Wisconsin Crop Manager

Volume 22 Number 11 - - - University of Wisconsin Crop Manager - - - May 14, 2015

What data layers are important for variable rate soybean seeding prescriptions?

Ethan Smidt, John Gaska and Shawn Conley, Department of Agronomy ; Jun Zhu, Department of Statistics and Department of Entomology; University of Wisconsin-Madison

Introduction

Growers are collecting many forms of spatial data for their fields, including yield, elevation and soils data. Highly accurate GPS systems along with advances in variable rate technology (VRT) are allowing growers to create and use variable rate planting prescriptions to optimize soybean yields and seed placement (Hoeft et al., 2000). As soybean seed prices continue to rise (USDA-ERS, 2014), growers are looking for ways to optimize seeding rates across their fields (Hoeft et al., 2000). However, growers and researchers alike feel there is an abundance of raw data but a shortage of methods and knowledge on how to use the data for advancements in precision agriculture (Bullock et al., 2007). Therefore, the objectives of this research were:

- **Find the key measureable predictors determining soybean seed yield in Wisconsin**
- **Use those predictors to create accurate, data-based future VRT prescriptions**

This study was conducted on a total of 22 sites between 2013 and 2014 as shown in Figure 1. Seeding rate prescriptions containing three unique rates were created prior to planting for each site as shown in Figure 2. The middle seeding rate was equivalent to the single rate each individual grower would have used in their respective field without VRT capabilities and the high and low rates were targeted at ±30% from the medium rate. After planting, soil samples were taken at geo-referenced points and submitted for pH, organic matter, phosphorus and potassium levels. Soil survey and satellite imagery data were also obtained during the growing season to determine any possible relationships with soybean yield.

To read the full article click on the link below:

http://www.coolbean.info/library/documents/Soybean_VR_2015_FINAL_web.pdf

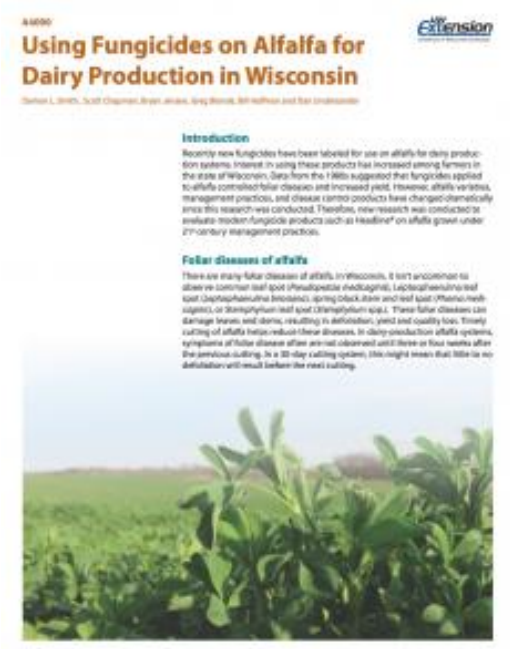
Vegetable Crop Update 5-8-15

The 7th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, early season diseases of potato, vegetable insect updates, and spotted wing drosophila updates for fruit crop. Click here to view this issue.

Using Fungicides on Alfalfa for Dairy Production in Wisconsin

Damon Smith, Assistant Professor and Extension Field Crops Plant Pathologist, UW-Madison; Scott Chapman, Researcher, Departments of Plant Pathology and Entomology, UW-Madison; Bryan Jensen, Outreach Program Manager, Integrated Pest Management Program, UW-Madison; Greg Blonde, Agricultural Agent, UW-Extension, UW-Madison; Bill Halfman, Agricultural Agent, UW-Extension, UW-Madison; and Dan Undersander, Professor, Department of Agronomy, UW-Madison

Recently new fungicides have been labeled for use on alfalfa for dairy production systems. Interest in using these products has increased among farmers in the state of Wisconsin. Data from the 1980s suggested that fungicides applied to alfalfa controlled foliar diseases and increased yield. However, alfalfa varieties, management practices, and disease control products have changed dramatically since this research was conducted. Therefore, new research was conducted to evaluate modern fungicide products on alfalfa grown under 21st century management practices. This new fact sheet is now available, which summarizes this research to evaluate the efficacy and economics of applying fungicide to alfalfa in Wisconsin. CLICK HERE TO DOWNLOAD A PDF VERSION OF THIS FACT SHEET.



Cover Crop Termination Before Planting Soybean

Liz Bosak, Outreach Specialist, Department of Agronomy, University of Wisconsin-Madison

Tough, cold Wisconsin winters translate into fewer cover crop species requiring spring termination before planting. For a quick chart of cover crop species that tend to winterkill, download the "Cover Crop Termination" fact sheet at https://host.cals.wisc.ed/wcws/wp-content/uploads/sites/4/2013/03/WCWS_204_cover_crop_termination_WEB.pdf . Here is a short list of the cover crops that will need to be terminated in the spring: winter (cereal) rye, winter barley, winter wheat, winter triticale, red clover, sweet clover, and hairy vetch. There are a few cover crops that may or may not winterkill depending on the severity of winter and degree of snow cover; these include canola, winter pea, and annual ryegrass. If cereal rye will be harvested for forage, then consult the herbicide rotational restrictions fact sheet, http://wcws.cals.wisc.edu/wp-content/uploads/sites/4/2013/03/WCWS_201_Herbicide_Rotation_Restrictions_WEB.pdf . For overwintering cover crops sown after winter wheat, some may prefer to terminate in the fall to simplify their spring planting schedule.

At Arlington Agricultural Research Station, cereal rye, planted during the first week of September, is ready to be terminated prior to planting soybean (Fig. 1). A general rule of thumb for termination of cereal rye with herbicides is to target the application before it reaches 18 inches in height. In another field trial, cereal rye planted in October can definitely be given some time to grow before termination (Fig. 2). There are a few termination methods for cereal rye outlined in the fact sheet including rolling-crimping, mowing, and applying herbicides. For the no-till soybean research fields planted with a cereal rye cover crop, typically we use glyphosate and 2,4-D ester (0.5 lb ai/A) seven days before planting to terminate the rye. Otherwise, glyphosate (4.5 lb ae per gal, 22 fl oz/A) will terminate the winter grasses: rye, barley, triticale, and wheat. Recommendations for red clover, sweet clover, and hairy vetch are in the fact sheet.

Figure 1. Cereal (winter) rye, Secale cereale, seeded in early September, nearing twelve inches in height on May 4, 2015.

Figure 2. Cereal (winter) rye, S. cereale, seeded in late October 2014, about five inches in height on May 4, 2015.

Annual ryegrass or Italian ryegrass can be a concern for spring termination because it can be challenging to predict winterkill and to terminate, if necessary. In the 2014 field season, annual ryegrass overwintered in all of the field research plots at Arlington. However,

this year annual ryegrass experienced partial winterkill (Fig. 3). To ensure termination success, plan on applying glyphosate at the full labeled rate before the ryegrass reaches 6 inches in height with the understanding that two applications may be necessary, see page two of the factsheet, https://host.cals.wisc.edu/wcws/wpcontent/uploads/sites/4/2013/03/WCWS_204_cover_crop_termination_WEB.pdf. Also, be aware that annual ryegrass has shown resistance to five different herbicide sites-of-action and is one of the eleven weeds that weed scientists have identified as a serious resistance threat, http://takeactiononweeds.com/wp-content/uploads/2014/01/Weed_Chart_Poster.pdf . The United Soybean Board and its TakeAction campaign worked with university weed scientists to develop a fact sheet specific to managing ryegrass, available here http://takeactiononweeds.com/wp-content/uploads/FactSheet_ItalianRyegrass.pdf . For more information on terminating annual ryegrass, Purdue University has a great fact sheet, https://www.extension.purdue.edu/extmedia/ws/ws-50-w.pdf . More cover crop resources, on an array of topics, are available at Cooperative Extension's cover crop website, http://fyi.uwex.edu/covercrop .

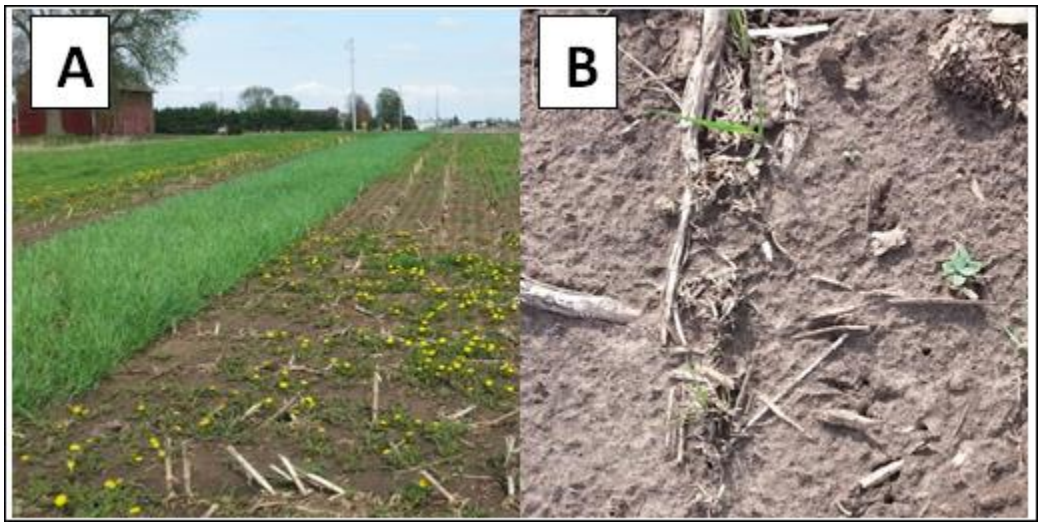


Figure 3. A) Cereal (winter rye), S. cereale, on the left, and annual ryegrass, Lolium multiflorum, on the right, showing partial winterkill especially in the foreground. B) Annual ryegrass with partial winterkill.

Think Twice Before Replanting Soybean- Research Results

Adam P. Gaspar, Shawn P. Conley, & John M. Gaska Deptartment of Agronomy, University of Wisconsin-Madison

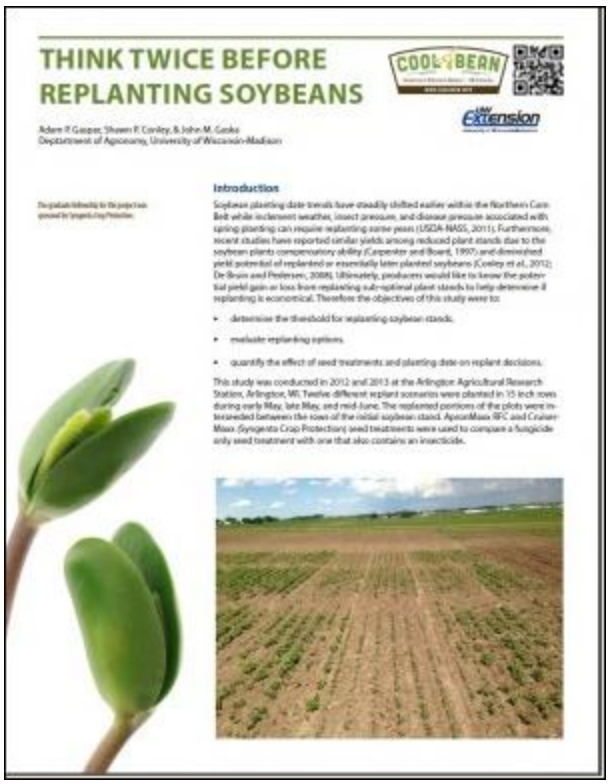
Read the full report here >>> http://www.coolbean.info/library/documents/SoybeanReplant_2014_FINAL.pdf

The first step in deciding if replanting is required is to determine the initial plant stand. This study demonstrated that replanting soybean stands below the threshold (100,000 plants/a) by filling in the existing stand, increased yields regardless of the date (May-June 20th) and seed treatment use. Below threshold plant stands should be filled in with enough seed to bring the final stand above 100,000 plants/a. Using tillage and replanting the entire stand greatly limited yield potential, even at replant seeding rates of 220,000 seeds/a. This is due to the entire plant stand being replanted or essentially planted later, which reduces yields by 0.32 bu/a/day on average.

These replant recommendations are applicable through June 20th in southern WI, where replanting after this date is not advised. Traditionally, the notion of adequate weed control has led producers to desire higher plant stands to quickly shade out competing weeds. However, pre-herbicide use and modern post herbicide technology has essentially eliminated this concern.

This study only evaluated soybean replanting in terms of yield and did not take into account the economics of a replant decision, which include additional seed, fuel, labor, and machinery costs; along with potential crop insurance replant payments. Producers should consult their crop insurance agent before making any replant decisions. Ultimately, the producer's efforts should be placed on using this data in conjunction with their own finances to determine if replanting will increase economic return.

Continue reading full report >>> http://www.coolbean.info/library/documents/SoybeanReplant_2014_FINAL.pdf



THINK TWICE BEFORE REPLANTING SOYBEANS

COOL BEAN

Extension

Introduction

Recent Cold Temps Have Little Impact on Soybean or Winter Wheat Crop

Coauthored by Dr. Shawn P. Conley and Dr. Jim Specht

Last nights cold temperature has led to an influx of questions regarding the potential impact on either the wheat crop or emerged soybean seedlings. In short there is nothing to worry about in either crop. In the case of wheat, which is still in the jointing growth stage, cold temperature would need to reach 24 degrees F or less for 2 plus hours before injury occurred.

With cold temperatures predicted over the next few days (May 15-17) there are some questions regarding the potential impact on this year's winter wheat crop. Based on the predicted temperatures reported, widespread significant crop injury is unlikely. The winter wheat crop is several weeks behind "normal" and remains in the tiller (Feekes 2) to jointing (Feekes 6) growth stages. At these growth stages the wheat crop can withstand temperature down to 24 degree F for up to 2 hours before crop injury occurs (Table 1). For more detailed information I have attached a link to a publication entitled Spring Freeze Injury to Kansas Wheat. For ease I have also removed a table from that publication to stress the importance of growth stage on damage potential (Table 1).

Lastly, growers may also be questioning the impact of temporary flooding within fields. Though crop injury from this flooding may occur that damage will likely be limited due to cool temperatures and slowed crop respiration. Any crop injury that does occur will directly be related to the duration of the flooding event.

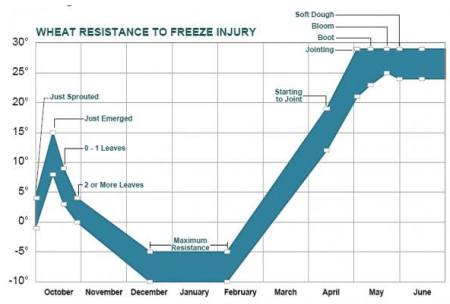


Figure 1. Temperatures that cause freeze injury to winter wheat at different growth stages. Winter wheat rapidly loses hardiness during spring growth and is easily injured by late freezes (graph adapted from A.W. Pauli).

Table 1. Temperatures that cause freeze injury to wheat at spring growth stages and symptoms and yield effect of spring freeze injury.

Growth stage	Approximate injurious temperature (two hours)	Primary symptoms	Yield effect
Tillering	12 F (-11 C)	Leaf chlorosis; burning of leaf tips; silage odor; blue cast to fields	Slight to moderate
Jointing	24 F (-4 C)	Death of growing point; leaf yellowing or burning; lesions, splitting, or bending of lower stem; odor	Moderate to severe
Boot	28 F (-2 C)	Floret sterility; spike trapped in boot; damage to lower stem; leaf discoloration; odor	Moderate to severe
Heading	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Flowering	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Milk	28 F (-2 C)	White awns or white spikes; damage to lower stems; leaf discoloration; shrunken, roughened, or discolored kernels	Moderate to severe
Dough	28 F (-2 C)	Shriveled, discolored kernels; poor germination	Slight to moderate

Table 1. Wheat Resistance to Freeze Injury (From: Spring Freeze Injury to Kansas Wheat)

In the case of soybean I was fortunate enough to be copied on this email from Dr. James Specht (please see below) which saved me a few hours of library time today so thank you Jim.

> First of all 34F will not impact above-ground tissue. Second, tissue freezing does not even take place at 32F because cell cytoplasm has solutes in it – like a modest anti-freeze, which depresses freezing point of the tissue a degree or two less than 32F – thus air temps surrounding the tissue have to get to below 31 or 30F before tissue freezing can occur. Third, the soil surface is typically warmer than the air temperature (particularly when the soil is wet) and does not give up heat acquired during a sunny day as fast as the air does after sunset. In actuality, the interface between soil surface temp and the air temp near that soil surface will be closer to the soil temp than to the air temp which most peopled measure on thermometers viewable at their height (not at ground level). Biophysically, control of the soil temp over the air temp this is called the "boundary layer effect"). So don't trust air temperatures read on thermometers unless you know what the air temperature near the soil surface was (put a thermometer on the soil surface tonight where the cotyledons are and check it just before dawn (when the soil surface temp reaches its nadir for a 24-hour temperature cycle) and send out an e-mail blog to your producer colleagues early the next day. Fourth, the cotyledons are a huge mass of tissue that are about 95% water. That big amount of water-filled tissue is hard to freeze unless the exposure to temps of 30F at the soil-air interface is many, many hours. Cotyledons will freeze faster (in fewer hours) but only if the soil surface temps get well below 30F (say 25F). The only concern I would have is when cotyledons are no longer closed and protecting the young stem tip. However, if that is in fact frozen off, the nodes to which the cotyledons are attached will regenerate TWO main stem tips. Not an ideal way to start the growing season, but better than having to replant (0.5 bu/ac loss per each day that soybeans are NOT in the ground on May 1).

Pre-emergence Herbicides for Weed Management in Soybean

Liz Bosak, Outreach Specialist, Department of Agronomy, University of Wisconsin-Madison

Pre-emergence herbicides can lower the risk of developing herbicide resistance and add flexibility to the post-emergence application timing. For an excellent discussion of how a two-pass herbicide program can reduce resistance risk, please read Boerboom et al.'s "An Equation for Trouble? Glyphosate x Weeds = Resistance" article, http://fyi.uwex.edu/grain/files/2015/03/Boerboom_An_Equation_for_Trouble.pdf . To see the utility of a residual herbicide applied at planting in less than 90 seconds, watch Purdue University's time lapse video of Palmer amaranth growth in two plots, with and without a pre-emergence herbicide application, https://youtu.be/VDvh0hhHNEE . When choosing a pre-emergence herbicide, there are a few factors to consider in the decision making process:

1. Select a PRE herbicide with a different site-of-action than the POST herbicide that you will be using. Download the TakeAction Herbicide Classification chart, http://wcws.cals.wisc.edu/wp-content/uploads/sites/4/2013/03/FactSheet_TakeAction_HerbicideClass_2013.pdf , or use their lookup tool on your android phone, iphone, or ipad http://takeactiononweeds.com/understanding-herbicides/site-of-action-lookup/ . For instructions, see this webpage http://takeactiononweeds.com/wp-content/uploads/52618-6_HRM-Bookmark_HR1-2.pdf .

2. Match the PRE herbicide effectiveness with the weed species on your farm. Efficacy information is available in summary tables located in A3646 Pest Management in Wisconsin Field Crops, http://learningstore.uwex.edu/Pest-Management-in-Wisconsin-Field-Crops2015-P155.aspx (scroll down to download the pdf, soybean pp. 143-144, corn pp. 23-37) or in yearly research reports published online, http://wcws.cals.wisc.edu/research/herbicide-evaluation-program/ .

Remember to apply the full labeled rate at the appropriate time. Once the application has been made, scout the field after crop emergence to determine the effectiveness of the pre-emergence application and to plan for the post-emergence application. For more information on herbicide resistance management, please consult the following fact sheet http://wcws.cals.wisc.edu/wp-content/uploads/sites/4/2013/03/WCWS_205_herbicide_resistance_management_WEB.pdf .

Managing Nutrients on Wisconsin Soils

Scott Sturgul – NPM Program

Managing Nutrients on Wisconsin Soils is a self-paced seven hour online video workshop designed for agency and industry personnel who desire to have a more in depth knowledge of intermediate to advanced topics in soil fertility and soil management. The learning objectives are to provide individuals with a fundamental understanding of Wisconsin's nutrient application guidelines, advanced soil fertility management tools, and soil management practices to reduce nutrient loss.

This online video series is available for viewing from May 4 to July 31, 2015. It is presented by the UW-Madison Department of Soil Science and UW-Extension's Nutrient & Pest Management Program. Featured speakers include: Carrie Laboski, Robert Florence, Matt Ruark, Francisco Arriaga, Kevin McSweeney, Laura Ward Good, Haily Henderson, and Scott Sturgul.

Topics include:

- Soils and landscapes of Wis. and their influence on nutrient loss
- Understanding soil groups and soil yield potential
- Phosphorus (P) and potassium (K) recommendations & management
- Manure and legume nutrient credits
- Liming: keystone to soil fertility
- Nitrogen (N) rate guidelines for profitable crop production
- Soil nitrate testing
- Understanding N stabilizers/extenders
- Crop canopy reflectance as an in-season N management tool
- Assessing potential for N loss after exercise rainfall
- Secondary and micronutrients
- Starter fertilizers as part of a nutrient management plan
- Uses and limitations of plant analysis
- Use and limitations of the end-of-season stalk nitrate test
- Soil management practices and their impact on nutrient loss
- Soil management practices in RUSLE2
- Using the Wisconsin phosphorus index
- Cover crops & nutrient management
- Tile drainage & nutrient management

A brochure for *Managing Nutrients on Wisconsin Soils* can be found here: http://ipcm.wisc.edu/download/ManagingWISoilsWebinar_2015.pdf.

Registration for viewing the video series is required for each participant and the fee is $100 per person. Registration is open now and will close on July 1. Interested participants can register at: https://patstore.wisc.edu/npm/register.aspx. **A credit card is the only acceptable form of payment on this website.** A confirmation email that will include viewing instructions will be sent to each participant. For questions on registration contact Scott Sturgul (ssturgul@wisc.edu, 608-262-7486). For questions about program content contact Carrie Laboski (laboski@wisc.edu, 608-263-2795). **Please note: You must be able to access YouTube in order to view these presentations!**

CCA CEUs

Certified Crop Advisor (CCA) continuing education units (CEU's) for this workshop have been approved by the Wisconsin CCA Board. The workshop contains 9.5 credits in nutrient management and 4 credits in soil and water management.

Wisconsin Pest Bulletin 5-7-15

A new issue of the Wisconsin Pest Bulletin from the Wisconsin Department of Agriculture, Trade and Consumer Protection is now available. The Wisconsin Pest Bulletin provides up-to-date pest population estimates, pest distribution and development data, pest survey and inspection results, alerts to new pest finds in the state, and forecasts for Wisconsin's most damaging plant pests.

Issue No. 3 of the Wisconsin Pest Bulletin is now available at:

http://datcpservices.wisconsin.gov/pb/index.jsp

https://datcpservices.wisconsin.gov/pb/pdf/05-07-15.pdf

Black Cutworms in WI Corn

Bryan Jensen, UW Extension

Several states to our south have reported relatively high catches of black cutworm moths in their trapping networks. To date, DATCP's WI Pest Bulletin has not reported high catches. However, recent low nighttime temperatures may (or may not) explain the lower catches. What I do suggest is to begin spot-checking those seedling corn fields which are most likely to attract egg laying moths. They are;

- Fields with significant broadleaf weed populations. Especially low growing perennials and winter annuals
- low lying areas of fields
- Fields with soybean residue
- later planted corn

Black cutworm larvae are grayish-black and lack obvious identifying characteristics. As a result, they may be confused with other non-pest insects found in corn fields, e.g. crane fly larvae and dingy cutworms. Crane fly larvae are similar in color and are found in many habitats including corn fields. Depending on the specie, crane fly larvae are tapered at each end. Dingy cutworms usually feed on corn leaves but are rarely considered a pest unless they are present in extremely high numbers. Dingy cutworm larvae are very similar in color, shape and size to black cutworms. However, proper identification can be made by looking at the tubercles (black dots) on their backs. Each of these cutworm species will have 4 prominent tubercles/segment. The rear tubercles on black cutworms will be slightly larger (see picture below) than the front pair. Tubercles on dingy cutworm will all be similar in size. Feeding habits also can help with identification. Crane fly larvae do not feed on corn, dingy cutworm are primarily foliar feeders.

Size and tubercle arrangement on black cutworm larvae

Black cutworm damage is variable and dependent on crop and insect size. First through third instar (< ½ inch) black cutworm larvae are usually not capable of cutting plants but will feed on leaves. This serves as an early warning when larger larvae can start cutting plants and/or burrowing into the stem below ground. Setting a treatment threshold can be difficult because many factors affect economical control including weather, crop and cutworm growth stage. Typically, treatment for black cutworm is suggested when 3-5% of the plants show cutting activity. Spot spraying can be effective if infestations are localized. If organophosphate (IRAC group 1) rescue treatments are to be used there may be interactions with certain herbicides. Read and follow label recommendations closely.

What about armyworms? They do migrate at approximately the same time as black cutworm adults and there have been scattered reports of high trap catches. Start spot checking seedling corn and wheat fields. Unlike black cutworm, armyworm females have a strong attraction to grasses when laying eggs. There is an exception. Corn that is no tilled into fall or spring killed alfalfa can be quite attractive. In wheat, they may not be good clues to use when spot checking. However, scouting areas with higher stand density may help. Later in the growing season pay special attention to lodged areas.

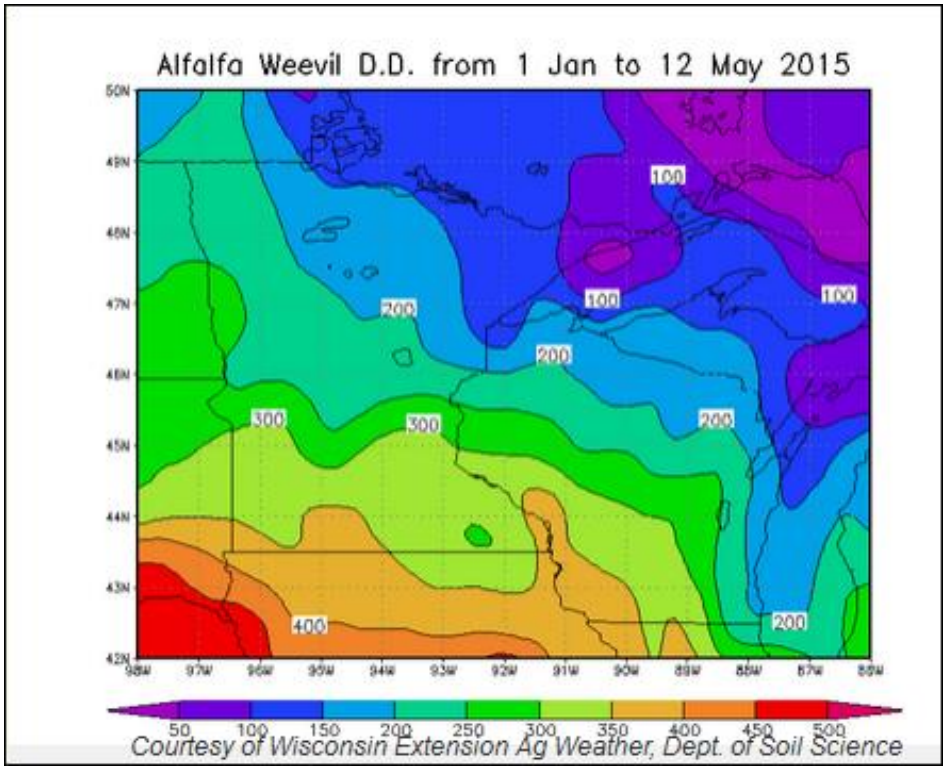
Alfalfa Weevils

Bryan Jensen
UW Extension

It is time (or soon will be!) to start scouting for alfalfa weevil damage in established alfalfa stands. We suggest spot-checking for early signs of damage when 300 weevil degrees have accumulated. This degree day map supplied by UW Extension Ag Weather will give you near real-time degree day accumulations for your area. Click on "Thermal Models" then select the model for alfalfa weevil. While you are at the UW Extension Ag Weather site check out the other degree day models. It is a great resource!

Adult weevils overwinter in plant debris along fence rows, grassy waterways, woodlands, etc. During the first warm spring days adults become active and females start to lay eggs. At 300 weevil degree days (Base 48°F) eggs start hatching and early signs of tip feeding should start to be noticeable. Alfalfa weevils go through 4 larval instars. Maximum feeding should occur between 600 and 800 weevil degree days. Scouting at 300 degree days will give you a heads up on damage potential and allow more time to reach a control decision if needed. Although weevil populations have been spotty the past two decades, I always hear about someone getting caught off guard. If you initiate spot checks at 300 degree days you can avoid a surprise.

A treatment threshold of 40% tip feeding is suggested. This is not to advocate treating at 40% defoliation but rather when 40% of the stems have signs of weevil feeding. If you are over the suggested threshold consider harvest if the timing is correct. Timely cutting is still our best control option. For those fields with heavy first crop weevil feeding, plan to check second crop regrowth for feeding. Larvae and/or adults can survive harvest and cause significant damage to regrowth.



Stripe Rust on Wheat: Stay Alert!

Damon Smith, Extension Field Crops Pathologist, Department of Plant Pathology, University of Wisconsin-Madison

I recently visited some wheat plots in southern Wisconsin. As in previous weeks, wheat is looking good and tillering well and nearing the jointing stage. Few disease issues have yet to be identified. In states to our south and west, such as Kansas and Nebraska, this has not been the case. Stripe rust has been identified in some of these areas and has been classified as moderate to severe depending on the variety of wheat. While, not yet a concern on wheat in Wisconsin, wheat farmers and crop consultants need to be paying attention to this potential threat. Typically in years where stripe rust is an issue in the southern wheat belt, Wisconsin will also see the disease.

Figure 1. Stripe rust on winter wheat leaves.

Stripe rust or yellow rust (Fig. 1) of wheat is caused by the fungus *Puccinia striiformis.* This fungus is in the same group of organisms that cause other rust diseases of wheat such as leaf rust and also the famed stem rust, which put the importance of wheat breeding on the map. Stripe rust can be identified readily by the bright yellow pustules that typically occur in a striped pattern on the surface of the wheat leaf (Fig. 2). The color of the bright yellow stripe rust pustules is very different from the brick-red pustules that are common with leaf rust (Fig. 3) or stem rust.

The stripe rust pathogen survives on wheat debris as spores or mycelium (fungal threads) in areas where the temperatures don't get above 90 F or below 20 F. It is thought that stripe rust cannot overwinter in the far northern areas of the U.S. such as Wisconsin. Little is know if the stripe rust fungus can survive the summers in Wisconsin, once the wheat crop has been harvested. We have a graduate student who will be working to address this and other questions about stripe rust on winter wheat in Wisconsin.

Figure 2. Yellow pustules indicative of stripe rust on a wheat leaf.

Because survival of the fungus might be limited in Wisconsin, the stripe rust pathogen most likely has to be windblown from the southern states into our wheat production area. This is why we need to pay close attention to stripe rust reports from the southern states. These reports are indicating that we will likely see stripe rust in wheat in Wisconsin this season and we may see it earlier than usual.

Management of stripe rust includes using resistant cultivars and applying fungicide, along with using some cultural practices such as avoiding excessive fertilizer applications and eliminating volunteer wheat plants. Obviously, winter wheat is already in the ground, so you cant make a decision on resistance for the current crop, but familiarize yourself with the stripe rust resistance rating for your wheat varieties. Knowing that certain fields might be more susceptible than others will help you determine where you should be scouting first.

Figure 3. Brick-red Leaf rust pustules on a winter wheat leaf.

Fungicide applications can also be useful for controlling stripe rust when properly timed with the onset of the epidemic. Frequent scouting of fields will help you to determine when stripe rust shows up and if an application of fungicide is needed to control it. Wheat will be most susceptible to yield loss if stripe rust infects plants prior to heading. The later that stripe rust infects, the less the impact on grain yield will be. Scouting at or near the flag-leaf emergence growth stage (Feekes 8) can help with making the decision to apply a fungicide at this critical time period. Although, scouting wheat now can't hurt either. Continued scouting through heading and anthesis (flowering; Feekes 10.5.1) can also help with making a decision to apply fungicide for leaf diseases and head diseases. For information on fungicides effective for controlling stripe rust, consult the Small Grains Fungicide Efficacy Table found here.

For more information about stripe rust, check out the USDA Cereal Disease Laboratory Website. They have a stripe rust informational page, which can be viewed by CLICKING HERE.

Remember to SCOUT, SCOUT, SCOUT

Plant Disease and Diagnostic Clinic Update 5/8/15

Brian Hudelson, Sean Toporek, Ann Joy and Joyce Wu

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from May 2, 2015 through May 8, 2015.

Plant/Sample Type, Disease/Disorder, Pathogen, County

Fruit Crops
Grape, Black Rot, *Guignardia bidwellii*, Dane
Pear, Sphaeropsis Canker, *Sphaeropsis sp.*, Milwaukee

Vegetables
Tomato, White Mold, *Sclerotinia sclerotiorum*, *Grant*

Soil
Soybean Soil, Soybean Cyst, *Heterodera glycines*, Rock

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu

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