) indicated that stripe rust over-wintered in winter wheat in western Montana (Flathead and Lake counties). Last year, we observed extensive stripe rust in some winter wheat cultivars in ND, including Hawken, Jagalene, and Darrell cultivars. Like Montana, we had heavy snow cover this year in ND, and snow which fell on non-frozen ground. These environmental conditions could allow stripe rust to survive over the winter, if fall infections were present. Please keep an eye open for potential over-wintering hot spots of stripe rust in winter wheat fields. If you see something suspicious, please alert me, your extension county or area agent, or your winter wheat agronomist. Very little stripe rust has developed in southern plains states this year, so we don’t expect a large influx of stripe rust spores from the south during the growing season.

Marcia McMullen
NDSU Extension Plant Pathologist, Cereals
marcia.mcmullen@ndsu.edu

Stripe rust in winter wheat, 2010
NONCONVENTIONAL FERTILIZER ADDITIVES AND AMENDMENTS

Higher commodity prices have been an incentive for the marketing of a deluge of products designed; it seems, to drain away farm income. I have fielded calls for about 100 products this winter and spring, which is far above a normal year. Most of these products have at best no advantage over standard commercial products, and in some cases may cause economic losses to growers who choose to use them over less expensive standard products and programs. I have limited space, so I will confine this alert to product groups with the exception of a couple of well-publicized products of questionable value. For more information on individual products, search the web for <i>Iowa State Compendium Nonconventional Additives</i>. The compendium contains research from non-biased sources for a large number of products. Since new products are continually introduced and it is not possible to test them all, look for product categories. For example, if a starter fertilizer is fish/shellfish extract based, search within the compendium for ‘fish’ and a number of product experimental results will be displayed. These associated studies will provide some direction to growers and suppliers whether the new product has a reasonable chance of success. Here is a summary of product categories:

**Soil conditioners:** These products are generally soap-based or surfactant based. In the short term (a few days) these products may reduce surface tension and allow water to penetrate soil better. However, they appear to break down rapidly and have had no long-term seasonal effects. Careful experiments on products such as Agri-SC™ have shown no differences in soil properties following its use. These products have no effect on soil salts.

**Biological nitrogen fixers:** All soils have bacteria that fix nitrogen. Clostridium and other bacteria are natural parts of all of our soils. In very controlled laboratory conditions, the amount of N that these bacteria can fix can be large. However, in soil most studies show only about 1-5 lb N/year. Environmental conditions including temperature, moisture, and perhaps natural pathogens and competitors limit their effectiveness. Adding more of these to the soil has not been helpful in field experiments.

**Nitrogen-fixing signal molecules:** In legumes, there is a complicated feedback mechanism for nitrogen-fixing bacteria attraction, infection and sustenance. Some of the signal molecules sent out by legumes to attract bacteria have been isolated and are now marketed under a variety of names. In careful field experiments, these products generally have not resulted in higher yield than normally inoculated varieties. With any growth regulator, the application of a one-time stimulant ignores the elegant feedback from the plant and the interaction of bacteria and plant. Legumes will only support so much nitrogen-fixation. With our present technologies we do not seem to be able to force them to fix more.

**Ortho-phosphate is better than poly-phosphate?** The debate over ortho-poly phosphate has raged for 40 years, since TVA developed poly-phosphate fertilizers (usually 10-34-0) in the early 1970’s. Many hundreds of unbiased studies have been conducted, including many in this region. There is no difference in plant P uptake or crop yield whether a grower applies ortho or polyphosphate fertilizers. Neither is more efficient than the other. I recommend a grower uses a P fertilizer based on cost per pound of P₂O₅, and the convenience of the formulation. If your brother-in-law sells a high-priced ortho, maybe you need to buy a little to have peace at Christmas. This is the only reason I can think of to use the high-priced materials.
**Phosphate inoculants:** These products, including TagTeam™ and Jumpstart™, contain a fungi that acidifies its hyphae zone (fungal root zone). If a soil has a pH well over 7 with significant carbonates, the acidification can dissolve carbonate minerals that coat P compounds and release some, perhaps as much as 10 lb P₂O₅/season. However, if the soil has a pH of 7 or below, it has no carbonates and it has no coatings of carbonates and it does nothing to improve P nutrition. Several studies of this fungus in the region have shown that without the proper soil conditions the product does not increase P availability to crops. The company knows this is what the data shows because a representative visited with Dr. Goos and myself before they went to market and they chose to ignore us. Hmmm.

**Micronutrient mixes:** A large amount of micronutrient mixes are sold I think because growers and maybe some suppliers do not understand soil or plant analysis. Just because a zinc test is ‘low’ does not mean it is low for all crops. A low zinc test should compel a zinc application only on responsive crops. In North Dakota, these crops are corn, potato, flax and dry edible beans (not soybeans or other legumes). The only other micronutrients that we have found responses to in North Dakota are iron and copper. Iron responses have been recorded in sugarbeet, at Fe-ortho-ortho-EDDHA rates of about 1 lb formulation/acre. In soybeans, the rate of Fe-ortho-ortho-EDDHA should be about 2 lb formulation/acre. Both of these applications are in-furrow soil applications in water only. We have not seen an iron response in other crops. Copper responses have been seen at low frequency in low organic matter sandy soil with spring wheat and durum. Canadian research also indicates that barley is responsive on these types of soils, but we have not researched it in North Dakota recently. Copper responses would not be expected in other crops. Micronutrient mixes contain not only a nutrient a crop might need, but nutrients it does not. The number of micronutrients actually beneficial and the crops they benefit are very small. A specific micronutrient application would be much more cost-effective than a blanket application over crops with little potential for benefit.

**Nutrisphere™:** This product advertises its benefits as a nitrification inhibitor and a urease inhibitor. Careful laboratory experiments at NDSU by Dr. Goos and at University of Arkansas-Fayetteville by Dr. Norman have shown it does neither. Not that it only does a little, but it really has no effect at all. I think that is all I need to write. I would not recommend this product, buy this product, stock this product or sell this product. We also alerted the supplier three years ago that the product did not perform as advertised, but they too chose to ignore us.

**Low-rate slow release N products:** Although low-rate slow-release N products have been successful in golf courses, their use in commercial farming is not recommended (unless you have a quarter section of daily irrigated sandy bent-grass greens). These products are no more efficient foliar-applied than UAN or other standard commercial N products. Their use in soil is limited by their high cost. A product like ESN (a poly-coated urea) would be more practical due to its cost advantage over the slow-release products evaluated at NDSU during the last 5 years.

**Humates:** Humate is a warm and fuzzy word that makes one think immediately of humus, which is a desirable thing to have in soils associated with active organic matter. However, humates are made through the treatment of a high carbon material, usually a low grade coal (in our state, usually Leonardite) with strong base, and the extract is a black high organic containing, but dead material called Humic acid, or Humate. These products have been extensively tested and you can find several studies in the compendium. The only improvement in crop condition I have read about is in a very leached white sand. If there is no organic matter in soils, any organic material is good. In what I would consider a normal field soil I cannot recall a single positive yield increase from their use at recommended rates. I have conducted several studies with some of these materials and have not found a benefit.

**Things that work:**
- Urease inhibitor- Agrotain™
- Nitrification inhibitor- N-Serve™ (nitrapyrin) or Instinct™ (encapsulated nitrapyrin), DCD if used at effective rates (Guardian™, Agrotain Plus™ or Super U™)
Summary: Be very careful when buying a new product that seems like it would perform miraculous deeds. Chances are that it does not. If you do try a product, do not just split a field or try it on one field. Enough natural variation is present in soils that it will over-shadow any true effects or non-effects. Multiple check strips evaluated with a yield monitor at harvest is a much better method of conducting farm trials. One of the red-flags from companies to look out for is a statement such as ‘the University really is behind the times and doesn’t understand the product’. Unfortunately for the marketers of these products, we really do understand them.

Note: The mention of trademarked products is not necessarily an endorsement of the products and their use is not endorsed by me or NDSU.

Dave Franzen
Extension Soil Specialist
david.franzen@ndsu.edu

PREEMERGENCE HERBICIDES IN CONVENTIONAL SUGARBEET

The percentage of conventional sugarbeet to be planted in 2011 should be greater than last growing season. In fields having kochia and difficult to control lambsquarters and pigweed, apply Nortron® at 6 to 7.5 pts/A preplant incorporated or preemergence to improve control. High rates of Nortron® can injure sugarbeet in fields with sandy soils and low organic matter. Historical research indicates that incorporating Nortron® usually improves weed control even in years with adequate moisture. Eptam® applied at 1.1 to 2.3 pt/A plus Ro-Neet™ 6 EC or Ro-Neet™ SB applied at 2.7 to 3.3 pts/A should provide similar control of lambsquarters and pigweed and increased wild oat and annual grass control compared to Nortron®, but reduced kochia control. Ro-Neet™ SB is a new formulation for 2011 containing methylated soybean oil instead of kerosene. Eptam® and Ro-Neet™ must be incorporated to obtain weed control.

Jeff Stachler
Extension Agronomist – Sugarbeet/Weed Science
jeff.stachler@ndsu.edu

PROPER MANAGEMENT OF WATERHEMP – NOW IS THE TIME TO TAKE CONTROL

Why is Proper Waterhemp Management Important?

Waterhemp is an annual weed species in the pigweed family that is capable of producing greater than 1 million seeds per plant and due to a limited number of effective herbicides, especially in sugarbeet and soybean, is difficult to control compared to most weed species. In addition to the production of large quantities of seeds, continual germination throughout the growing season and an increased frequency of herbicide-resistant biotypes adds to the degree of difficulty in keeping this weed species under control. The good news is that the longevity of waterhemp seeds in the seedbank is relatively short compared to most species (1 to 12% survival after 4 years), meaning complete control (zero seed production) of all plants over a three to four year time period should significantly reduce the waterhemp seed bank densities, allowing the farmer to take control of this difficult weed problem.

Glyphosate-resistant waterhemp has recently been confirmed in a small area of Richland County, North Dakota. Glyphosate-resistant waterhemp was confirmed in southern Minnesota in 2007 and has continued to increase over time. In 2010, based on visual observations, a high percentage of fields in Renville and Swift Counties in Minnesota had some frequency (> 1 plant/field) of glyphosate-resistant waterhemp present at harvest. The frequency of glyphosate-resistant waterhemp has continued to increase due to the continued planting of Roundup Ready® crops and the exclusive use of glyphosate.

Where glyphosate-resistant biotypes are known to be present in fields, waterhemp must be properly managed using reactive management strategies. Proactive management strategies will be necessary in other fields in order to
attempt to prevent glyphosate-resistant biotypes from developing. Often the level of weed control inputs will be lower in fields where proactive strategies are employed due to lower weed seed bank populations. Proper management requires managing waterhemp across the entire cropping system over time. Many growers have begun using preemergence residual herbicides. Increasing crop rotation diversity in the cropping system and focusing on the use of Roundup Ready® crops in the rotation where the fewest alternative herbicides to glyphosate exist, will also reduce the selection pressure for glyphosate-resistant waterhemp. To illustrate, wheat, corn, and LibertyLink® soybean provide more chemical weed control options and should be considered when integrating Roundup Ready® sugarbeet into your rotation.

Proper Management in Sugarbeet

To proactively manage waterhemp in Roundup Ready® sugarbeet, apply Nortron® at 6 to 7.5 pt/A (use the highest rate allowable for the soil type) and follow with postemergence glyphosate at 1.125 lb ae/A in the first application to 1 inch waterhemp followed by glyphosate at 0.75 lb ae/A every 10 to 18 days as needed after the initial application. To reactively manage glyphosate-resistant waterhemp in Roundup Ready® sugarbeet apply Nortron® as mentioned above or Eptam® at 1.1 to 2.3 pt/A plus Ro-Neet™ 6EC or Ro-Neet™ SB at 2.7 to 3.3 pt/A (use the highest rate allowable of both products for the soil type). Eptam® plus Ro-Neet™ must be incorporated to obtain waterhemp control and control is usually improved when Nortron® is incorporated. In addition to the soil-applied treatment, apply Betamix® or Betanex® at 12 to 22 fl oz/A (use the highest rate based upon the size of sugarbeet plants at application) plus Nortron® at 4 fl oz/A plus glyphosate plus a test-proven MSO-based HSOC to cotyledon to 1 leaf waterhemp or Betamix® or Betanex® at 3.0 to 7.5 pt/A (depending upon size of sugarbeet and size of waterhemp) plus Nortron® at 4 fl oz/A plus glyphosate. Apply glyphosate at 1.125 lb ae/A to Roundup Ready sugarbeet in the first application and 0.75 lb ae/A in all sequential applications. All sequential applications containing these mixtures should be applied every 10 to 14 days as necessary, adjusting the rate of Betamix® and Betanex® for the size of waterhemp at the time of application. Follow label restrictions for maximum seasonal rates of all products used. Regardless of proactive or reactive waterhemp management in sugarbeet, scout fields to determine need for row cultivation and/or hand-weeding to stop seed production.

Proper Management in Soybean

To proactively manage waterhemp in Roundup Ready® or LibertyLink® soybean, apply Authority® Assist®, Authority™ First, Authority® MTZ, Boundary®, Gangster®, Pursuit® Plus, Prefix®, Sencor® (metribuzin), Sharpen™ plus Outlook® (dimethenamid), Sonic®, Spartan®, Valor®, or Verdict™ plus Outlook preemergence or Valor or Sharpen plus Prowl® (pendimethalin) or Treflan® (trifluralin) preplant incorporated. Most premix products or mixtures of single products should provide more effective control than single-active ingredient products. Apply glyphosate to Roundup Ready® soybean and Ignite® 280 to LibertyLink® soybean at maximum single-application rates to 1 to 3 inch waterhemp. Warrant™ or Dual Magnum® (S-metolachlor) can be mixed with glyphosate or Ignite® 280 to provide additional residual control. To reactively manage glyphosate-resistant waterhemp in LibertyLink® soybean follow proactive management recommendations. To reactively manage glyphosate-resistant waterhemp in Roundup Ready® soybean apply one or more of the soil-applied products above and follow with Flexstar® GT 3.5 or Cobra® or Flexstar® plus glyphosate when waterhemp is 1 to 3 inches in height.

Proper Management in Corn

To proactively manage waterhemp in all types of field corn apply Balance® Flexx (ND only), Callisto®, Camix®, Harness® / Surpass® (acetochlor), Lumax®, Prequel® (ND only), SureStart® / TripleFlex™, or Verdict preemergence. Mixtures of Balance Flexx®, Callisto®, or Prequel® with acetochlor will improve waterhemp control. Following the preemergence applications, apply glyphosate to Roundup Ready® corn and Ignite® 280 to LibertyLink® corn at maximum single-application rates. In corn lacking herbicide resistance consider Callisto®, Callisto Xtra®, Clarity® (at maximum rates and/or in mixtures with other products), Impact®, Laudis®, Realm™ Q, or Status® applied to 1 to 3 inch waterhemp. To reactively manage glyphosate-resistant waterhemp in non-Roundup Ready® or -LibertyLink® corn follow the
proactive management strategies outlined above. To reactively manage glyphosate-resistant waterhemp in Roundup Ready® corn, mix one of the postemergence herbicides mentioned above for non-Roundup Ready® or –LibertyLink® corn with glyphosate at 1.125 lb ae/A or apply Halex® GT. Mixing atrazine at 0.38 lbs ai/A with Callisto®, Halex® GT, Impact®, or Laudis® should improve waterhemp control.

**Proper Management in Wheat**

Many herbicides are available for management of waterhemp in wheat and wheat competes well against waterhemp. Follow recommendations in the Minnesota and North Dakota Weed Control Guides. The most important recommendation in wheat is to make sure no waterhemp plants go to seed after wheat harvest.

**Additional Comments and Summary**

Follow label directions for herbicide rates according to soil type and weed size, use of products by geography, and crop rotation, especially for sugarbeet. Consult the publication PRE and POST Herbicide Diversification Options (http://tinyurl.com/y45yopj at U of MN or http://www.ag.ndsu.edu/weeds/sugarbeet-files/Herb_Divers.pdf at NDSU) for information regarding crop rotation and herbicide effectiveness. Scout fields following the first postemergence application to determine need for a second application. If planting no-tillage corn or soybean, apply the necessary preplant herbicides to control emerged waterhemp and other weeds prior to planting and use the appropriate adjuvant(s) and rate(s) for all products in the preplant treatment. In areas of low rainfall, incorporation of preemergence herbicides may improve waterhemp control but may increase crop-injury for some products.

Proper proactive and reactive management of waterhemp this growing season and into the future is necessary to reduce selection of herbicide resistant biotypes and maintain the effectiveness of Roundup Ready® crops in the rotation. This is especially true for Roundup Ready® sugarbeet in which few herbicides are available to effectively manage waterhemp.

Jeff Stachler  
NDSU and U of MN Extension Agronomist – Sugarbeet/Weed Science  
jeff.stachler@ndsu.edu

Rich Zollinger  
NDSU Extension Weed Specialist  
R.Zollinger@ndsu.edu

Jeff Gunsolus  
U of MN Extension Weed Specialist  
gunso001@umn.edu

---

**SPRUCE SPIDER MITE CORRECTION**

The wrong photograph for the adult spruce spider mites was placed in last week’s Crop & Pest Report, Issue 1. Here is the correct photograph of an adult spruce spider mite. The photograph in last week’s issue was an Oribatid soil mite that was accidently attached to the spruce sample. Oribatid mites live in the soil and feed on living and dead plant material, lichens and carrion, and some are predatory.

Janet J. Knodel  
Extension Entomologist  
janet.knodel@ndsu.edu

Spruce spider mite (*Oligonychus ununguis*), USDA Forest Service Archive, USDA Forest Service, Bugwood.org
BANDED ASH BORER FOUND IN NORTH DAKOTA

Banded ash borer, *Neoclytus caprea* (Say), was recently found in the Bismarck area. On May 5th, a homeowner submitted a single adult found on a pile of firewood to Burleigh County Extension Agent Elroy Haadem, who in turn sent the specimen to NDSU Extension Entomology for identification. I positively identified the specimen as banded ash borer, and my identification was confirmed by Dr. Gerald Fauske of NDSU Entomology. Interestingly, banded ash borer had not been found in three years of sampling for wood-boring insects in eastern North Dakota. This specimen represents the first record of banded ash borer in North Dakota.

Adults are about 10 to 12 mm long and black in color, except for a series of whitish or yellowish bands on the wing covers formed by short, dense hairs (Figure 1). The first bands (just behind the thorax) form a circle on each wing cover that is broken at the shoulder. The middle band is curved on each side and the last band is obliquely transverse.

Adults emerge in early spring (March through June) and females deposit eggs in bark crevices on the host. Larvae feed just under the bark for a short period, and then bore into the sapwood where they feed throughout the summer. Pupation occurs in the fall, and adults emerge the following spring, forming a round exit hole. There is one generation per year. Banded ash borer utilizes several hardwood hosts, including ash, elm and oak. Ash species are its preferred hosts. It attacks dead and dying trees and poses no threat to healthy ash trees. Banded ash borer is especially attracted to freshly sawn ash, and larvae can cause damage to sawlogs used for lumber.

Banded ash borer is a native long-horned beetle (family Cerambycidae) and is widely distributed from the eastern United States and Canada west to Utah and Arizona. Banded ash borer is related to redheaded ash borer, *Neoclytus acuminatus* (Fabricius), which is more common in North Dakota (Figure 2). Both species have similar habits and biology, except that redheaded ash borer has two generations per year.

The best preventive measure to deter banded ash borer, redheaded ash borer and other native wood-boring insects is to maintain tree health through proper fertilization, watering and pruning. Firewood should be used as soon as possible. As a reminder, please DO NOT move firewood, as wood-boring insects can hitch a ride as well. This is important in helping prevent the spread of wood-boring insects, especially the exotic emerald ash borer. To date, emerald ash borer has not been detected in North Dakota.

Patrick Beauzay
Extension Entomology Research Specialist
Patrick.beauzay@ndsu.edu
STORM-DAMAGED TREES

Earlier this week, severe thunderstorms rolled through several parts of the state with lightning, high winds and hail. There was a blizzard less than two weeks ago. These severe weather events caused a lot of tree damage, ranging from shredded leaves to broken branches to trees completely tipped over. Several recommendations for treating damaged trees are found below.

First and foremost, though, is a discussion about safety. If a tree has been knocked into a power line or if there are downed power lines near a tree, don’t go near it. Call your local electricity provider and have them clear the branches or downed trees and repair the line. The second note about safety is to recognize when the work is too much for you, and a professional tree service should be hired. While there is no specific cutoff point for this decision, please recognize the limitations of your own equipment, experience, and physical condition. Ask yourself, “If I cut this branch or this tree, what will happen? Where will it go?” If you honestly don’t know, then maybe it would be better to hire a professional. More information about responding to storm damage is available from the National Arbor Day Foundation at: http://www.arborday.org/media/stormrecovery/.

Broken branches should be pruned back to the previous connecting point – either another branch or the stem. Pruning cuts should be just outside the branch collar without leaving stubs (see figure below). Pruning paint or wound sealers are usually not needed. However, application of non-phytotoxic wound dressings (those without a petroleum or oil base) may be useful to reduce incidence of fireblight and fungal cankers. More information about proper pruning technique is available from the International Society of Arboriculture at: http://www.treesaregood.org/treecare/pruning_young.aspx.

In some cases, trees were tipped over partially or completely. Trees that were tipped over completely are unlikely to survive and should be removed. Partially tipped trees that are leaning towards buildings or children’s play areas could be very dangerous unless the trees are still small, and also should be removed. Trees that are partially tipped can be left alone or re-straightened. Often, trees that are slightly tipped develop new roots to re-anchor the tree and to provide water and nutrients to the aboveground portions of the tree. Tipped trees may also be straightened, using some type of guy wire attached to a stake. Around the tree stem, some type of strap material should be used to cradle the tree; do not place wire or rope directly on the stem as this may restrict nutrient flow and could eventually girdle the tree. Don’t leave the strap on the stem for more than about 2 years. If the tree lean worsens over time, then it may not be developing replacement roots as desired. At that point, the tree should be removed.

Hail damage to trees occurred in many locations around the state. Hail damage is shown by broken branch bark, broken ends off of new shoots, and tattered leaves. These wounds may provide entry points for disease organisms; one of our main concerns right now is apple trees. The hail wounds are easy openings for the bacteria that cause fireblight and the fungus that causes black rot canker. An application of a copper-based fungicide may help prevent infection. However, the fungicide will not cure a tree that is already infected. The rain in the immediate forecast may provide conditions for spread and infection of these pathogens. Therefore, protection of at-risk trees is advised. As always,
follow the label recommendations for proper timing and rates of applications. Physical damage caused by wind and hail is often confused with fireblight. Fireblight infections cause new leaf and shoot tissue to turn black, and the black area spreads from the initial point of infection. New leaf and shoot tissue that has suffered only physical damage often turns black, but the black area does not spread from the initial wound.

Joe Zeleznik
Extension Forester
joseph.zeleznik@ndsu.edu

Jim Walla
Forest Pathologist
j.walla@ndsu.edu

AROUND THE STATE:

NC AND NW NORTH DAKOTA

The area covered by this report includes 11 counties in north central and northwest North Dakota stretching from Bottineau and Pierce counties west to the Montana line and from McKenzie and McLean north to the Canadian border. Some fieldwork took place in the region during the last week with the majority of the progress occurring in isolated pockets south of highway 2. In most of the area north of highway 2 very little, if any, planting has been done. Any progress was halted by a widespread system that moved in on Sunday and brought rainfall amounts in excess of 1 inch to most of the region. Some areas are reporting closer to 2 inches or more. This week’s rainfall will delay fieldwork for some time and cause an already narrow planting window to be even tighter.

Accessing fields once they dry is a concern in many areas as there are many reports of flooded county and township roads throughout the region. Another concern among growers is the availability of nitrogen fertilizer, especially anhydrous ammonia. With much of the northern Great Plains delayed, there could likely be a logistical challenge to supply all areas with enough anhydrous ammonia to keep pace with the demand. Due to the late date and possible nitrogen shortages, some growers who have typically employed a “one-pass” seeding system may choose, or be forced, to plant crops such as cereal grains and apply nitrogen fertilizer later in an effort to increase efficiency and plant the crop in as timely a manner as possible.

According to North Dakota Ag Weather Network (NDAWN) data, average daily soil temps for May 9th ranged from the upper 40’s to the low 50’s degrees F measured in bare soil at a depth of 4 inches. The winter wheat that is not under water appears to have survived the winter quite well and is reported to look very good for the most part. Winter annual weeds are emerged throughout the region and are close to flowering in the southern areas. Annual weeds such as kochia, lambsquarters, wild oat, and others are emerged or beginning to emerge throughout the region.

Jeremy Pederson
Area Extension Specialist/Cropping Systems
NDSU North Central Research Extension Center
jeremy.pederson@ndsu.edu
NC NORTH DAKOTA: WHEAT STREAK MOSAIC VIRUS CONFIRMED IN SPRING WHEAT VOLUNTEERS

Last week symptoms of wheat streak mosaic virus were observed in spring wheat volunteers that had overwintered in a field in southeastern Ward County. A sample was sent to the NDSU diagnostic lab and virus testing (ELISA) confirmed it was in fact wheat streak mosaic virus (WSMV). The sample was collected just north of a field which had corn planted in 2010. Although this is primarily a disease of wheat, WSMV can infect corn, barley, and some weeds. It is not uncommon for this disease, which is primarily spread by wind dispersal of the wheat curl mite, to move from maturing corn into winter wheat and fields with spring wheat volunteers in the late summer or early fall. The mite that spreads wsmv cannot be controlled by miticides or insecticides, and fungicides are not effective against this disease. Benjamin Franklin said it best, “An ounce of prevention is worth a pound of cure”. The best form of management for WSMV is killing volunteers which can harbor the disease two weeks prior to planting with herbicides or less than two weeks with tillage. The challenge this year is that many producers will want to seed as soon as their fields dry out and will deal with weeds and volunteers during or after seeding. This type of management practice creates a higher risk for WSMV which can move from volunteers to this season’s crop. While it may not be practical this season to make herbicide applications two weeks prior to planting, the next best alternative is to avoid planting corn, wheat, or barley on any ground that had these crops in 2010 or have volunteers of these crops from previous years. Spring wheat volunteers have come through the winter the past two years and may be present in fields planted with wheat before 2010. In 2010 we saw a barley field that had a substantial reduction in yield from WSMV. The source of the problem was infected winter wheat volunteers. The last time winter wheat was planted in the field was fall of 2007, more than two and half years earlier. Taking the time to survey the volunteer situation in fields prior to planting may be well worth the investment in time and effort. For more information on wheat streak mosaic virus please see the following websites:


Wheat Streak Mosaic Symptoms on Winter Wheat

CRUCIFER FLEA BEETLES ACTIVE

We've started catching crucifer flea beetles in our yellow sticky traps at the North Central Research Extension Center. Flea beetle feeding on volunteer canola has also been observed.

Daniel Waldstein
Crop Protection Specialist
North Central Research Extension Center, Minot
daniel.waldstein@ndsu.edu

SOUTHWEST NORTH DAKOTA

Field work is off to a slow start this year because of several significant snow events during the month of April. A blizzard on April 30 dumped up to 18 inches of snow in some locations and nearly 70 mph winds piled snow into deep drifts in sheltered areas and on to south facing slopes. Field work did occur on well drained soils from about May 4
through May 8 before significant rainfall occurred throughout the region on May 9 and 10. Rainfall totals reported at NDAWN reporting stations ranged from 0.44 inches at Bowman to 2.15 inches at Beach.

Craig Askim, Mercer County Agent, reported that about 75% of the field pea acreage has been seeded in his county. Craig along with other county agents (Bowman, Hettinger, Oliver counties) reporting activity in the field indicate about 10 to 15% of the small grains acreage has been seeded. Areas in the far west and north along the Missouri River haven’t been able to seed nor do any field work as they received copious amounts of snow during the April 30 blizzard. Some corn has been seeded in Hettinger and Bowman counties. The Dickinson Research Extension Center spring wheat, durum, barley, and oat variety trials were seeded along with the barley rotation study. Depending on what producers received from this last precipitation event, field work is expected to begin again during the weekend to about May 20.

Winter wheat is in excellent condition while alfalfa has grown to about 3 to 5 inches in height. Growers are reminded not to seed or perform field operations when soils are too wet as doing so will negatively affect the crop and result in poor performance throughout the growing season.

Roger Ashley
Area Extension Specialist/Cropping Systems
NDSU Dickinson Research Extension Center
roger.ashley@ndsu.edu

SOUTH-CENTRAL NORTH DAKOTA

According to NDAWN (North Dakota Ag Weather Network) data, the region received 0.1 inches (Wishek) to 1.1 inches (Linton and Pillsbury) of rain during the past week (May 4 to 10). NDAWN soil temperatures (4-inch depth) on May 10 averaged 51 to 61 degrees in uncovered soil and 47 to 56 degrees in sod-covered soil. Many farmers got started with small grain and corn planting during the week of May 1. The region’s estimated planted acreage for spring wheat is 10-15% and corn at 5-10%. Farmers are very anxious to return to crop planting when fields and roads dry.

CROP MANAGEMENT FIELD SCHOOL

NDSU Extension Service’s annual crop management field school will be offered Thursday, June 23, from 9 a.m. to 4:30 p.m. at the Carrington Research Extension Center. The school will provide hands-on training on crop pest management using field research and demonstration plots. Field sessions include weed identification, herbicide mode-of-action, wheat disease management, managing current insect threats, and options for spray drift management.

For further details and preregistration information, go to http://www.ag.ndsu.edu/CarringtonREC/events or contact the Carrington center at (701) 652-2951. A completed preregistration form and $75 fee is required by June 20 ($100 after June 20). CCAs participating in the event will receive six pest management continuing education credits.

Greg Endres
Area Extension Specialist/Cropping Systems
NDSU Carrington Research Extension Center
gregory.endres@ndsu.edu
WEATHER & CROP PHENOLOGY MAPS:

Departure from Normal Average Air Temperature (°F) (2011–05–04 – 2011–05–10)


Departure from Normal Corn Accumulated GDD (°F) (2011–05–02 – 2011–05–16)


F. Adnan Akhuz, Ph.D.
Assistant Professor of Climatology
North Dakota State Climatologist
http://www.ndsu.edu/ndsco/
Helping You Put Knowledge To Work

The information given herein is for educational purposes only. References to a commercial product or trade name is made with the understanding that no discrimination is intended and no endorsement by the North Dakota Extension Service is implied.

NDSU Extension Service, North Dakota State University of Agriculture and Applied Science, and the U.S. Department of Agriculture cooperating. Duane Hauck, Director, Fargo, North Dakota. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. We offer our programs and facilities to all persons regardless of race, color, national origin, sex, handicap, age, Vietnam era veterans status, or sexual orientation; and are an equal opportunity employer.

This publication will be made available in alternative formats for people with disabilities upon request (701) 231-7881.