Wisconsin Crop Manager

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**UW-River Falls Field Scout Training Class**

Bryan Jensen, IPM Program

The University of Wisconsin-River Falls, UW-Extension and the Integrated Pest Management Program are co-sponsoring the IPM Field Scout Training Class which will be held March 19-20 on the UW-River Falls campus. This training session will provide classroom and laboratory instruction for several pest and nutrient management topics (pest identification, life cycle, damage symptoms, economic thresholds and scouting techniques for insects, weeds, plant pathogens, herbicide injury and nutrient deficiency symptoms for corn, alfalfa, soybean and wheat, soil sampling, plant tissue testing, etc). Click [here](https://www.patstore.wisc.edu/ipm/register.asp) for the complete schedule. CEU’s will be applied for.

Non-student registration fee is $100/person and covers the cost of the training and the Field Crop Scout Training Manual. To register online please go to [https://www.patstore.wisc.edu/ipm/register.asp](https://www.patstore.wisc.edu/ipm/register.asp)

To register by check, send name, phone number, address and/or email address and a check payable to UW-Extension to:

Bryan Jensen
Dept. of Entomology
1630 Linden Drive
Madison, WI 53706.

For more information call Bryan Jensen at (608) 263-4073 or email at [bmjense1@facstaff.wisc.edu](mailto:bmjense1@facstaff.wisc.edu)

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**Final Announcement for the 2014 Wisconsin Corn Conferences**

Joe Lauer, Corn Agronomist

Announcing the 2014 Corn Conference meeting series sponsored by UWEX and the Wisconsin Corn Growers Association. We invite you to be a part of these conferences.

We have a limited mailing list of contacts from previous meetings, but really depend on local agents for the most effective publicity. Please inform farmers from your county or area, and encourage them to attend. Please do not expect the host agent to promote this event in your county. Three hours of Certified Crop Advisor CEU credits in crop production were requested for each session.

There is a $5.00 registration fee per participant. The information packet will contain 2014 corn hybrid trial results, plus numerous production related reference materials. Additional copies of the packet will be available for purchase at the meeting.

Below is a list of topics, meeting sites, dates and times. Join us at a meeting in your area.

January 28 – Oshkosh – La Sure’s Banquet Hall
January 29 – Viroqua – VFW POST 3032
January 30 – Poynette – The Barn at Harvest Moon Pond

2014 Wisconsin Corn Conference Program

9:30 am Registration
Coffee, milk, rolls in Exhibit Area

10:00 am Welcome
Opening remarks by Host Agent

10:10 am
2014 Corn Production and Management Keys to High Yields and Profitability
Dr. Joe Lauer – UWEX Corn Agronomist

11:00 am
What is Ahead for Wisconsin Corn?
How Our Association Helps Producers
Mr. Bob Oleson – WCGA/WCPB Executive Director and WCGA/WCPB Directors

11:30 am
What is New in Seeds and Ag Products for 2014?
Industry Co-sponsor Representatives

12:00 pm LUNCH
Exhibits open

1:00 pm
Nutrient Use Efficiency: A Key to Profitability
Dr. Carrie Laboski – UWEX Soil Scientist
Mr. John Peters – UWEX Soil Scientist

1:50 pm
Grain marketing outlook and strategies for 2014
Dr. Brenda Boetel – UW River Falls Ag Economist

2:40 pm
Tips for Successful Corn Production and Profitability
Oshkosh: Comparing Continuous Corn to Crop Rotation
Nick Schneider, Winnebago County Agent
Viroqua: Land Rent Negotiations
Tim Rehbein, Vernon County Agent
Poynette: Land Rent – What should I pay?
George Koepp, Columbia County Agent

3:30 pm Conference Adjourns
Support for the 2014 Wisconsin Corn Conferences provided by:
The Climate Corporation
Dairyland Seed Company
Partners in Production
Legacy Seeds
First Capital Ag
AgriGold
Mycogen Seed
DuPont Pioneer Hi-Bred
Syngenta
Contree Sprayer and Equipment Company
Asgrow/Dekalb (Monsanto)
Wisconsin Corn Growers Association
Wisconsin Corn Promotion Board

To view the brochure for this event follow the link below or scroll down to the bottom of this newsletter.

http://ipcm.wisc.edu/download/misc/CC2014Brochure%282%29.pdf

Thanks for your help. If you have any questions, please contact me.

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http://corn.agronomy.wisc.edu/Web/Subscribe.htm
Twitter: @WisCorn
Blog: WiscCorn.blogspot.com
Google+: WiscCorn

All 2013 Crop Manager articles compiled in one PDF

The complete 2013 Wisconsin Crop Manager Volume 20 is now available on our website as a single PDF. The first five pages are a Table of Contents listing every article and the page number it can be found on.

To view or download all the articles from the 2013 Wisconsin Crop Manager in one PDF file, complete with a table of contents, click on the link below.


Moses Organic Farming Conference and Organic University to Offer Continuing Education Units (CEU) for Certified Crop Advisors (CCA)

Kevin Shelley, UW NPM Program

Professionals certified through the American Society of Agronomy as Certified Crop Advisors (CCA) working in organic crop production, and those professionals interested exploring approaches to organic production, can obtain continuing education units (CEU’s) at this year’s MOSES Organic Farming Conference. The conference, conducted by the Wisconsin-based Midwest Organic and Sustainable Education Service (MOSES), will be held February 28-March 1, 2014 at the La Crosse Center in La Crosse, WI. There is also a pre-conference Organic University, February 27, which offers intensive day-long sessions on specific topics in organic agriculture. A total of 83.5 CEU’s have been applied for in the areas of Crop Management (48.5), Pest Management (16), Soil and Water (9), Nutrient Management (5.5), and Professional Development (4.5).

The conference is billed as the foremost educational and networking event in the organic farming community in the United States. In past years, more than 3200 people have attended from over 41 states and 8 countries. This year marks the 25th anniversary. The conference includes 65 workshops designed to help beginning, transitional, and experienced organic farmers. There is also an organic research forum where researchers from universities and other institutions will present results from current and ongoing studies in organic crop and livestock production. Finally, there is a trade show featuring over 170 exhibitors from resource groups, certification agencies, buyers, processors, cooperatives and suppliers in the organic industry.

For more information on the MOSES Organic Farming Conference and the Organic University, see the MOSES website at http://mosesorganic.org/conference/. Or, contact
The Cold Temperatures and Alfalfa

Dr. Dan Undersander, Forage Agronomist

Concern always arises in cold periods over winter about the effect of the low temperatures on alfalfa winter survival. This of concern because certainly the alfalfa plant will die if exposed to cold enough temperatures.

However, generally alfalfa survives the winter and its periodic cold spells. The reasons are:

1. Alfalfa can survive temperatures of 10 to 15°F.
2. This is the temperature of the crown not the topgrowth.
3. As little as 4 inches of loose snow will insulate against up to 16°F of air temperature.
4. The crown is insulated by soil as well; therefore the crucial temperature is the temperature at 2 to 4 inches below the soil surface.

As the map shows, the soil temperature of bare ground at 4 inches on Jan 8 (after the last cold spell) is generally in the single digits above 0°F for the Midwest. The higher temperature than the air the last few days is due to the insulating ability of the soil. However, soil temperature at 2 to 4 inches under the 4 or more inches of snow is generally 28 to 30°F; well above the temperature likely to cause injury to alfalfa.

This situation should indicate little to no injury or kill of alfalfa from the recent cold spell.
Economic Risk and Profitability of Soybean Seed Treatments at Reduced Seeding Rate

Adam P Gaspar, Shawn P Conley and John Gaska, Department of Agronomy and Paul Mitchell, Department of Agricultural and Applied Economics, University of Wisconsin Madison

Introduction

Earlier soybean planting coupled with increasing seed costs and higher commodity prices have led to a surge in the number of acres planted with seed treatments (Esker and Conley, 2012). Furthermore, the components and relative cost of various soybean seed treatments has broadened greatly. Recent studies have suggested that growers should consider lowering seeding rates to increase their return on investment (DeBruin and Pedersen, 2008; Epler and Staggenborg, 2008). This recommendation is attributed to the soybean plant’s potential compensatory ability at lower plant populations. Ultimately, growers would like to know the value proposition of combining seed treatments with lowered seeding rates. Therefore, the objectives of this study were to:

- Quantify the effects of seed treatments and seeding rates on soybean yield.
- Assess the economic risk and profitability of seed treatments and seeding rates, including calculating economically optimal seeding rate (EOSR) for each seed treatment.

ApronMaxx RFC and CruiserMaxx (Syngenta Crop Protection) seed treatments were used to achieve these objectives because they differ in their components and relative cost per unit. This study was conducted in 2012 and 2013 at nine Wisconsin locations. All locations were planted in 15 inch rows within the first 3 weeks of May.

To read the full PDF article follow the link below:

Palmer amaranth identified through the late-season weed escape survey

Vince Davis (Assistant Professor) Department of Agronomy, UW-Madison; Ross Recker (Graduate Research Assistant)

Palmer amaranth (Amaranthus palmeri) is a dioecious, summer annual broadleaf weed species in the pigweed (Amaranthaceae) family that is extremely adaptable to environments, including the development of herbicide resistance, and it is extremely competitive with row crops1. Palmer amaranth has been tormenting cotton and soybean producers in the southeast United States for the past decade, and more recently Palmer amaranth has been moving its way north into states such as Iowa2, Illinois3, Indiana4, and Michigan5,6,7,8. This northward movement of Palmer amaranth is alarming, and the movement has often been attributed to spreading contaminated manure from animal production operations that have fed cottonseed feed by-products transported from Southern U.S. production fields, as well as equipment movement, and contaminated seed for Prairie restorations.

Palmer amaranth is not native to Wisconsin. A population was identified in Dane County, WI through the 2013 late-season weed escape survey efforts partially funded by the Wisconsin Corn Promotion Board. During this survey in fall 2013, five plants were distantly distributed in a large soybean field. Four of those plants were male plants (Figure 1), and luckily only one plant was a female plant was present and produced minimal seed in comparison to the seed production they can potentially produce (Figure 2).

Figure 1. Male Palmer amaranth plant from Dane County, WI

Figure 2. Female Palmer amaranth plant from Dane County, WI
Plant tissue from all five plants was sent to the Dr. Pat Tranel at the University of Illinois. Dr. Tranel’s lab conducted molecular techniques to confirm that these plants were in fact Palmer amaranth as well as quantify the number of copies of the EPSPS gene. All five plants were confirmed as Palmer amaranth, and subsequently they produced EPSPS gene amplification ranging from 3-fold to >20-fold. EPSPS gene amplification within those ranges has previously demonstrated to be an effective mechanism for evolved glyphosate resistance in Palmer amaranth9. Whole-plant dose response experiments will be conducted to further confirm if this plant population is in fact resistant to glyphosate, but the molecular findings are at this point a strong indication that it is likely resistant. The origin of how this population established in Dane county, like many others, is difficult to pinpoint, but these plants were found in a field with a history of dairy manure application.

Because this is so far only one confirmed location of questionably resistant Palmer amaranth with minimal plants at this location, this does not necessarily represent a wide-spread catastrophe. However, this does provide further indication that the threat of herbicide-resistant pigweeds in Wisconsin crop production is real. The best approach is to be aware of this threat and implement a robust Integrated Pest Management approach, if you’re not already doing so. This approach should start with intently scouting fields and identifying weeds this spring prior to preplant control. Utilize diverse preplant control methods to ensure starting with a clean field at planting, but make sure scouting and proper identification is done prior to postemergence herbicide applications. Consider interrow cultivation and tank-mix herbicides that provide a second effective mode-of-action for key weed species that need controlled in-crop. Most importantly, intently scout following postemergence applications to look for weeds that were not controlled. Those are the weeds that pose the biggest threat to building a population with herbicide resistance. If any of these scouting trips indicates a pigweed species is one of the main target weeds, then make certain you know what type of pigweed species it is. Redroot pigweed, smooth pigweed, Powell amaranth, and waterhemp are all common pigweed species, however, waterhemp poses the greatest risk of herbicide resistance from that list. As already mentioned, Palmer amaranth is not a native, or common, pigweed species, but it poses a significant risk. If Palmer amaranth is identified, then its presence should invoke a “zero tolerance” mindset with eradication as the goal where feasible.

Characteristics of Palmer amaranth include rapid growth rate, high seed production, high degree of genetic diversity, high water use efficiency, and rapid development of herbicide resistance. Palmer amaranth competition with crops has demonstrated yield losses as high as 78% (soybean) and 91% (corn)10,11. Therefore, Palmer amaranth should be of high concern for producers across the state. Below are links to help with the identification and management of Palmer amaranth.

- Palmer amaranth biology, identification, and management. T. Legleiter and B. Johnson. Available at: Purdue University Extension
- Identifying Palmer amaranth in the field — Video. B. Johnson and T. Legleiter. YouTube video
- Palmer amaranth in Michigan, Keys to Identification. C. Sprague, C. Michigan State University Weed Science. Available at: Michigan State University

If you or your crop scout has utilized the identification guides and believe you have Palmer amaranth escapes in your fields, please contact your local county extension agent and/or Dr. Vince Davis (vmdavis@wisc.edu) or (608) 262-1392.

References:

3. Hartzler, B. 2013. Palmer amaranth update. Iowa State University, Integrated Crop Management News: article is available here


Corn, Gibberella Ear Rot, *Fusarium graminearum*, Vernon
Corn, Gibberella Stalk Rot, *Fusarium graminearum*, Vernon
Corn, Penicillium Rot, *Penicillium* sp., Vernon

VEGETABLES,
Garlic, Fusarium Basal Rot, *Fusarium* sp., Dane
Garlic, Waxy Breakdown, None, Dane

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 December 21, 2013 through December 27, 2013.

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

**SOIL,**
- Alfalfa Soil, Aphanomyces Seedling Blight, *Aphanomyces euteiches* race 2, Iowa

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 January 1, 2014 through January 3, 2014.

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

**VEGETABLES,**
- Garlic, Fusarium Clove Rot, *Fusarium* spp., Dane

**SOIL,**

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

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**UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Updates**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 November 30, 2013 through December 6, 2013.

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

**FIELD CROPS,**
- Corn, Cladosporium Rot, *Cladosporium* sp., Vernon
- Corn, Fusarium Ear Rot, *Fusarium* sp., Vernon

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Crops

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WI Soybean Research Program Wisconsin Crop Management Conference Research Presentations

The WI Soybean Research Program Wisconsin Crop Management Conference Research Presentations are now available. The presentations include WCMC 2014: 80 Years of B(reeding) x A(gronomy) Interactions in 30 Minutes or Less, WCMC 2014: Relationship Between SDS and SCN in Commercial Soybean Fields in Wisconsin, and WCMC 2014: Economic Risk & Profitability of Soybean Seed Treatments at Reduced Seeding Rates. To view the presentations visit www.coolbean.info.

Webinar: Corn Rootworm Management in the Transgenic Era

Bryan Jensen, IPM Program

A free webinar is being offered by the North Central Region’s extension and research entomologists on February 20, 2014. Several speakers will present timely topics which are listed below. The webinar starts at 1 pm and will conclude by 3:30. This webinar is supported by a USDA-NIFA North Central IPM program grant.

You will need a computer with speakers and can start the connection process 5 minutes prior to the planned start time by navigating to https://connect.unl.edu/r9ra3734my/ When you arrive at the login page, click the radio button that allows you to “Enter as a Guest”, type in your name and hit the “Enter Room” button.

To test your connection prior to the start of the webinar (suggested), or for troubleshooting during the webinar click on http://www.extension.iastate.edu/testconnect/

Topics/speakers

Rootworm biology and behavior; Dr. Joe Spencer, Illinois Natural History Survey
Resistance evolution and IRM for rootworm; Dr. Aaron Gassmann, Iowa State University
Adult management options: Dr. Lance Meinke, University of Nebraska-Lincoln
Larval management options: Dr. Bob Wright, University of Nebraska-Lincoln
Decision tree for grower management options; Dr. Ken Ostlie, University of Minnesota

Winners of the 2013 WI Soybean Yield Contest are Announced

Shawn Conley, Soybean and Wheat Extension Specialist

The 1st place winner in Division 4, Dean Booth of Cuba City, grew Asgrow AG2431 and harvested 82.7 bu/a. In second place, Mary Kay Booth of Cuba City grew Asgrow AG2433 and harvested 81.8 bu/a. In Division 3, RnK DeVoe Farms of Monroe won 1st place with Pioneer P28T33R at 92.1 bu/a (highest overall yield) and in 2nd place, Ellis Farms Inc. of Walworth harvested 74.4 bu/a with Dairyland DSR-2190/R2Y. Also in Division 3, the Wisconsin Bean Team of UW Graduate students Adam Gaspar, David Marburger, and Ethan Smidt grew Pioneer P28T33R and harvested 87.4 bu/a. The WI Bean Team is ineligible for official prizes as they are grad students of Dr. Conley; however their efforts are still recognized. In Division 2, Stetzer Brothers LLC of Melrose achieved 71.2 bu/a from Pioneer 91Y90 for first place. In 2nd place, Triple Maple Dairy LLC of Manitowoc harvested 65.0 bu/a from Renk RS183NR2 soybeans. In Division 1 at 57.8 bu/a was Paul Graf Farms LLC from Sturgeon Bay. They planted Pioneer
The contest is sponsored by the WI Soybean Program and organized to encourage the development of new and innovative management practices and to show the importance of using sound cultural practices in WI soybean production.

Agronomic Practices of 2013 WI Soybean Yield Contest Winners

<table>
<thead>
<tr>
<th>Practice</th>
<th>Percentage Using</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Planting date</td>
<td>May 14th</td>
</tr>
<tr>
<td>Avg. Seeding rate (seeds/acre)</td>
<td>176,111</td>
</tr>
<tr>
<td>Inoculant</td>
<td>33</td>
</tr>
<tr>
<td>Seed fungicide</td>
<td>67</td>
</tr>
<tr>
<td>Seed insecticide</td>
<td>56</td>
</tr>
<tr>
<td>Foliar fungicide</td>
<td>56</td>
</tr>
<tr>
<td>Foliar insecticide</td>
<td>22</td>
</tr>
<tr>
<td>Row spacing &lt; 30&quot;</td>
<td>89</td>
</tr>
<tr>
<td>Conventional tillage</td>
<td>56</td>
</tr>
<tr>
<td>Previous crop not corn</td>
<td>11</td>
</tr>
</tbody>
</table>

For more information please contact Shawn Conley, WI State Soybean Specialist at 608-262-7975 or spconley@wisc.edu

Crop Management Workshops February 21

Crop Management Updates, Hillsboro and Sparta, WI

Friday February 21, 2014
9:30 Registration
Program 10:00 am to 3:30 pm

Jake’s Northwoods Sparta, WI & Hillsboro Firemen’s Community Center Hillsboro, WI

Topics: (Speakers will rotate between locations between morning and afternoon)

- Farm Bill and Crop Insurance Update for 2014- Dr. Paul Mitchell, UW Extension Ag Economist
- Extreme Nutrient Management- Dr. Carrie Laboski, UW Extension Soil Scientist
- Do’s and Don’ts of Soil Compaction Management- Dr. Francisco Arriaga, UW Extension Soil Scientist
- Weed Management on 2013 Prevent Planted Acres and Cover Crop Weed Management- Dr. Vince Davis, UW Extension Weed Scientist

Get the Most from Your Time Crop Scouting: Tips and Practices for Efficient Crop Scouting- Bryan Jensen, UW IPM Program Specialist

Local Update including Alfalfa Fungicide Trial Results from 2013- One of the Area UW Extension Agriculture Agents

Pre-Registration:
Please pre-register for this workshop to help us plan accordingly for meals and handout materials:
To pre-register for the Sparta location contact the Monroe County Extension Office at 608-269-8722 by February 17th
To pre-register for the Hillsboro location contact the Vernon County Extension Office at 608-637-5276 by February 17th

Cold Killing Insects Podcast Now Available

Russel Groves, Associate Professor-Department of Entomology

Transcript

Sevie Kenyon: You tell us that this sub zero weather is actually good for something. Can you describe what that is?

Russell Groves: Yeah, as we’re speaking, the forecast tonight may be about twelve below zero. What that is going to do for us is it’s going to provide enough chilling degree-days, or cold temperatures, that’s going to kill a lot of insects that are trying to [survive] over winter. This is the year we need; to set them back.

Sevie Kenyon: Explain to us how it works?

Russell Groves: The air temperature itself can have the ability to directly freeze an insect, but it is a little bit challenging for you know insects that are in the soil, to be exposed to that air temperature. And in fact, a little bit of the snow that we have is a real good insulator. So what we do need is extended periods of cold temperature, and we also need a little bit of this wind. So where we have these cold temperatures and we have these extreme wind chills, when the wind comes and it blows the fields wide open, it really allows that cold temperature to reach the soil and our frost line to go deep, and by doing that can get to these insects, and drive the temperature down to levels that can be killing.

Sevie Kenyon: This isn’t just about killing bugs in Wisconsin.

Russell Groves: this is sort of a big, synoptic, weather event that’s really over much of the upper Midwest and even over the east. So this effect is going to be felt across many many areas of the state, Emerald Ashborer, and Emerald Ashborer populations might be getting effected by this, especially in the areas where we’re really getting these cold temperatures. And the same phenomenon is the case, we have to have these extended periods of cold temperature in order for the interior of the trees to reach the temperatures that can be a killing temperature. In the case for a lot of our insects that effect crops, again where they’re in the soil, we have to have these extended periods, and it is, it’s happening over a very large area in the country.
**Sevie Kenyon:** What other insects are affected by such cold temperatures?

**Russell Groves:** As a vegetable entomologist here in Wisconsin, probably a couple of the insects that I deal with, most often, one would be the Colorado Potato Beetle. And of course that’s probably our key pest with potatoes. That’s an insect that over winters in the ground, usually winters on average over twelve, to fifteen, maybe twenty inches in the soil, and so it’s these types of temperatures that are reaching these kinds of populations. Another one is Striped Cucumber Beetle. In our squashes are Cucurbits, and insects that over winters not in the ground, but on the soil surface, again when these fields blow open because of this wind and this cool, it’s getting to them. And we’re getting a few of them.

**Sevie Kenyon:** We’ve been visiting with Russell Groves, Department of Entomology, University of Wisconsin Extension and the College of Agricultural and Life Sciences, now celebrating 125 years, and I am Sevie Kenyon.

To listen to the audio of this podcast click [here](#).

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**New Publication on Corn Disease Loss Estimates in the U.S. and Canada**

Damon Smith, Extension Field Crops Plant Pathologist

A new publication on corn disease loss estimates in the U.S. and Ontario, Canada in 2012 has been developed. The publication is a product of a team effort composed of plant pathologists from across the corn production belt of the U.S. and Canada and describes the predominant disease of corn in 2012 and the estimated loss as a result. [CLICK HERE TO DOWNLOAD A PDF OF THIS NEW PUBLICATION](#).

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**UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 January 1, 2014 through January 3, 2014.

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

**VEGETABLES,**

Basil, [Root Rot](#), [Pythium](#) sp., [Columbia](#)

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](#).

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**New Pythium Root Rot in Soybean Scouting Card**

Damon Smith, Extension Field Crops Plant Pathologist

A new Pythium root rot in soybean scouting card has been developed by research and extension soybean pathologists in the North Central region. The card describes risk and symptoms of Pythium root rot and how to scout for the disease. Management recommendations are also included in this short and concise pamphlet. Scroll down to the end of this newsletter to view the card or [CLICK HERE TO DOWNLOAD A PDF VERSION OF THIS SCOUTING CARD](#).
Description of Pythium root rot

Pythium root rot is primarily a seedling disease. Early planting dates increase the risk of this disease. A seedling disease survey of the North Central Region of the United States and Canada in 2011 and 2012 recovered approximately 50 species of Pythium from diseased soybean seedlings. The species identified differed by latitude. Moreover, the diversity of species recovered was related to precipitation, soil type, and temperature. Survey data suggest Pythium has the potential to persist in soil environments and may become a long-term disease challenge.

Pythium species cause pre- and post-emergence damping off and, consequently, reduce stand. Infected seed appears rotted and soil sticks to it. Infected seedlings have water-soaked lesions on the hypocotyl or cotyledons that develop into a brown rot. Diseased plants are easily pulled from the soil because of rotted roots. Other plants become resistant to soft rot, but root rot retards plant growth, and affected plants may be yellow, stunted, or wilted if infection is severe.
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Crops
Think Twice Before Replanting Soybeans ...... Attachment
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IPM Toolkit app updated to use local news

A new version of the IPM Toolkit app is available. You can now customize your choice of RSS feeds, Twitter account lists, and YouTube playlists that show up in the application. This will allow users in other states around the country to make more use of this app on their mobile devices.

The staff of the University of Wisconsin Integrated Pest Management (IPM) program developed the IPM Toolkit app to allow users to read IPM related news articles, view videos, download publications, and access pictures to aid in adapting IPM practices to their agricultural operations.

Check out this application for iPhone and iPad: http://itunes.apple.com/us/app/ipm-toolkit/id504685615?mt=8

Check out this application for Android: https://play.google.com/store/apps/details?id=ipcm.tool.kit

You can find out more about this app by following the link below:
http://ipcm.wisc.edu/apps/ipmtoolkit/

Broadcast Recording Available from National Cover Crops Conference

To meet some of today’s biggest challenges in agriculture, including rising food demand, a shrinking land base and climate change, farmers should be encouraged to adopt a holistic approach to enriching their most valuable resource – the soil – according to a panel of experts who helped open last week’s National Conference on Cover Crops and Soil Health.

“Cover crops to me are just the next natural step in trying to have a broader system, and I think the single biggest issue we have as farmers in this country is we don’t farm with a system in mind,” said panelist Howard G. Buffett, a philanthropist and Illinois farmer.

To learn more, watch a recording of opening sessions from the National Conference on Cover Crops and Soil Health, held Feb. 17 – 19 in Omaha, Neb. Joining the 300 farmers, scientists, and industry and government representatives who met in Omaha, approximately 6,000 others participated by gathering at more than 200 local soil health forums nationwide, where this recording was broadcasted live.

Also available online are presentations from breakout sessions and 10 short videos of innovative farmers describing their use of cover crops.

To read more follow the link below:
http://www.sare.org/Events/National-Conference-on-Cover-Crops-and-Soil-Health
Surveys on Cover Crops and Soybean Production
Matt Ruark, Dept. of Soil Science, Univ. of Wisconsin-Madison & Univ. of Wisconsin-Extension

The North Central Soybean Research Program (NCSRP) has recently funded an eight-state study to identify and prioritize future research needs on the use of cover crops in soybean production systems. Part of this project is to get a sense from soybean growers in Wisconsin, and from those that advise soybean growers in some capacity, if they are using cover crops before or after soybean.

Our goal is to get input from all soybean growers and consultants, not just ones currently using cover crops. The survey includes questions about drawbacks and challenges to cover crop use in Wisconsin. Answering “no” to the question, “Do you use cover crops?” is an important piece of information for us and for the NCSRP (and will dramatically shorten your time on the survey). For those that are using cover crops, we are very interested in which cover crop species are used, how they are planted, and what benefits you would like from cover crops. For the purpose of this survey, a cover crop refers to any crop intentionally planted between traditional crop production periods (May – October). This would not include any crop grown for the purpose of being harvested for feeding livestock. These survey results will be summarized and presented to the farmer-led NCSRP, along with a review of known research studies on cover crop impacts on soybean production. Your answers are anonymous.

Farmer Survey
To easily assess soybean grower use of cover crops, we have developed an 18-question survey. This survey can be completed online (https://www.surveymonkey.com/s/BGTMJ2S) and should not take more than 10 minutes to complete. There is also a hard copy of the survey available at www.ruarklab.soils.wisc.edu/research/cover-crops, although this will then need to be emailed or mailed after completion (mailing instructions are on the survey).

Crop consultant, agricultural professional, or service provider survey

The consultant survey can be found at (https://www.surveymonkey.com/s/5PDV788) and should not take more than 10 minutes to complete. There is also a hard copy of the survey available at www.ruarklab.soils.wisc.edu/research/cover-crops, although this will then need to be emailed or mailed after completion.

The survey is short and easy to complete. We hope you consider participating. Again, your answers are anonymous. If you’re interested in more information on cover crops please check out the Midwest Cover Crop Council website (www.mccc.msu.edu) which contains detailed information on nearly every crop species as well as current information on crop insurance issues as they pertain to cover crops. For Wisconsin specific information on cover crops, check out the cover crops page on the UW Soils Extension site (www.soils.wisc.edu/extension/covercrop).

Vegetable Crop Update 3/2/14

The first issue of the Vegetable Crop Update is now available. This issue contains information on upcoming cover crop webinars and early disease considerations for potato. Click here to view this update.

Recording Available from Corn Rootworm Management in the Transgenic Era
Eileen Cullen, Extension Entomologist

A free webinar was held on Feb. 20, 2014 to provide information on current rootworm management and information and recommendations on how to proceed in 2014 in light of developing western corn rootworm resistance to some Bt rootworm traits. This program was supported by a USDA-NIFA North Central IPM program grant.

The webinar was recorded and is available for viewing at: https://www.ncipmc.org/videos/index.cfm

Topics covered included:
Rootworm biology and behavior; Dr. Joe Spencer, IL Natural History Survey
Resistance evolution and IRM for rootworm; Dr. Aaron Gassmann, Iowa State University
Adult management options: Dr. Lance Meinke, University of Nebraska-Lincoln
Larval management options: Dr. Bob Wright, University of Nebraska-Lincoln
Decision tree for grower management options; Dr. Ken Ostlie, University of Minnesota

Follow us on

folk and twitter logos
For additional information, the official agenda, and to register, visit the Nitrogen Summit and Roundtable Series website.

**Friday, March 28, 2014**

**A one-day Wisconsin Nitrogen Science Summit:**
Exploring agricultural nitrogen and water quality connections - science, policy, and management

**TIME** 9:00 a.m. - 4:15 p.m.

**LOCATION**
Microbial Sciences Building
Ebbling Symposium Center
1550 Linden Drive, Madison, WI
Get Directions

Click here to > REGISTER NOW

**ABOUT THE SUMMIT**
As part of Wisconsin's strategy to better manage nutrients and water quality, University of Wisconsin-Madison, College of Agricultural and Life Sciences (CALS) is hosting a Nitrogen Science Summit on March 28, 2014.

The summit will discuss the state of knowledge regarding nitrogen presence and pathways in Wisconsin's environment - soil, surface water, groundwater, air - what we know, what we don’t know, and related uncertainties.

We expect participants representing many Wisconsin stakeholders across agricultural sectors, agencies, nongovernmental organizations, and academics.

**AFTER THE SUMMIT**
The summit will kickoff a year-long series of focused round-table discussions about nitrogen.

**PARTNERSHIPS**
UW CALS will host the summit and series in partnership with Wisconsin's conservation agencies (including UW-Extension, DNR, DATCP, NRCS, USDA-ARS) and others in the public, private, and non-profit sectors.

**QUESTIONS?**
Martha Martin
mlmartin3@wisc.edu (608) 262-0020
THINK TWICE BEFORE REPLANTING SOYBEANS

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

Introduction

Soybean planting date trends have steadily shifted earlier within the Northern Corn Belt while inclement weather, insect pressure, and disease pressure associated with spring planting can require replanting some years (USDA-NASS, 2011). Furthermore, recent studies have reported similar yields among reduced plant stands due to the soybean plants compensatory ability (Carpenter and Board, 1997) and diminished yield potential of replanted or essentially later planted soybeans (Conley et al., 2012; De Bruin and Pedersen, 2008). Ultimately, producers would like to know the potential yield gain or loss from replanting sub-optimal plant stands to help determine if replanting is economical. Therefore the objectives of this study were to:

- determine the threshold for replanting soybean stands.
- evaluate replanting options.
- quantify the effect of seed treatments and planting date on replant decisions.

This study was conducted in 2012 and 2013 at the Arlington Agricultural Research Station, Arlington, WI. Twelve different replant scenarios were planted in 15 inch rows during early May, late May, and mid-June. The replanted portions of the plots were interseeded between the rows of the initial soybean stand. ApronMaxx RFC and Cruiser-Maxx (Syngenta Crop Protection) seed treatments were used to compare a fungicide only seed treatment with one that also contains an insecticide.
Determine the Initial Plant Stand

The first step in making an informed replant decision is determining the initial plant stand. Soybean stands can be deceiving to the eye sometimes, especially in narrow rows (<15 inch), where stands can be greatly underestimated. Therefore, using the hula hoop method or counting the number of plants in a row is needed to accurately determine the plant stand. If severe weather causes stand reduction and/or plant injury, stand counts should be performed 3-5 days after damage has occurred to give the plants time to recover. Only live plants that are expected to survive should be counted (Table 1).

<table>
<thead>
<tr>
<th>Plant Condition</th>
<th>Will the plant survive?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant cut off below the cotyledons</td>
<td>No</td>
</tr>
<tr>
<td>Plant missing only one cotyledon</td>
<td>Yes</td>
</tr>
<tr>
<td>Plant missing both cotyledons but growing point intact</td>
<td>Yes</td>
</tr>
<tr>
<td>Plant cut off above unifoliate leaves</td>
<td>Yes</td>
</tr>
<tr>
<td>Plant lightly bruised on the stem</td>
<td>Yes</td>
</tr>
<tr>
<td>Plant heavily bruised and folded over</td>
<td>No</td>
</tr>
</tbody>
</table>

Counting Plants in a Row

When determining the plant stand with this method, count the number of plants in a length of row based upon your row spacing (Table 2). Do this at least five times in different areas of the field and calculate the average, then multiply that number by 1,000 to get the number of plants per acre (plant stand).

<table>
<thead>
<tr>
<th>Row Width (inches)</th>
<th>Length of Row*</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>17.4 feet</td>
</tr>
<tr>
<td>20</td>
<td>26.2 feet</td>
</tr>
<tr>
<td>15</td>
<td>34.8 feet</td>
</tr>
<tr>
<td>10</td>
<td>52.3 feet</td>
</tr>
<tr>
<td>7.5</td>
<td>69.7 feet</td>
</tr>
</tbody>
</table>

*Length of Row = (43,560 ÷ row width(ft)) ÷ 1000

Hula Hoop Method

When determining the plant stand with this method, randomly toss any round hoop with a known diameter on the ground and count the number of plants within the hoop. Do this at least five times in different areas of the field and calculate the average, then multiply that number by the appropriate multiplier (Table 3) to get the number of plants per acre (plant stand).

<table>
<thead>
<tr>
<th>Hoop Diameter (inches)</th>
<th>Multiplier*</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>24,662</td>
</tr>
<tr>
<td>21</td>
<td>18,119</td>
</tr>
<tr>
<td>24</td>
<td>13,872</td>
</tr>
<tr>
<td>27</td>
<td>10,961</td>
</tr>
<tr>
<td>30</td>
<td>8,878</td>
</tr>
<tr>
<td>33</td>
<td>7,337</td>
</tr>
<tr>
<td>36</td>
<td>6,165</td>
</tr>
</tbody>
</table>

*Multiplier = 43,560 ÷ ((hoop radius² x 3.14) ÷ 144)
Replant Threshold

Our study showed that the highest yields were achieved with initial plant stands >100,000 plants/a (Figure 1). This is consistent with Lee et al. (2008), who stated soybeans in Kentucky require plant stands above 100,000 plants/a to achieve 95% of maximum yield. This is further demonstrated by the initial seeding rates of 40000, 60000, and 80000 seeds/a with no replanting, which produced final plants stands well below 100,000 plants/a and yielded 10, 5, and 4 bu/a less than the maximum yield, respectively (Figure 1). However, when these same plant stands were filled in and the final plant stands were subsequently increased above 100,000 plants/a; significant yield increases of 7, 2, and 2.5 bu/a were attained, respectively (Figure 1). Replanting initial soybean stands <100,000 plants/a significantly increased yield, but not to levels attained by initial plant stands >100,000 plants/a, where replant is not beneficial. Therefore, the threshold for soybean replanting is 100,000 plants/a.

Replanting Options

When below threshold soybean stands arise (<100,000 plants/a), producers are faced with the decision to fill in the initial stand or perform a tillage operation and completely replant the entire stand. Our study found that a tillage operation limited yield potential by essentially delaying planting and reducing cumulative light interception of the entire stand compared to only a portion of the stand when the fill in method was used (Gaspar and Conley, 2014). In Figure 1, we see that when the initial plant stand was reduced to zero (by tillage), replanting with up to 220,000 seeds/a only significantly increased yield over a final plant stand of 37,000 plants/a. However, when this plant stand was filled in with only 100,000 seeds/a, its yield was the same or higher than replanting the entire stand with 220,000, 180,000, and 140,000 seeds/a (Figure 1). Furthermore, final plant stands >59,000 plants/a produced similar or higher yields compared to using tillage and replanting with 220,000 seeds/a (Figure 1). Therefore, filling in soybean stands below the replant threshold (100,000 plants/a) is the best method of replanting and replant seeding rates should be high enough to increase the final plant stand over 100,000 plants/a. Figure 2 depicts a stand with 37,000 plants/a being filled in with 100,000 seeds/a.

Figure 1. Yield (bu/a) of twelve replant scenarios across all three planting dates. The number printed at the top of the bars represent the final plant stand (1000 plants/a) after replanting.

Figure 2. An initial soybean stand of 37,000 plants/a that was not filled in (top) and filled in with 100,000 seeds/a (bottom).
Seed Treatment and Planting Date Effects on the Replant Decision

We observed no effect of seed treatment use on replant decisions and therefore should not be a factor considered. However, seed treatment use (especially insecticide/fungicide treatments) may help avoid replanting because it is an effective management practice for increasing initial plant stands by 20% on average (Gaspar et al., 2014).

Our study indicated a large yield decline as planting was delayed past the first week in May (Figure 3). This yield decline is most likely due to decreased light interception of later planted or replanted soybeans. The earliest planting date yielded 73 bu/a (Figure 3). We observed a 0.25 bu/a/day yield decline between the early May and late May planting dates, which then doubled to 0.5 bu/a/day between the late May and mid-June planting dates. The average yield decline through the whole planting season was 0.32 bu/a/day. However, the replant decision was not affected by planting date and therefore the replant threshold (100,000 plants/a), method (fill-in), and seeding rates (>100,000 plants/a) are appropriate until June 20th in southern WI. Replanting past this date greatly increases the risk of fall frost damage (Conley and Gaska, 2013).

Conclusion & Recommendations

The first step in deciding if replanting is required is to determine the initial plant stand. Our 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.

References


Yield (bu/a) of soybean planted at three different dates across all replant scenarios and seed treatments.

**Figure 3.** Yield (bu/a) of soybean planted at three different dates across all replant scenarios and seed treatments.
**What’s New**

UWEX Team Forage Launches New Web Site

3 minute survey to help UW IPM Program

IPM Toolkit app, video demonstration

Certified Crop Advisor recognition

**Fertility & Soil**

New publication from NPM Program-

SnapPlus Prep

**Insects and Mites**

Plant Disease Diagnostic Clinic Update, March 1-7

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**New publication from NPM Program-SnapPlus Prep**

Kim Meyers, NPM Southwest Wisconsin Regional Specialist

SnapPlus Prep is a new publication available from the Nutrient and Pest Management Program. It provides guidance to help you write a nutrient management plan using SnapPlus software.

The publication includes 8 basic steps to developing a new plan and explains information needed to complete each step. It also includes links to useful resources, such as publications, youtube videos, websites, and an easy to understand glossary.

SnapPlus Prep also has an inventory worksheet which can be used to gather all needed information before working with the software.

http://ipcm.wisc.edu/download/pubsNM/SnapPlusPrepWorksheet_FINAL.pdf

**UWEX Team Forage Launches New Web Site**

The University of Wisconsin-Extension Team Forage recently updated their web site. In addition to information about the team and its activities, the site accumulates a variety of forage crop resources available from many experts and disciplines within the University of Wisconsin. There are also nearly 100 Focus on Forage fact sheets that have been developed by team members.

All of the information from the old team site has been migrated to the new site. In addition, a section on “Short Forage Years” and “Forage Videos” has been incorporated into the list of topic pages.

Frequent uses of the site can subscribe for email updates when new material is added. In 2013 the site had over 0.5 million pageviews. The web site offers access to hundreds of UW forage resources including papers, presentations, and spreadsheet decision aids. It includes both production and feeding information.

The new UW Team Forage site can be accessed at http://fyi.uwex.edu/forage/
3 minute survey to help UW IPM Program

Jed Colquhoun, Vince Davis, Dan Heider, Roger Schmidt and Bryan Jensen  University of Wisconsin IPM Program

The University of Wisconsin Integrated Pest Management Program (IPM) would be very appreciative if you could take our anonymous online survey. This survey lets you quickly tell us which UW IPM program activities you find valuable. The estimated time to complete the survey is 3 minutes.

http://go.wisc.edu/qx3hq6

IPM provides educational programming to Wisconsin agronomic and specialty crop producers. Your input will help document the stakeholder value of these programs, as well as focus our program on activities that best serve agronomic and specialty crop producers in the future.

IPM Toolkit app, video demonstration

A new version of the IPM Toolkit app is available. You can now customize your choice of RSS feeds, Twitter account lists, and YouTube playlists that show up in the application. This will allow users in other states around the country to make more use of this app on their mobile devices.

https://www.youtube.com/watch?v=8dC3MpSlIyeg

Check out this application for iPhone and iPad:

Checkout this application for Android:

You can find out more about this app by following the link below:
http://ipcm.wisc.edu/apps/ipmtoolkit/

Certified Crop Advisor recognition

Bryan Jensen, IPM Program

On behalf of the Wisconsin Certified Crop Adviser Board, we would like to congratulate and recognize those CCA’s who have recently surpassed their 20th anniversary as a Certified Crop Advisor. Please take some time to review the list below. We’re sure you are going to recognize several colleagues.

CCA’s Achieving Their 20 Year Anniversary in 2014

Northwest
William Rose, Colfax
Matthew Cranston, River Falls
David Peterson, Balsam Lake
Larry Offerdahl, Mondovi
Mahlon Nordahl, Hixton
Randy Hansen, Glenwood City
Thomas Hoffman, Stratford
Clark Bauman, Marshfield
Ronald Schuh, Spencer
Tim Mares, Balsam Lake
David Black, Durand
Paul Krause, Edgar
Rodney Ellwanger, Ladysmith
Donald Roger Lentz, Menomonie
Ronald Wyss, Black River Falls
Douglas Yapp, Independence

Southwest
Wayne Loeffelholz, Platteville
Kevin Sloane, Viroqua
Donald Bennett, Arena
Dennis Storandt, Mindoro
Patrick Wiegel, Cuba City
Elizabeth Pinkston, Baraboo
Bryan Black, Darlington
Bruce Ludolph, Sauk City
Michael O’Leary, Richland Center
Gary Ott, Sauk City
Jacob Kaderly, Monticello
Thomas Sandahl, New Glarus
James Fanta, Lodi
Gregory Ballweg, Richland Center
Eric Birschbach, Verona
Joe Connors, Mt Horeb
Mike Olson, Westby
Carl Nachreiner, Waunakee
Nina Holte, Coon Valley
James Hartung, Cross Plains
Paul Henn, Prairie du Sac

**Northeast**
Daniel Zierke, Stevens Point
Joseph Nagel, Stevens Point
William Page, Bryant
David Henselin, Marion
John Riener, Marion
Larry Paltzer, Omro
John Donaldson, Kewaunee
Frank Brenner, Mosinee
John Peters, Rudolph
David Virant, Junction City
Timothy Bender, Sturgeon Bay
Patrick Denor, Whitelaw
Vince Michalski, Green Bay
Jon Anderson, Appleton
Thomas Davies, Greenleaf
Bradley Holtz, Whitelaw
Joseph Kolbe, Chilton
Donald Schmidt, Coleman

**Southeast**
Wade Rudyanski, Brodhead
Marvin Baker, Janesville
Eugene Wilcenski, Sun Prairie
H. Michael Sarton, Lake Geneva
Andrew Walsh, Random Lake
Shawn Eckstein, Reedsville
Gerald Berg, Oconomowoc
John Sudbrink, Cascade
Jeff Laufenberg, Fond Du Lac
Dennis Klumpers, Ripon
Curt Mayer, Whitelaw
Colleen Loppnow, Reedsville
Brian Karkosh, Milton
Rebecca Wagner, Fond du Lac
Robert Thomsen, Jefferson
Francis Steffeck, Horicon
Daniel Uminsiki, Middleton
Juan Edwards, Waterloo
David Welsh, Elkhorn
Kristopher Duffy, Watertown
Michael Kuffel, Oostburg
Richard Hammen, Waldo
Rodney Smith, Fort Atkinson
Michael Rankin, Fond du Lac
Nelson Graham, Cottage Grove
Brian Madigan, Ripon

**Out of State**
Kenneth Washburn; Walcott, IA
David Allen; Franklin, TN

[https://www.certifiedcropadviser.org](https://www.certifiedcropadviser.org)

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**Plant Disease Diagnostic Clinic Update, March 1-7**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic (PDDC)

The following diseases/disorders have been identified at the PDDC from March 1, 2014 through March 7, 2014.

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

Potato, **Powdery mildew**, *Oidium* sp., Dane

The UW-Extension/Madison Plant Disease Diagnostic Clinic receives samples of many plant and soil samples from around the state. For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

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**Follow us on**
WSMB Continues Enhanced Nematode Testing Program for 2014

Shawn Conley, Soybean and Wheat Extension Specialist

Four out of every five animals on earth today is a nematode so it is not surprising that agricultural fields are home to many nematode species. Fortunately, most nematodes are beneficial to crop growth and soil health because their activities help decompose crop residues and cycle nitrogen and other nutrients. Pest nematodes do not threaten yield if their numbers remain low. The key to avoiding population explosions of nematode pests is to be proactive – know what the situation is and take appropriate measures when nematode numbers indicate a problem is brewing.

The WSMB sponsors free nematode testing to help producers stay ahead of the most important nematode pest of soybean, the soybean cyst nematode (SCN) (Figure 1). Eggs of SCN persist in the soil between soybean crops so a sample can be submitted any time that is convenient. The soil test report indicates the number of eggs in the sample and is useful for selecting the right variety for the next soybean crop. Retests of fields planted with SCN-resistant varieties over multiple years shows how the nematode population is responding to variety resistance and provides an early warning should the nematode population adapt to host genetics.

In 2014, the WSMB is again offering the expanded nematode testing program to include other pest nematodes in addition to SCN. These nematodes are less damaging to soybean than SCN but can cause enough yield loss to warrant treatment. As is the case for SCN, there are no rescue treatments for nematodes so the primary purpose of this year’s soil test is to plan for next year’s crop. Soil samples collected in corn for nematode analysis have predictive value for explaining yield if they are collected before the corn V6 growth stage. Sampling early in the season will provide information about the risk potential for the current corn crop AND the next soybean crop.

The assays used to recover nematode pests other than SCN in soil require that the nematodes are alive. So, it is important to keep the samples moist and at least room temperature cool. Collecting a sample that includes multiple cores ensures that there will be plenty of root pieces to assay. It is not necessary to include live plants in the sample. The soil test report will indicate which pest nematodes are present and at what quantities and their damage potential to soybean and corn based on the numbers recovered. Free soil sample test kits are available now and can be requested at freescntest@mailplus.wisc.edu.

For more information on SCN testing and management practices to help reduce the losses from this pest, please contact: Shawn Conley: spconley@wisc.edu; 608-262-7975 or visit www.coolbean.info.
Factors to Consider While Assessing your 2014 Winter Wheat Crop

Shawn Conley, Soybean and Wheat Extension Specialist

As the snow begins to melt and we finally put the 2013/14 winter behind us, many growers and consultants alike are beginning to venture out to their winter wheat fields to assess winter injury. Though it is a premature to make any rash decisions here are a few considerations for assessing your spring 2014 winter wheat stands.

1. As you look across your wheat landscape vibrant green patches will be interspersed with drab brown areas. The brown areas do not necessarily indicate those plants are dead.

   ![2014 Arlington WI Winter Wheat Variety Trials](image1)

   Growers and consultants can either reassess in a week or pull plants from the field and place in warm environments. Milk houses and kitchens work perfect. Root regrowth will appear from the crown and will appear as vibrant white roots as shown below.

   ![Spring Root Regrowth in Winter Wheat](image2)

   If plants do not recover our critical threshold for turning over a field is 12 to 15 live plants per square foot. Below this threshold is an automatic replant. For more detailed information on assessing winterkill please view Wheat Stand Assessment, Winterkill Yield loss, and Nitrogen Application.

2. Evaluate tiller number and make the N timing decisions. It is important to remember that the functional purpose of spring N is to 1. stimulate tillering and 2. provide crop nutrition. If ample tillering (> 70 tillers per square foot) has occurred growers can delay N applications up to pre-joint (Feekes 4-5; Zadoks 30). This practice will aid in minimizing early spring N loss. Applications of N made after this growth stage may lead to wheel track damage. If growers have < 70 tillers per square foot it is important to get across those fields as soon as possible to minimize yield loss due to low tiller/head counts. For more information on tiller counts and spring N timing please view my YouTube video entitled: Wheat Stand Assessment and Nitrogen Timing.

3. Lastly remember that wheat grain in itself is only part of the revenue you capture with winter wheat. The price of winter wheat straw remains strong so please consider that revenue stream before any replant decisions are made.

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2014 WI Soybean Yield Contest is Announced

Shawn Conley, Soybean and Wheat Extension Specialist

The Wisconsin Soybean Marketing Board launches the 5th annual Wisconsin Soybean Yield Contest. The objective of this program is to encourage the development of new, innovative management practices and show the importance of sound cultural practices in Wisconsin soybean production.

Wisconsin soybean growers have until September 1, 2014 to enter the Wisconsin Soybean Yield Contest. Two winners from each of four geographical districts in the state will receive awards (Image 1.). “Please note the divisional lines were redrawn for 2014 based on a rolling 10 year average yield”. The first place award in each district includes a $1,000 cash prize; second-place honors include a $500 prize. Winners will be selected for having the highest soybean yield based on bushels per acre at 13% moisture. The awards ceremony is scheduled for January 29, 2015 during the Corn/Soy Expo at WI Dells.

For more detailed information regarding the program and contest rules please visit www.coolbean.info or 2014 Wisconsin Soybean Yield Contest Rules.

Entry forms can be found at 2014Wisconsin Soybean Yield Contest Entry Form.

A list of the 2013 winners and a management summary of their practices is also provided.
For more information please contact Dr. Conley at spconley@wisc.edu. Good luck and have a safe and productive 2014 growing season!

New Pub: Oat Yield and Quality in Wisconsin

Syririon Mourtzinis, Shawn P. Conley, and John M. Gaska
Department of Agronomy, University of Wisconsin-Madison

Oat cultivation in Wisconsin has declined considerably in the last eight decades; nevertheless, it continues to be an important crop in the north central states where 65% of the oats harvested for grain in the United States each year are produced.

To read the full article follow the link below:

Plant Disease Diagnostic Clinic (PDDC)
Update 3/22-3/28

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 March 22, 2014 through March 28, 2014.

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

**FRUIT CROPS,**
Plum, Plum Pockets, Taphrina communis, Walworth

**VEGETABLES,**
Beet, Southern Sclerotium Root Rot, Sclerotium rolfsii, Vernon

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

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**Glyphosate-resistant Horseweed in Wisconsin**

Ross Recker (Graduate Research Assistant), John Buol (Undergraduate Research Assistant), and Vince Davis (Assistant Professor) Department of Agronomy, UW-Madison

Glyphosate-resistant weeds continue to be a major threat to corn and soybean production across the Nation. A pro-active survey of late-season weed escapes in corn and soybean fields was conducted throughout Wisconsin in 2012 and 2013. One objective of the survey was to identify areas where populations of glyphosate-resistant weeds may exist.

In 2012, a population of horseweed (Conyza Canadensis) collected from Jefferson County, and glyphosate screening in the greenhouse confirmed it was glyphosate-resistant with a 6-fold tolerance compared to a susceptible population. This announcement and more information about horseweed biology and management were previously reported and can be read here.

During the 2013 late-season survey, another putative glyphosate-resistant horseweed population was collected from Columbia County. Again whole-plant dose response experiments were recently conducted in the greenhouse and results confirm this population is also nearly six-fold glyphosate-resistant (Figure 1).

![Figure 1. Shoot dry biomass of Columbia County horseweed and susceptible horseweed following treatment with glyphosate at doses up to 3.48 kg ae ha\(^{-1}\) as estimated by a four-parameter log-logistic regression function.](https://example.com/figure1.png)

The horseweed seeds were collected from mature plants in a soybean field with a history of no-till, corn/soybean rotation, and glyphosate use. These plants displayed symptomology at the time of collection including shortened internodes (Figure 2)
and were scattered randomly at low densities in about a 2 to 3 acre patch. If you have horseweed or other weeds that survive postemergence applications, you should have concern about herbicide resistance. Contact your local county Ag Extension Agent who can help you further evaluate the situation and plan a pro-active resistant management program so you can take action against herbicide resistance.

Figure 2. Horseweed plant late in the 2013 growing season that was not controlled with a previous postemergence glyphosate application in a no-till soybean field in Columbia County, Wisconsin.
While reading the Nation Corn Growers Association Yield Contest results, I was struck by the plant populations at planting and harvest. The average planting population of all entrants in the contest was 33,616 plants/A, while state winners averaged 34,821 plants/A, and national winners averaged 39,166 plants/A. The average harvest population for all entrants was 32,160 plants/A, while state winners averaged 33,833 plants/A, and national winners averaged 39,222 plants/A. If we assume that the initial plant population was the planter setting that reflects the number of seeds dropped, then seed survival for all entrants was 96%, while for state winners it was 97% survival, and for national winners it was 100% survival.

I was curious about corn seed survival in Wisconsin. We have traditionally figured that 90% of the seed planted survives to produce a harvestable plant. So to establish a field at 30,000 plants/A, you would need to drop seed at 33,333 plants/A.

Corn seed treatments are required in most planting situations. These treatments protect the plant through the first four- to six-weeks of the corn life cycle. In the past the dominant seed treatment was Captan. Since 2005, we have been tracking the use of seed treatments in the UW corn hybrid performance trials and to date we have had 164 different combinations of seed treatments entered. The question that many growers have asked is, "Has corn seed survival improved in modern production systems?"

Since 2008, the UW hybrid evaluation program has used a precision planter to establish plots. The seeding rate for every plot planted in this program is 34,100 plants/A. At harvest we count the number of plants that survived in 10% of the plots. Various seed treatment combinations are used on hybrids, however, no chemical seed treatments are used in the organic trials.

Where seed treatments are used, corn seed survival averaged 91-92% and was similar in the Early, Late and Specialty trials (Table 1). The organic trials where no seed treatments are used had 82% seed survival. The most challenging location in the program with the lowest seed survival was Seymour where survival was 84%. Other locations that had lower seed survival included Coleman, Lancaster and Marshfield. These sites ranged from 86 to 87% survival. The location with the highest seed survival was Fond du Lac at 95%.

<table>
<thead>
<tr>
<th>Trial</th>
<th>N</th>
<th>Harvest population (plants x 1000/A)</th>
<th>Seed survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>114</td>
<td>31.2</td>
<td>91</td>
</tr>
<tr>
<td>Late</td>
<td>100</td>
<td>31.3</td>
<td>92</td>
</tr>
<tr>
<td>Organic</td>
<td>37</td>
<td>27.9</td>
<td>82</td>
</tr>
<tr>
<td>Specialty</td>
<td>45</td>
<td>31.0</td>
<td>91</td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>0.5</td>
<td>0.5</td>
<td>2</td>
</tr>
</tbody>
</table>

Data derived from reports available at [http://corn.agronomy.wisc.edu/HT/](http://corn.agronomy.wisc.edu/HT/) (Table 5 or 6).
Another study where we routinely measure seed survival is a planting date experiment at Arlington (Table 2). In this study a known quantity of seed is planted and then emerged plants are counted at V5-V6. The optimum time to seed corn at this farm is May 1. Yet, seeding around May 1 does not always result in the best corn seed survival. For example, during 2010 seed survival was 85% in early May with dates before and after where survival was 95% or greater. In most years planting during April decreased seed survival. So to achieve a target harvested population, seeding rate adjustments would need to be made and changed as the planting season progressed.

<table>
<thead>
<tr>
<th>Table 2. Corn seed survival (%) at Arlington, WI.</th>
</tr>
</thead>
<tbody>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>March 26 - April 26</td>
</tr>
<tr>
<td>April 30 - May 8</td>
</tr>
<tr>
<td>May 16 - May 21</td>
</tr>
<tr>
<td>May 31 - June 4</td>
</tr>
<tr>
<td>June 15 - June 18</td>
</tr>
<tr>
<td>LSD (0.10)</td>
</tr>
</tbody>
</table>

Data derived from [http://corn.agronomy.wisc.edu/Research/ under "03 Date of Planting."](http://corn.agronomy.wisc.edu/Research/ under "03 Date of Planting.")

Corn seed survival likely varies by field. The more challenging fields in our program are in northern Wisconsin. One exception is Lancaster where aggressive tillage is used to prepare the seedbed with soil crusting resulting in some years. Average corn seed survival seems higher than the 90% level we have traditionally used. We should probably be using 92 to 95% seed survival. However, there are numerous exceptions due to seed quality, planting date, tillage system, seed treatment and hybrid.

### SnapPlus: How to Videos Available

Kim Meyer, Southwest Regional Specialist

There are currently 20 instructional videos which demonstrate how to utilize the many screens and tools within the SnapPlus program, Wisconsin’s nutrient management planning software. These videos are designed to help both the new user and seasoned users that need a quick refresher. All videos are between 1 to 6 minutes in length, depending on the topic.

There are many new features within SnapPlus that advanced users may not be aware of, such as the data dump option for making customized reports in Microsoft Excel, or how to operate the new Daily Log screen. There are videos available that demonstrate these new features and tools, with additional videos on the way. All videos can be viewed directly from the SnapPlus website, [www.snapplus.wisc.edu](http://www.snapplus.wisc.edu) under the Support tab, How To Videos. Videos can also be viewed from the SnapPlus You Tube channel, [http://www.youtube.com/user/SnapPlusUW](http://www.youtube.com/user/SnapPlusUW).

### Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 March 22, 2014 through March 28, 2014.

**VEGETABLES,**

Carrot, Black Rot, Alternaria radicina, Dane

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).
Save the date: Agronomy/Soils Field Day August 27, 2014

Carrie Laboski, Associate Professor & Extension Soil Scientist

The Agronomy/Soils Field Day will be held on August 27, 2014 at the Arlington Ag Research Station. Details of topics and tours will be provided as they become available.

Top 5 Recommendations for Soybean Establishment and Yield

Shawn Conley, Soybean and Wheat Extension Specialist

I awoke this morning to the gleeful announcement from my two year old yelling at the top of her lungs "Dad....snow....outside". I feigned excitement only because I know we are still missing 75 entries for our soybean variety test program (hint hint to those that are delinquent) and suboptimal soil temperatures (Figure 1).

As past experience has taught many of us that live in the "frozen tundra", a WI spring can appear rapidly so here are a few thoughts to mull over before we all get busy and throw recommendations out the window to get those crops in the ground.

1. Planting date matters for northern soybean growers. Dr. Specht et al. from UNL did a very good job discussing "Why planting soybean early improves yield potential". Furthermore, our recent planting date data is also very supportive of early planting. Not only have we seen a synergistic yield response with today’s genetics to early planting, we also average ~0.36 bu per day cost to delaying planting past the first week of May (please see Figure 2. below).

![Graph showing yield versus date]
2. Use a fungicide and insecticide seed treatment. Given today’s seed input costs and commodity price our data suggests **reduced economic risk and increased profitability** utilizing these inputs.

3. Plant your soybean seed 1” deep. I know I know MSU just came out with new information regarding soybean planting depth, but I am not completely sold on planting early soybean at 1.75 inches in Wisconsin. If it is June 5th, soil temps are 72 degree F, and I am planting to moisture due to drought conditions and no rain in the forecast then maybe I could be convinced.

4. **In short….if rotating with corn no tillage is required!**

5. Last but certainly not least, invest in a residual herbicide program for your soybean crop. Not only is it an effective tool for herbicide resistance management (remember we have two confirmed (one suspect) glyphosate resistant weed populations in WI) it also widens the application window for glyphosate and it often provides growers with a positive ROI.

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**The Corn-Soybean Rotation X Tillage Interaction: No Tillage Required When Rotating**

Joe Lauer, Corn Agronomist

Crop rotation is the easiest yield you can get. I call it "the gift that keeps on giving." Corn yield increases 10 to 19% when rotated with soybean, while soybean yield increases 14 to 23% when rotated with corn. For a summary of these rotation responses click here and here. This rotation effect is even more dramatic in stressful years.

The rotation effect lasts at most two years and depends upon the length of the break between similar crops. When you have two or more break years, then the yield of second-year corn is 7 to 8% greater than continuous corn. If there is only one break year than the yield of second-year corn is the same as continuous corn.

Tillage used to be about controlling weeds and preparing a seedbed. Today it is all about stand establishment. We have many excellent herbicides and advanced technology on our planters. So tillage is often not necessary in today’s corn production systems, except in continuous corn. Tillage responses are more often measured in the northern corn belt and can increase yield 5 to 7%.

**How does crop rotation and tillage interact to affect grain yield?**

A corn-soybean rotation X tillage study was begun in 1983 at Arlington, WI. The rotation treatments consist of continuous corn, continuous soybean, alternating corn and soybean, and five years of corn followed by five years of soybean. Every phase of these 14 rotation treatments is grown every year. Two tillage treatments designated no-till (NT) and conventional-till (CT) have been practiced. since 1987. No-till consists of one-pass with a 13-wave coulter, followed by trash whippers and then double disc seed openers. Conventional-till is fall chisel plow followed by two spring field-cultivator operations. The continuous corn and soybean plots have been in place 30 years. The results for the previous 20 years (1993-2012) are shown in Figure 1 for corn and Figure 2 for soybean.

Little corn yield differences are observed in rotated corn (CS) and first-year (1C) corn following 5-years of soybean (Figure 1). During the second-year of corn plots that had conventional tillage increased yield 5% over no-till plots (2C). Yield was 10 to 11% greater for conventional-till plots than for no-till plots as the number of continuous corn production years increased (3C, 4C, and 5C). So, tillage is not needed when corn is annually rotated with soybean. Tillage can make up some of the rotation effect over time in continuous corn, but it does not bring yield back to rotated corn yield levels.

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![Figure 1. Corn yield response to rotation and tillage following five years of soybean during 1993 to 2012 at Arlington, WI. Asterisks in indicate statistical differences at P < 0.05. NS= non significant. Percentage values indicate relative differences between tillage systems for a phase in the rotation sequence.](image1)

The story is somewhat different for soybean. Grain yield is 3 to 5% greater in no-till than conventional till for the rotated soybean (SC), first-year (1S) and second-year (2S) soybean following five years of corn (Figure 2). There is no tillage effect as the number of years of continuous soybean production increases (3S, 4S and 5S) Conventional-till does increase yield over no-till in soybean plots that have been in continuous production for 30 years (SS). So, tillage is not needed when soybean is annually rotated with corn.

![Figure 2. Soybean yield response following five years of corn.](image2)
Figure 2. Soybean yield response to rotation and tillage following five years of corn during 1993 to 2012 at Arlington, WI. Asterisks indicate statistical differences at P < 0.05. NS = non significant. Percentage values indicate relative differences between tillage systems for a phase in the rotation sequence.

Vegetable Crop Update 4/16/14

The 2nd issue of the Vegetable Crop Update is now available. This issue contains information on nitrogen decision making, early season disease concerns in vegetable crops, and an introduction to some of the disease forecasting tools offered through UWEX Vegetable Pathology. Click here to view this update.

Calibrate manure spreaders to determine nutrient credits

Kevin Shelley, UW NPM Program

As much of Wisconsin continues to either thaw out, or dry out, now might be a good time for manure spreader weighing and calibration on dairy and livestock farms. Determining the weight of an average load of manure is an important step in the process of determining valuable nutrient credits from a farm’s solid or semi-solid manure applications. Accurate nutrient crediting depends on knowing both the application rate and the nutrient content of the manure. Knowing how much manure is being applied from each load helps determine the application rate part of the equation.

Farmers can get a load weight by weighing a “representative” load of the solid or semi-solid manure they have on the farm. This can always be done by driving a load to the nearest scale, such as at a grain elevator, feed mill or gravel pit. If there are no stationary scales nearby, portable weigh pad scales can be brought to the farm. Many county land and water conservation agencies or extension offices have scales, or have access to them through the University of Wisconsin Nutrient and Pest Management Program (NPM). Farmers or farm consultants can check with their County Cooperative Extension agricultural agent to see who in the county has scales.

Once the average load weight is known, manure application rates in tons per-acre can be calculated by keeping track of the number of loads spread on a field or area of known acreage. Knowing the application rate, together with the nutrient content of the manure, will allow calculation of the amount of N, P and K that can be credited toward crop needs as recommended by a soil test.

The Nutrient and Pest Management Program has produced an instructional video on determining manure application rates by weighing a spreader with portable scales. The step by step process of weighing the tractor and spreader, both full and empty, is shown. Manure spreader calibration is also discussed. In the video, calibration is shown as measuring an area to which two or more loads have been spread, calculating the application rate in tons per-acre, and then making ground speed or discharge rate adjustments to achieve a specific application rate goal.

The NPM video, Calibrating a Manure Spreader, can be viewed on YouTube. https://www.youtube.com/watch?v=m9LAsOgVN-g

Educational publications and worksheets useful for spreader calibration can be accessed on the IPCM website at http://ipcm.wisc.edu. Click on “publications” and then “nutrient management” to find publications such as:

Know How Much You haul
http://ipcm.wisc.edu/download/pubsNM/KnowHowMuchYouHaul.pdf

Manure Load Worksheet
http://ipcm.wisc.edu/download/pubsNM/ManureWS.pdf

Nutrient Management Fast Facts provides guidelines for estimating manure nutrient content

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 April 5, 2014 through April 11, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEGETABLES, Potato, Pink Eye, Unknown, Barron</td>
</tr>
<tr>
<td>Potato, Potato Virus S, Potato virus S, Barron</td>
</tr>
</tbody>
</table>

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

Follow us on

https://www.youtube.com/watch?v=m9LAsOgVN-g
**What's New**

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20 Year Anniversary for Certified Professional Agronomists ................................................................. 25

**Plant Disease**
Wisconsin Winter Wheat Disease Update- April 16, 2014 ................................................................. 26

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**Congratulations to Wisconsin CCA’s Achieving Full Certification**

On behalf of the Wisconsin CCA board, we would like to offer our congratulations and warmest wishes to 2013 Class of CCA’s. These individuals have passed the state and international exams, completed the required amount of crop advising experience, provided acceptable letters of reference and have signed the CCA Code of Ethics.

We’ve attached a list you to review. Some you may not recognize yet (but will). Others you may know or are your colleague. When you see them, take a moment to congratulate them for a job well done and to point out all their efforts are soon to be worthwhile.

**Wisconsin CCA’s Achieving Certification in 2013**

**Northwest**
Justin Bauer, Durand
Chase Cummings, Menomonie
John Mugg, Plum City
William Prindle, Alma Center
Dana Swanson, Ellsworth
Andrew Tucker, Cochrane
Trisha Wagner, Black River Falls
Alan Williams, Somerset

**Southwest**
Terence Kelly, Dodgeville

**Northeast**
Jeff Landon, Lancaster
Mack Naber, Madison
Cory Schultz, La Crosse

**Southeast**
Darren Danke, Lomira
Ian Duffey, Janesville
Kathryn Eggers, Juneau
Nicholas Groth, West Bend
Scott Rowntree, Waterford
Jordan Weiler, Eden
Gerald Wilson, Johnson Creek

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**20 Year Anniversary for Certified Professional Agronomists**

As rewarding as it is to recognize a new class of CCA’s it is equally rewarding to recognize a class of Certified Professional Agronomists (CPAg) who have been certified for 20 years or more! Please take a look at the list below. I’m sure you will recognize more than a few of the names. Take a moment to congratulate these individuals for the expertise, dedication, performance and, of course, longevity.

Todd Andraski, Madison
Carl Buchner, Whitelaw
This week I scouted winter wheat in research trials located at the Arlington Agricultural research station. Wheat in the southern part of Wisconsin is starting to green up a bit (Fig. 1). In this location snow cover was pretty consistent throughout the very cold winter months. Survival of wheat plants was pretty good with the consistent snow cover. I was worried about snow mold development given the duration of snow cover this year, however, none was observed in this location.

I did observe Septoria leaf blotch on a few of the plants in these plots already this season. It is possible that the fungus infected these plants last fall, and the pathogen was able to overwinter. Regardless of when these initial infections took place, this is a disease we need to scout for now and keep track of through the season. If it is already present in wheat plots, then the base is set to build disease quickly if conditions are cool and wet this spring. In figure 2, you can see a lesion of Septoria leaf blotch with pycnidia (fruiting structures) that can produce lots of spores that can be rain splashed to other leaves and plants. Should the spring remain cool and wet, and a susceptible variety present, then this disease will increase and can cause enough damage to limit grain yield. To learn more about leaf blotch disease on wheat, consult the fact sheet located here: [http://fyi.uwex.edu/fieldcroppathology/files/2013/04/Leaf-Blotch-Diseases-of-Wheat-1.pdf](http://fyi.uwex.edu/fieldcroppathology/files/2013/04/Leaf-Blotch-Diseases-of-Wheat-1.pdf).

Spraying when plants are very young (prior to jointing) isn’t generally recommended for this disease. However, spraying to protect the flag leaf and later growth stages during heading can help preserve yield when this disease is a problem. In 2013 we conducted a fungicide trial on wheat where Septoria leaf blotch was the main disease of concern. In that trial we found that applications of fungicide at the early flag leaf emergence stage (Feekes 8) gave us good control of Septoria leaf blotch, which translated into giving us a yield increase over not spraying or spraying prior to jointing (Feekes 5). To read more about the results of this fungicide trial, you can visit the webpage found at this link: [http://fyi.uwex.edu/fieldcroppathology/wheat/2013winterwheatfungicide/](http://fyi.uwex.edu/fieldcroppathology/wheat/2013winterwheatfungicide/). It is a good idea to begin scouting now to determine what diseases are already present in wheat. Continue to watch weather forecasts as the crop matures and make plans for disease intervention measures (such as fungicide) if conducive disease conditions are present near flag leaf emergence later this season.

No other diseases were observed on winter wheat this week. Hopefully it will quite snowing and spring will arrive soon!
Crops
Economic Risk and Profitability of Soybean Seed Treatments at Reduced Seeding Rates. Attached
Vegetable Crop Update 4/28/14. 27
UW Crop Diagnostic Training Center Workshops for 2014. 27

Plant Disease
Plant Disease Diagnostic Clinic (PDDC) Update. 28

Vegetable Crop Update 4/28/14
The third issue of the Vegetable Crop Update is now available. This issue contains information on early season hops, considerations for organic late blight control in potato and tomato, and an advertisement for an upcoming high tunnel workshop. To view this newsletter click here.

UW Crop Diagnostic Training Center Workshops for 2014
Registration is open for UW-Madison Integrated Pest Management Program’s two Crop Diagnostic Training Center workshops for 2014. The Diagnostic Troubleshooting Workshop will be held July 15, 2014. The Crop & Pest Management Workshop will be held August 5, 2014.

FAST and easy ONLINE registration by credit card:
https://patstore.wisc.edu/ipm/register.asp

Both workshops will be hosted at the Arlington Agricultural Research Station. Be aware that this is not a “traditional” field day. These training sessions are designed to be primarily in-field and hands-on. We advise that attendees come prepared to be in the field and ready for all types of weather. CCA CEU’s are available as listed, but are subject to change pending approval from the Certified Crop Advisor Program.

Contact Dan Heider at 608-262-6491, or email djheider@wisc.edu

Diagnostic Troubleshooting Workshop
Date: July 15, 2014
Location: Arlington Ag Research Station

CCA CEU’s: 4.0
Tiered fee: $75 before 7/1/11, $90 after 7/1/11
Topics Covered: This Workshop gives you the opportunity to fine tune your crop diagnostic skills in a fun and interactive setting. Small groups will rotate through field problems with UW Specialists role-playing as farmers. Through digging up plants, asking questions and consulting references participants will make a diagnosis of the problem being observed and a recommendation for correction. Each participant will experience 8 separate diagnostic scenarios.

Tuesday – July 15, 2014
9:00 - 9:20 registration
9:20 - 9:30 introduction/orientation
9:30 - 12:00 sessions 1-5
12:00 - 12:45 lunch (provided)
12:45 - 2:15 sessions 6-8

Crop & Pest Management Workshop
Date: August 5, 2014
Location: Arlington Ag Research Station
CCA CEU’s: 0.5 Crop Management, 3.5 Pest Management, 1.0 Nutrient Management
Tiered fee: $75 before 7/25/14, $90 after 7/25/14
A multi-disciplinary and in-depth workshop covering agronomic concerns ranging from identification of crop and pest production problems to management options within production systems.

Tuesday – August 5, 2014
8:30 - 8:50 registration
8:50 - 9:00 introduction/orientation
9:00 - 12:00 sessions 1-3
12:00 - 12:45 lunch (provided)
12:45 - 2:45 sessions 4-5

Topics Covered:
Nutrient uptake and partitioning in soybean – Shawn Conley, Extension Soybean and Small Grains Specialist
• Soybean nutrient requirements change with developmental stage
Learn to understand these nutrient requirements and their effects on the growth and development of high yielding soybeans

**Herbicide Mode of Action** – *Vince Davis, Extension Weed Specialist*
- Understanding herbicide mode of action is critical to developing effective resistance management strategies
- This session will emphasize herbicides and emerging crop technologies, their use and resistance management strategies

**The trait game** – *Bryan Jensen, UW Integrated Pest Management Specialist*
- This session begins with a brief discussion on the biology and current management problems of Bt resistant western corn rootworm
- Learn to evaluate multiple corn rootworm management strategies for their efficacy and effectiveness in delaying the development of resistance

**SCN / SDS Interaction** – *Damon Smith, Extension Plant Pathology Specialist*
- Soybean cyst nematode and sudden death syndrome are both major yield limiting problems in soybean
- Learn to recognize/diagnose crop symptoms and discover where current research is on interactions between SCN and the SDS causing fungus

**Spray drift mitigation in crop pest management** – *Daniel Heider, UW Integrated Pest Management Specialist*
- Drift reduction has made great strides, but new emerging herbicide resistant technologies will require you to remain vigilant on drift
- Evaluate nozzles and other drift reduction technology in a field setting to better understand drift and how to manage it

To view the flyer for this event scroll down to the end of this newsletter.

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**Plant Disease Diagnostic Clinic (PDDC) Update**
Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 April 19, 2014 through April 25, 2014.

**Plant/Sample Type, Disease/Disorder, Pathogen, County**
**SOIL,**
Soybean Soil, Soybean Cyst Nematode, *Heterodera glycines*, Dane, Iowa, Richland

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).
Economic Risk and Profitability of Soybean Seed Treatments at Reduced Seeding Rates

Adam P Gaspar, Shawn P Conley and John Gaska, Department of Agronomy and Paul Mitchell, Department of Agricultural and Applied Economics, University of Wisconsin-Madison

Introduction

Earlier soybean planting coupled with increasing seed costs and higher commodity prices have led to a surge in the number of acres planted with seed treatments (Esker and Conley, 2012). Furthermore, the components and relative cost of various soybean seed treatments has broadened greatly. Recent studies have suggested that growers should consider lowering seeding rates to increase their return on investment (De Bruin and Pedersen, 2008; Epler and Staggenborg, 2008). This recommendation is attributed to the soybean plant’s potential compensatory ability at lower plant populations. Ultimately, growers would like to know the value proposition of combining seed treatments with lowered seeding rates. Therefore, the objectives of this study were to:

- Quantify the effects of seed treatments and seeding rates on soybean yield.
- Assess the economic risk and profitability of seed treatments and seeding rates, including calculating economically optimal seeding rate (EOSR) for each seed treatment.

ApronMaxx RFC and CruiserMaxx (Syngenta Crop Protection) seed treatments were used to achieve these objectives because they differ in their components and relative cost per unit. This study was conducted in 2012 and 2013 at nine Wisconsin locations. All locations were planted in 15 inch rows within the first 3 weeks of May.

Effects on Soybean Yield

When pooled over all seed treatments, the highest seeding rate (140,000 seeds/a) yielded 64 bu/a, which was significantly higher than all other seeding rates, except 120,000 seeds/a. ApronMaxx showed no improvements in yield at any seeding rate compared to the untreated control (UTC), while CruiserMaxx provided increased yields at all seeding rates (Figure 1). CruiserMaxx showed a trend of larger yield increases as the seeding rate was lowered. We observed a 4% and 12% yield increase at 140,000 and 40,000 seeds/a, respectively, over ApronMaxx and the UTC (Figure 1).

Figure 1. Yield (bu/a) of the three seed treatments across all seeding rates.
Profitability and Economic Risk

Partial profit was calculated as follows: (Yield x Grain Sale Price) – (Seed + Seed treatment cost). CruiserMaxx increased profit at each grain sale price and across all seeding rates compared to ApronMaxx and the UTC (Figure 2). Again, no differences were observed between ApronMaxx and the UTC (Figure 2). The economically optimal seeding rates (EOSR), or the high point on the profit curves, for the three seed treatments and two grain sale prices are displayed at the bottom of Tables 1 and 2.

Economic risk was applied to the profit curves (Figure 2), where risk is measured as the break even probability (the probability of breaking even relative to the base case of UTC at 140,000 seeds/a), and displayed in Tables 1 and 2 for soybean grain sale prices of $9 and $12/bu, respectively. For example, in Table 1, CruiserMaxx at 140,000 seeds/a had a 0.71 (71% chance) probability of increasing profit over the base case and on average for all outcomes (all environments), increased profit by $10/a. In addition, an average $18/a increase was observed for the positive outcomes and an average $11/a decrease for negative outcomes. The positive outcomes column represents responsive environments while the negative outcomes column represents non-responsive environments.

At a grain sale price of $9/bu (Table 1), ApronMaxx and the UTC obtained break-even probabilities >0.50 at seeding rates of 100,000 and 120,000 seeds/a. However, the average profit increases for all outcomes was minimal (<$3/a). At this grain sale price, UTC at 120,000 seeds/a had the lowest risk (0.91) of any treatment combination in Table 1, but again provided a relatively low average profit increase for all outcomes ($3/a). Using seeding rates below 100,000 seeds/a was very risky for ApronMaxx and the UTC, showing break-even probabilities <0.50 and negative average profit increase for all outcomes. CruiserMaxx produced break-even probabilities >0.50 for all seeding rates except at 40,000 seeds/a and the average profit increase for all outcomes was >$17/a at seeding rate between 80,000 and 120,000 seeds/a. Furthermore, the lowest risk (0.89) and largest average profit increase for all outcomes ($20/a) with CruiserMaxx was at its EOSR (94,000 seeds/a).

Figure 2. Partial profit per acre of the three seed treatments across all seeding rates.
When the grain sale price was increased to $12/bu (Table 2), ApronMaxx and the UTC required higher seeding rates (>120,000 seeds/a) to achieve break-even probabilities >0.50. Furthermore, we again saw trivial average profit increases for all outcomes (<$2/a) with ApronMaxx and the UTC. The lowest risk ApronMaxx treatment combination (0.52) was at its EOSR. However, this only attained a $1/a average profit increase for all outcomes and a wide range of possibilities existed when accounting for the average positive ($19/a) and negative (-$18/a) outcomes. CruiserMaxx showed relatively high break-even probabilities (>0.76) for seeding rates between 80,000 and 140,000 seeds/a, with the lowest risk (0.87) and largest average profit increase for all outcomes ($25/a) at its EOSR (100,500 seeds/a).

---

### Table 1. Seeding rate by seed treatment economic risk table for all locations with a grain sale price of $9/bu.

<table>
<thead>
<tr>
<th>Treatment combination¹</th>
<th>Break-even probability²</th>
<th>Average profit increase over base case³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seed treatment</td>
<td>Seeding rate (seeds/acre)</td>
</tr>
<tr>
<td>UTC</td>
<td>120,000</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.00</td>
</tr>
<tr>
<td>ApronMaxx</td>
<td>140,000</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>120,000</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.00</td>
</tr>
<tr>
<td>CruiserMaxx</td>
<td>140,000</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>120,000</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.01</td>
</tr>
</tbody>
</table>

---

¹Treatment combination includes all possible seed treatment and seeding rate combinations for comparison to the base case.
²Break-even probability is the probability a treatment combination will at least provide the same profit/acre as the base case.
³Base case is untreated seed at 140,000 seeds/acre.
⁴na, no outcomes are possible.
Conclusion & Recommendations

Our study found differences in yield, profitability and economic risk due to seed treatment and seeding rate. Growers should account for their expected grain sale price and seed treatment use when determining their seeding rate and additionally, the components of the seed treatment should be considered. We found that reducing seeding rates when using no seed treatment or a fungicide only seed treatment (ApronMaxx) may be too risky and provided minimal profit gains. In contrast, this study also showed that a fungicide/insecticide seed treatment (CruiserMaxx) reduced economic risk and increased profit across an array of environments, seeding rates (80,000–140,000 seeds/a), and grain sale prices ($9/bu and $12/bu). Furthermore, to realize the lowest risk and highest profit increase with CruiserMaxx, producers should consider lowering their seeding rates to the EOSR according to their expected grain sale price. The EOSR for CruiserMaxx ranged from 94,000 to 101,000 seeds/a and was on average, 16% (18,000 seeds/a) less than ApronMaxx and the UTC across grain sale prices of $9/bu and $12/bu.

Table 2. Seeding rate by seed treatment economic risk table for all locations with a grain sale price of $12/bu.

<table>
<thead>
<tr>
<th>Treatment combination¹</th>
<th>Break-even probability²</th>
<th>Average profit increase over base case³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed treatment</td>
<td>Seeding rate</td>
<td>Positive outcomes</td>
</tr>
<tr>
<td>(seeds/acre)</td>
<td></td>
<td>-------------------</td>
</tr>
<tr>
<td>UTC</td>
<td>120,000</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.44</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.00</td>
</tr>
<tr>
<td>ApronMaxx</td>
<td>140,000</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>120,000</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.44</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.00</td>
</tr>
<tr>
<td>CruiserMaxx</td>
<td>140,000</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>120,000</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>100,000</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>80,000</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>60,000</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>40,000</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**ECONOMICALLY OPTIMAL SEEDING RATES (EOSR)**

<table>
<thead>
<tr>
<th>Seed treatment</th>
<th>Seeding rate</th>
<th>Break-even probability²</th>
<th>Positive outcomes</th>
<th>All outcomes</th>
<th>Negative outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTC</td>
<td>119,500</td>
<td>0.76</td>
<td>3</td>
<td>2</td>
<td>-3</td>
</tr>
<tr>
<td>ApronMaxx</td>
<td>119,000</td>
<td>0.52</td>
<td>19</td>
<td>1</td>
<td>-18</td>
</tr>
<tr>
<td>CruiserMaxx</td>
<td>100,500</td>
<td>0.87</td>
<td>30</td>
<td>25</td>
<td>-11</td>
</tr>
</tbody>
</table>

¹Treatment combination includes all possible seed treatment and seeding rate combinations for comparison to the base case.
²Break-even probability is the probability a treatment combination will at least provide the same profit/acre as the base case.
³Base case is untreated seed at 140,000 seeds/acre.
*na*, no outcomes are possible.

References


Diagnostic Troubleshooting Workshop

**July 15, 2014, Arlington Ag Research Station**

CCA CEU’s: 4.0

Tiered fee: $75 before 7/1/11, $90 after 7/1/11

- 9:00 Registration and introduction
- 12:00 Lunch (provided)
- 2:15 Adjourn

This Workshop gives you the opportunity to fine tune your crop diagnostic skills in a fun and interactive setting. Small groups will rotate through field problems with UW Specialists role playing as farmers.

Through digging up plants, asking questions and consulting references participants will make a diagnosis of the problem being observed and a recommendation for correction. Each participant will experience 8 separate diagnostic scenarios.

Crop & Pest Management Workshop

**August 5, 2014, Arlington Ag Research Station**

CCA CEU’s: 0.5 Crop, 3.5 Pest, 1.0 Nutrient Management

Tiered fee: $75 before 7/25/14, $90 after 7/25/14

- 8:30 Registration and introduction
- 12:00 Lunch (provided)
- 2:45 Adjourn

This workshop will cover agronomic concerns ranging from identification of crop and pest production problems to management options within production systems.

**Nutrient uptake and partitioning in soybean** - Shawn Conley, Extension Soybean and Small Grains Specialist

- Soybean nutrient requirements effects on the growth and development of high yielding soybeans

**Herbicide Mode of Action** - Vince Davis, Extension Weed Specialist

- Herbicide mode of action and emerging crop technologies; their use and resistance management strategies

**The trait game** - Bryan Jensen, UW Integrated Pest Management Specialist

- Management strategies for Bt resistant western corn rootworm; their efficacy and effectiveness in delaying the development of resistance

**SCN / SDS Interaction** - Damon Smith, Extension Plant Pathology Specialist

- Soybean cyst nematode and sudden death syndrome symptoms; current research on interactions between SCN and the SDS causing fungus

**Spray drift mitigation in crop pest management** - Daniel Heider, UW Integrated Pest Management Specialist

- Drift reduction, emerging herbicide resistant technologies, nozzles and other drift reduction technology in field settings

Both workshops begin in the Public Events Facility of the Arlington Agricultural Research Station. Be aware that this is not a “traditional” field day. Training sessions are designed to be primarily in-field and hands-on. We advise that you come prepared for all types of weather.

**FAST and easy ONLINE registration by credit card:**

[https://patstore.wisc.edu/ipm/register.asp](https://patstore.wisc.edu/ipm/register.asp)

Contact: Dan Heider, 608-262-6491, djheider@wisc.edu

CCA CEU’s are subject to change pending approval from the Certified Crop Advisor Program.
Crops
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Vegetable Crop Update 5/7/14
The 4th issue of the Vegetable Crop Update is now available. This issue contains information on Dual Magnum 24(c) Special Local Needs label in WI, Edema & Ethylene Toxicity in Greenhouse Plants, and Risk for Potato Volunteers in WI 2014. To view this update click here.

Hitting the Bull’s Eye when Switching Corn Hybrid Maturity
Joe Lauer, University of Wisconsin-Madison
This article first appeared May 2013

The 2013 corn growing season is off to its slowest start in a long time. On May 12 USDA-NASS reported 14% of the corn planted. The slowest start ever recorded was in 1984 when by week 19, only 14% of the corn was planted. Other slow starting years (by Week 19) were 1979 (15%), 1981 (20%) and 1993 (21%). Due to the slow start, especially for farmers in northern Wisconsin, many are considering whether they need to switch corn hybrid maturities. In the north, we really only have one opportunity to switch maturity and still have the potential for grain yield. In southern Wisconsin, we may have two opportunities to switch hybrid maturity. Although the penalty for late planting is important, growers also need to be careful to avoid tillage when soil is too wet. Yields may be reduced somewhat this year, but effects of soil compaction can reduce yields for several years to come. Your decision to switch hybrid maturity depends upon:

- **Desire to accept risk**: Longer season hybrids offer the highest yield potentials, but may also increase drying costs and/or delay harvest.
- **Potential use**: For dry grain, relative maturities should be shorter-season within the maturity range for the latest acceptable planting date. For ear corn, high moisture corn, and silage, relative maturities should be longer-season within the maturity range for the latest acceptable planting date.
- **Field conditions**: Shorter-season hybrids within the maturity range for the latest acceptable planting date should be selected when field conditions include heavy crop residue, reduced tillage, and heavy soil textures.
- **Hybrid dry down and grain quality characteristics**: Longer-season hybrids within the latest acceptable planting dates should have fast grain dry-down and high test weight characteristics.
- **Ease of trading** original hybrids for superior shorter-season alternatives.

Please read the full article for the complete UWEX guidelines at http://wisccorn.blogspot.com/2013/05/B036.html
New Video: Soybean Emergence and Germination Common Issues

Shawn Conley, Soybean and Wheat Extension Specialist

Common issues growers may have concerning soybean emergence and germination are discussed by Wisconsin State Soybean and Wheat Extension Specialist Dr. Shawn Conley. In a spring field, Shawn gives tips on seeding depth, soil compaction issues, loss of cotyledon at emergence, frost damage, and general stand assessment.

To watch the video click on the image below.

How to use UWEX Pest Management Mobile web app

Mark Renz, Extension Weed Specialist; University of Wisconsin-Extension

University of Wisconsin-Extension is pleased to announce Pest Management Mobile, which offers quick mobile access to key pest management information found in publication A3646 (Pest Management in Wisconsin Field Crops) through http://pmm.uwex.edu. This website has been tailored for use on a mobile device such as a smart phone or tablet, but can also be viewed through any web browser on any computer.

Pest Management Mobile currently provides information on
1. herbicides for establishing and established alfalfa,
2. insecticides for corn, soybeans and alfalfa, and
3. fungicides for corn. Herbicides in corn and soybean and fungicides in soybeans and alfalfa will be added later in 2014.

Here is an example of how to use this web app. While herbicides are given as an example, users can also access information with respect to insecticides and select fungicides (corn). These other options will be highlighted in future articles.

Quick reference to key information about a product: To check on an attribute of a product, use the “product details” search feature. Simply start to type in the product name and, as the product name becomes available from the list, select it (Figure 1A). The resulting page will display key attributes of the product, such as restricted entry interval, mode of action, manufacturer, or rainfastness of the resulting pesticide (Figure 1B). To access information about using the product in registered crops, scroll down and click on the tab key (Figure 1C).

Interactive search for pest management options: An interactive search of pesticide products registered for user-identified pests can also be conducted from this website. For example, to identify a herbicide that is effective in managing foxtails, common lambsquarters, and common ragweed in a new alfalfa seeding, select “establishing alfalfa weeds” (Figure 2A), then select the weed species of interest (Figure 2B), and a list of herbicides sorted by effectiveness on the species selected will be displayed. Pesticides can be filtered by stage, application method, or minimum efficacy rating to reduce the number of products (Figure 2C). Results are presented in a table that allow for quick viewing of key information (Figure 2D). While the table is initially sorted by efficacy, it can be resorted by any of the other attributes—just select the column heading.
Once a product is selected (figure 3A), touch/click the name to view specific information related to application in the crop of choice (Figures 3B-D), pests selected, and general product information (Figure 1c).

Any information can be shared by emailing, texting, or posting the URL from the mobile website. This will allow users to communicate results to interested parties. For example, these are the links used in this example:

Figure 1C: http://pmm.uwex.edu/Product.aspx?p=Raptor

Figure 2C: http://pmm.uwex.edu/grid.aspx?crop=2&type=weeds&ids=5,6,2

Figure 3A: http://pmm.uwex.edu/product.aspx?product_id=26&pest_ids=5,6,2&crop_id=2

All this information is also found within Pest Management in Wisconsin Field Crops (A3646). For a print copy or PDF of this information, please search for A3646 at the UW-Extension Publishing website learningstore.uwex.edu or use the following link: http://learningstore.uwex.edu/Pest-Management-in-Wisconsin-Field-Crops2014-P155.aspx.

Wisconsin Pest Bulletin
5/8/14

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. 2 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Hop production workshops for sprayer calibration and more

UW-Madison Integrated Pest Management specialist Dan Hieder will be speaking at two hop production workshops held in Waterloo and Arkansaw, WI. Both workshops are the same and are titled “Hop Production in Wisconsin: Sprayer Calibration and Proper Pesticide Application.” Both workshops start at 3:00 pm and are limited to the first 25 registrants at each location. The workshops are part of a larger group of education sessions on Hop and Malting Barley production. The sessions are organized by UW-Extension with funding in 2014 through a SARE, Education and Research Grant.

Speaker: Dan Heider, UW-Madison IPM Outreach Specialist

- Nozzles Types and Spray Rates
- Nozzle selection for the pesticide used
- Calibration of hand sprayers
- Calibration of air blast sprayers
- Herbicides and sucker control
- New Hop pesticide registration process

View the flyer: http://buffalo.uwex.edu/files/2011/01/Hop-Sprayer-Calibration-Workshop.pdf
May 23 - NuSolutions Agronomy
Dave Buss, N1926 County Road II, Waterloo, WI  https://goo.gl/maps/eYX0U

May 30 – AgDynamics LLC
Luke Albers, N5988 County Road N, Arkansaw, WI  https://goo.gl/maps/W55Ml

To register, email Carl.duley@ces.uwex.edu or call 608-685-6256

For more info about more barley and hops workshops, visit http://buffalo.uwex.edu/agriculture/barley-and-hops/

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**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 3, 2014 through May 9, 2014.

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

**VEGETABLES,**

Broccoli, Sunburn/Water Stress, None, Dane

Tomato, Bacterial Canker, *Clavibacter michiganensis* subsp. *Michiganensis*, Douglas

Tomato, Ethylene Injury, None, Dane

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

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**Wisconsin has a 2014 CCA of the Year**

Bryan Jensen, IPM Program

Please join the WI CCA Board in congratulating Jeff Polenske as our 2014 WI CCA of the Year!

Jeff has over 26 years of Wisconsin crop advising experience and currently works with 56 clients and over 50,000 acres of corn, soybean, alfalfa and wheat in Northeast Wisconsin. His company, Tilth Agronomy (formerly Polenske Agronomic Consulting), employs 8 permanent staff (5 of which are CCA’s), 2 part time staff and several summer interns. Jeff was raised in Wisconsin and Nebraska but moved permanently to Wisconsin to attend UW-Madison where he completed his degree in Agronomy. Jeff and his wife live in the Appleton area and have raised three daughters.

Jeff is a registered Technical Service Provider for NRCS and is certified to write both CNMP’s and Conservation Plans for Wisconsin. Jeff visits clients on a weekly basis during the growing season and his services include field scouting with emphasis on IPM techniques and recommendations. Jeff and his staff are active supporters of on-farm research including several WAPAC Grain and UWEX Research trials. Currently they are working on a Maximum Return to Nitrogen (MRTN) plot to refine nitrogen rates on corn.

Jeff’s professional contributions include:

- Active membership in the Wisconsin Association of Professional Agricultural Consultants and has served as president.
- Active member of the National Alliance of Independent Crop Consultants. Jeff currently serves on the Educational Outreach Committee and is the committee co-chair for the Precision Agriculture Committee.
- Additionally, Jeff is the co-chair for the University of Wisconsin Integrated Crop and Pest Management Programs (NPM, PAT and IPM).

Jeff, we’re not sure if there can be any higher praise than having your colleagues and clients nominate you for this award. Congratulations Jeff!

Jeff (center) along with colleagues Todd Schaumberg (left) and Matt Brugger (right)

---

**Add Ed Liegel to the list of CPAg’s with 20 plus years of certification**

Bryan Jensen, IPM Program

Our sincere apologies go out to Ed Liegel for unintentionally leaving him off the list of CPAg’s with 20 or more years of experience. Ed, we salute you and your colleagues for your dedication to Wisconsin Agriculture!
**Considerations for Switching Soybean Maturity Groups for Delayed Plantings**

Shawn P. Conley, State Soybean and Wheat Extension Specialist  
John Gaska, Outreach Specialist  
University of Wisconsin, Madison

Delayed corn planting coupled with frequent rainfall events and poor planting conditions have postponed soybean planting across many parts of WI. Since we are rapidly approaching the hybrid maturity switch date for corn in southern WI (May 20th, given 2014 costs and prices) three common questions have arisen regarding soybean plantings. These are:

1. **When during the planting season should a producer switch to an earlier maturing soybean variety?**  
   In southern Wisconsin, full season soybean varieties (>1.8RM) out yielded earlier maturing varieties (<1.8RM) by 15 bu per acre at early May planting dates compared to only 2 to 5 bu per acre at late May planting dates. In northern Wisconsin, late maturing varieties (1.7 to 1.9RM) also out yielded early maturing varieties (<1.7RM), however the difference was not as great. **Switching to an earlier maturing variety when planting after the first week of June will reduce the chance of damage from an early fall frost** (Fig. 1.). Unfortunately growers will realize a yield penalty if they choose to move to an earlier maturity groups and lowered seeding rates (Table 1.). It is also important to note that if you do choose to switch to an earlier maturity group soybean, do not use a variety that is more than 0.5 RM earlier than you normally would plant.

2. **When is the latest soybeans can be planted in Wisconsin and still expect a grain yield?**  
   Research from the 1990's in southern Wisconsin indicates that in two out of three years, grain can be harvested from soybeans planted as late as June 26, although the yields are usually minimal and not generally economically feasible. The frequency of harvesting grain from soybeans planted this late can be increased by using early maturing varieties (<1.8RM) in southern Wisconsin, and <1.0RM in northern production areas. A planting date of June 20 in southern Wisconsin and June 15 in northern Wisconsin, using early maturing varieties, was considered to be the latest practical date. However today’s grain prices coupled with opportunities for late-season discounted treated soybean seed may entice growers to push the planting date window in 2014.

*www.coolbean.info*
3. What should my target plant population be in my late planted soybeans?
To maximize yield potential in late planted soybean, growers should target a stand of 180,000 plants per acre in row spacing’s ≤ 20inches. Wider row spacings and reduced plant stands will lead to reduced yield potential due to decreased canopy development. Planting too few seeds can also lead to a lower physical pod set and harvest issues. To achieve 180,000 plants per acre a grower may have to plant up to 200,000 seeds per acre (assuming 90% germ).

Table 1. Expected relative soybean yield at four replanting dates compared to predicted yields for a range of plant populations resulting from an optimum planting date of May 1-20 for full season maturity or short season maturity varieties.

<table>
<thead>
<tr>
<th>Early plant population</th>
<th>Initial planting (May 1-20)</th>
<th>June 1</th>
<th>June 10</th>
<th>June 20</th>
<th>July 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% of maximum yield</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>100</td>
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<td>83</td>
<td>77</td>
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* Figures in bold italics are for shorter season maturities.
Scout Corn Fields for Black Cutworm – Significant Moth Flight

Eileen Cullen, Extension Entomologist

Corn planting and weed control delayed by wet field conditions coupled with a major black cutworm migration make black cutworm damage a likely event in the next couple of weeks. Larvae resulting from the current spring flight are predicted to begin cutting corn seedlings by May 29. Late-planted, no-till, and reduced tillage fields are at highest risk. Black cutworm treatment is suggested if 2-5% of corn plants have cutting damage and cutworm larvae are 6th instar or smaller. Seed treated and traited corn should also be scouted as they can sustain feeding damage under heavy population infestations.

The WIDATCP Wisconsin Pest Bulletin is reporting high black cutworm captures for a second consecutive week. Their network of 34 pheromone traps distributed in southwestern Wisconsin registered another 353 moths, for a cumulative total of 649 moths as of May 15.

Black cutworm moth. Egg deposition is now occurring on winter annual weeds (common chickweed, peppergrass and yellow rocket) in no-till and reduced tillage fields. Late planted and no-till or reduced tillage corn fields will be attractive egg-laying sites for the moths now arriving. Larvae resulting from the current spring flight are predicted to begin cutting corn seedlings around May 29.

Concerns over damage are greatest during the first ten days to two weeks after corn emergence. Scout fields for early feeding damage and presence of larvae. Focus attention on corn fields which are most attractive for black cutworm oviposition.

Black cutworm moths prefer to lay eggs on low-growing vegetation such as chickweed, curly dock, mustards or plant residues from the previous year’s crop. Female moths are partial to soybean residue over corn and wheat residue for egg-laying sites. Heavy spring weed growth, newly broken sod,
previous crop and plant debris all increase risk of black cutworm infestations.

Late-planted corn fields are most heavily damaged during an outbreak of black cutworm because plants are smaller and more vulnerable when larvae are at the “cutting” stage.

Initial damage to corn seedlings by early instar black cutworm larvae shows up as holes or irregular feeding injury to corn leaves. Small larvae are not yet able to cut plants and this injury is not economic. However, it does indicate potential for cutting or tunneling into the base of the plant by larger larvae. By contrast, seedcorn maggot and wireworm feeding may also occur early season, but their feeding is confined to lower leaves (first and second leaf) and below ground.

Black cutworm larvae

More information on black cutworm as well as foliar insecticide treatment options are available on pp. 65-66 of UW Extension Publication A3646 Pest Management in Wisconsin Field Crops.

Timely Video: Black Cutworm in Corn
Eileen Cullen, Extension Entomologist

Dr. Eileen Cullen, University of Wisconsin Extension Entomologist, takes you into the field to show you when to scout and how to manage key pests of Wisconsin field crops. For more information, visit http://www.entomology.wisc.edu/cullenlab and http://ipcm.wisc.edu

To view the video click on the image below.

Black cutworm feeding damage by small larvae on young corn plant.

Black cutworm treatment is suggested if 2-5% of corn plants have cutting damage and cutworm larvae are 6th inches or smaller.

Black cutworm larvae reach the “cutting” stage at ½ -inch length. Corn plants are most vulnerable to cutting until V5. When corn reaches V4 stage larvae may not be able to cut the plant, but they can burrow into the corn plant below ground level.
Timely Video: Alfalfa Weevil Scouting after First Cut

Bryan Jensen, University of Wisconsin Integrated Pest Management Program, takes you into the field to show you how to scout and manage alfalfa weevil in Wisconsin field crops.

Scouting AFTER first cut harvest is different than scouting before harvest because it includes checking during regrowth for green up. Also, the economic threshold moves up to 50% on the count of plants showing damage.

To view the video, click on the image below:

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Recent Cold Temperatures will have Little Impact on WI Winter Wheat Crop

Shawn Conley, Soybean and Wheat Extension Specialist

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.

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

<table>
<thead>
<tr>
<th>Growth stage</th>
<th>Approximate injurious temperature (F)</th>
<th>Primary symptoms</th>
<th>Yield effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilling</td>
<td>12°F (-11°C)</td>
<td>Leaf chlorosis; burning of leaf tip; stunted growth; yellowing of leaves</td>
<td>Slight to moderate</td>
</tr>
<tr>
<td>Jointing</td>
<td>24°F (-4°C)</td>
<td>Death of growing point; leaf yellowing or burning; lesions, shrivelling, or browning of lower stem; stem</td>
<td>Moderately to severe</td>
</tr>
<tr>
<td>Boot</td>
<td>30°F (-1°C)</td>
<td>Floret sterility; primary aets and spikelets; damage to lower stem; leaf blight; leaf discoloration</td>
<td>Moderately to severe</td>
</tr>
<tr>
<td>Heading</td>
<td>30°F (-1°C)</td>
<td>Floret sterility; white aets and spikelets; damage to lower stem; leaf blight; leaf discoloration</td>
<td>Severe</td>
</tr>
<tr>
<td>fenced</td>
<td>30°F (-1°C)</td>
<td>Floret sterility; white aets and spikelets; damage to lower stem; leaf blight; leaf discoloration</td>
<td>Severe</td>
</tr>
<tr>
<td>Date</td>
<td>28°F (-2°C)</td>
<td>Tillering, discoloration; leaf blight; seedling death; root blight; root discoloration</td>
<td>Slight to moderate</td>
</tr>
</tbody>
</table>

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Vegetable Crop Update 5/16/14

The 5th issue of the Vegetable Crop Update is now available. This issue contains information on Blocker 4F 2(ee) label in WI for potato common scab, Late blight reminders, updates, and a look at Blitecast, Vegetable crop disease diagnostic report, and the Hops pesticide application workshop advertisement. Click here to view this update.

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Think Twice Before Replanting Soybeans

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

Introduction

Soybean planting date trends have steadily shifted earlier within the Northern Corn Belt while inclement weather, insect pressure, and disease pressure associated with spring planting can require replanting some years (USDA-NASS, 2011). Furthermore, recent studies have reported similar yields among reduced plant stands due to the soybean plants compensatory ability (Carpenter and Board, 1997) and diminished yield potential of replanted or essentially later planted soybeans (Conley et al., 2012; De Bruin and Pedersen, 2008).

Ultimately, producers would like to know the potential yield gain or loss from replanting sub-optimal plant stands to help determine if replanting is economical. Therefore the objectives of this study were to:

- determine the threshold for replanting soybean stands.
- evaluate replanting options.
- quantify the effect of seed treatments and planting date on replant decisions.

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Table 1. Temperatures that cause freeze injury to wheat at different growth stages. Winter wheat rapidly loses hardiness during spring growth and is easily injured by early freezes (graph adapted from A.W. Pauls).
This study was conducted in 2012 and 2013 at the Arlington Agricultural Research Station, Arlington, WI. Twelve different replant scenarios were planted in 15 inch rows during early May, late May, and mid-June. The replanted portions of the plots were interseeded between the rows of the initial soybean stand. ApronMaxx RFC and Cruiser Maxx (Syngenta Crop Protection) seed treatments were used to compare a fungicide only seed treatment with one that also contains an insecticide.

To read the full PDF version of this article follow the link below:


Little leaf buttercup (Ranunculus arbotivus) shown in alfalfa. Height as shown is 12 inches.

While this plant competes with desirable forage, the reason for controlling this native weed is that buttercups contain a toxic compound to all classes of livestock. This compound causes inflammation of the mouth and intestine when ingested, and if enough is ingested (>20% of diet) death can result. Fortunately little leaf buttercup is one of the least toxic buttercup species, with no direct evidence of mortality from ingestion known in the United States. Additionally, this plant is rarely eaten by animals as it has a very bitter flavor. Thus pasture animals have low risk of poisoning unless a producer grazes in a manner that reduces selectivity (e.g. mob grazing).

A fairly heavy infestation has been observed (see picture) in first crop alfalfa hay in western Columbia County near Lodi this spring. This poses a bigger problem as the cut forage is a mixture of alfalfa and buttercup. This mixed ration, if fed directly to animals, could reduce their ability to avoid

Little leaf buttercup (weed with yellow flower) shown infesting a spring alfalfa field.

**Little leaf buttercup, a bitter weed in spring hayfields**

Mark Renz, Extension Weed Scientist, and Kevin Shelley, UW NPM Program

Buttercups, have been showing up this spring in pastures and hayfields in southern Wisconsin. While Wisconsin has 18 species of buttercup, **little leaf buttercup (Ranunculus arbotivus)** is the most commonly seen in production fields. This species is native to Wisconsin and can behave as a biennial to short term perennial. While this plant can be found every year in the state (common in our forests), it is probably more common this year in hayfields and pastures due to overgrazing and poor regrowth from the summer droughts of 2012 and 2013. These conditions likely allowed for establishment and increased populations compared to “normal years”.

A fairly heavy infestation has been observed (see picture) in first crop alfalfa hay in western Columbia County near Lodi this spring. This poses a bigger problem as the cut forage is a mixture of alfalfa and buttercup. This mixed ration, if fed directly to animals, could reduce their ability to avoid
buttercups. While it is unlikely that the amount of buttercups ingested will result in mortality, reduction in performance or changing in milk flavor could result. In this situation we recommend drying the hay before feeding it to livestock as the poisonous properties and bitterness are destroyed when hay is cured.\cite{royer1999, universityOfPennsylvania2014}

This problem is an issue in the first cutting of the year, but buttercups are rarely present in subsequent harvests as regrowth is minimal.

In pastures, a range of broadleaf herbicides are available and effective on buttercups, but will also injure/kill legumes. Spot treatments of herbicide or mowing will prevent any toxicity. In alfalfa, buttercup presence is often a symptom of thin stands or fertility problems. Check these prior to using herbicides, as effective options (e.g. Velpar) should be applied pre-greenup and typically have long plant-back intervals. Consult UWEX A3646 Pest Management in Wisconsin Field Crops for general guidelines\cite{cullen2014}.

\begin{itemize}
  \item University of Pennsylvania, 2014. \url{http://research.vet.upenn.edu/PoisonousPlantsofPA/Ranunculus/tabid/5473/Default.aspx}
  \item Cullen, E. et al. Pest Management in Wisconsin Field Crops, 2014. UW Cooperative Extension publication A3646, pp. 177-189. \url{http://learningstore.uwex.edu/Assets/pdfs/A3646.pdf}
\end{itemize}

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**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 10, 2014 through May 16, 2014.

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

**VEGETABLES,**

Basil, Root Rot, Pythium sp., Columbia

Horseradish, Virus Disease, Unidentified virus (suspected turnip mosaic virus), McHenry (IL)

Pepper, Gray Mold, Botrytis cinerea, Adams

Pepper, Impatiens Necrotic Spot, Impatiens necrotic spot virus, Adams

Tomato, Herbicide Injury, None, Winona (MN)

**SOIL,**

Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Columbia, Dane

For additional information on plant diseases and their control, visit the PDDC website at \url{pddc.wisc.edu}.
Insects and Mites
Wisconsin Pest Bulletin 5/22/14

Crops
Delayed Planting: Top Three Considerations for Switching Corn Acres to Soybean
Vegetable Crop Update 5/23/14

Plant Disease
Plant Disease Diagnostic Clinic (PDDC) Update

Wisconsin Pest Bulletin 5/22/14

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. 4 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Delayed Planting: Top Three Considerations for Switching Corn Acres to Soybean
Shawn Conley, Soybean and Wheat Extension Specialist

A tremendous number of corn and soybean acres have been planted over the past 10 days; however C, NC, and NE WI continue to get hammered for the second year in a row with awful planting weather. It seems like those growers are constantly 1/2 day away from the soil being fit to go. Over the past two weeks we have discussed maturity switch dates for corn grain, corn silage and soybean cultivars. What about switching corn ground to soybean.

1. Check your herbicide label. Several burn-down or early pre-plant programs have labels for both crops. However tankmix partners or rates may differ between the two. Maker sure you verify rates, timings, and plant back restrictions before you make the switch. Even with the intense rainfall we have experienced don't bank on these products being gone.

2. Fall applied anhydrous or spring applied urea. How much N is too much to not even consider the switch? Biologically I don't think that number really exists. Economically that number is a moving target given yield penalty, corn drying costs, etc. What I can surmise and you would likely agree with is that over the last 4 weeks the amount of N readily available to the late planted corn crop or in this case the soybean crop has declined, though some N is still readily in the soil profile. We were somewhat prepared for this question a year ago given the likelihood of residual N following the 2012 drought stricken corn. In that article I stated:

In excess situations soybean will generally utilize the background nitrogen prior to initiating maximum N fixation. This may lead to luxurious early season growth, which in fields with a history of white mold, may cause problems if weather conditions are conducive. High soil N reserves may also lead to increased lodging. In either case, manage your soybean crop accordingly to minimize risk of white mold or lodging. This can be accomplished through variety selection (e.g. white mold tolerance, short statured soybean cultivars or good lodging tolerance), decreasing seeding rates, and proper scouting to time fungicide applications if needed.

The only change I would make to this paragraph would be to increase seeding rates to compensate for delayed planting. Remember when I wrote this article in 2013 I was under the assumption that soybean would be planted the first week in May not the first week in June.

3. Should I use an inoculant even when excess N is present? The simple answer is yes and here is why...excess N limits N fixation (Lit review excerpt quoted with permission from Eric Wilson; M.S. Thesis; Shaun Casteel Adviser; Purdue University)

Nitrate uptake of soybean plants did not appear to directly damage the BNF capacity (Streeter, 1985; Arrese-Igor et. al, 1997). Streeter (1985) concluded that carbohydrate deprivation and nitrate toxicity did not inhibit BNF. It is hypothesized that additional nitrate increased the oxygen diffusion barrier of the nodule, which limited oxygen...
supply and restricted nitrogenase activity and nodule respiration (Vessey and Waterer, 1992). This hypothesis was supported by Arrese-Igor et al., 1997. However, additional oxygen supplied to the nodules did not markedly increase BNF (Heckmann et al., 1989; Serraj et al., 1992).

**Literature cited:**


**Vegetable Crop Update 5/23/14**

The 6th issue of the Vegetable Crop Update is now available. This issue contains information on Late blight reminders, updates, and a look at Blitecast, Hop downy mildew detected in Portage and Dane Counties, Cucurbit downy mildew - info resources, and a Vegetable farm field day advertisement (organic and sustainable production). To view this issue click [here](#).

**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 17, 2014 through May 23, 2014.

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

**FIELD CROPS,**

Wheat, [Ergot](#), *Claviceps purpurea*, Door

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).
Recent rains have caused flooding and ponding in many cornfields. Growers are concerned about corn growth and development and any yield effects that might occur from short periods of flooding. Many crop fields were completely destroyed, while others were left with varying degrees of damage. Before making any decisions about your fields, you should document and report any crop damage to your local U.S. Department of Agriculture Farm Service Agency (USDA FSA) office, your crop insurance agent and the Wisconsin Department of Agriculture, Trade and Consumer Protection.

You are strongly encouraged to take “time-dated” photos of any damage. Such information may be critical in federal emergency determinations and your eligibility for these programs.

The extent to which flooding injures corn is determined by several factors including: 1) timing of flooding during the life cycle of corn, 2) frequency and duration of flooding, and 3) air-soil temperatures during flooding (Belford et al., 1985). Flooding at any time when the growing point is below the water level can kill the corn plant in a few days, especially if temperatures are high. Growing point tissues are depleted of oxygen. After a storm event we need to be patient and let plants respond. Plants can usually survive short periods of flooding of less than 48 hours (Wenkert et al., 1981).

Respiration is the plant physiological process most sensitive to flooding. Flooding reduces the exchange of air (oxygen) between soil and atmosphere eventually leading to decreased total root volume, less transport of water and nutrients through the roots to the shoot, and formation of sulfides and butyric acid by microorganisms that are toxic compounds to plants (Wesseling, 1974).

Soils contain pores filled with gas and/or water. The two main gases important for respiration are oxygen and carbon dioxide. The pathway for oxygen into the plant is from the atmosphere through soil pores to a thin water film surrounding plant root hairs. It is relatively easy for oxygen to diffuse into soil when pores are filled by air, but oxygen does not easily diffuse in water so the main constraint to oxygen movement is the thin water film surrounding root hairs. This boundary is magnified in flood/pond conditions. Carbon dioxide rarely accumulates to toxic levels in soil (Wesseling, 1974).

Roots are injured if the soil remains waterlogged. Continued poor aeration causes cell death and even death of roots. Measurable short term reductions for root and leaf growth rates begin immediately within 1-12 hours, but tend to recover quickly within 2-3 days (Wenkert et al., 1981). Almost

All biological processes are influenced by temperature (Wesseling, 1974). Wet soils have a large heat capacity and considerable amounts of heat are required to raise their temperature. Thus, usually wet soils are cold and corn growth is slower. Drainage lowers the moisture content of the upper soil layers so air can penetrate more easily to roots, and transport carbon dioxide produced by roots, microbes and chemical reactions to the atmosphere. Lowering soil moisture content also leads to higher soil temperatures and faster growth.

**Evaluating damage from flooding**

The growing point of corn is metabolically active and is near or below the soil surface prior to V6 (6 visible leaf collars). Within about 48 hours the oxygen supply in a flooded soil is depleted (Purvis and Williamson, 1972; Fausey and McDonald, 1985). Without oxygen, the growing point cannot respire and critical functions are impaired. If temperatures are warm during flooding (greater than 77 degrees F) plants may not survive 24-hours. Cooler temperatures prolong survival. If flooding in corn is less than 48 hours, crop injury should be limited.

To confirm plant survival, check the color of the growing point. It should be white to cream colored, while a darkening and/or softening usually precedes plant death. Also look for new leaf growth 3 to 5 days after water drains from the field. Once the growing point is above the water level, the chances of survival improve greatly.

**Things to look for later during the growing season**

Even if flooding doesn’t kill plants, it may have a long-term negative impact on crop performance. Excess moisture during the early vegetative stages retards root development (Wenkert et al., 1981). As a result, plants may be subject to greater injury later during a dry summer because root systems are not sufficiently developed to contact available subsoil water.

A considerable amount of oxygen is required in the soil for mineralization of nutrient elements from organic matter by microbes. Oxygen deficiencies reduce microbe activity, decreasing the rate at which ammonium and nitrate are supplied to plants resulting in nitrogen deficiency in waterlogged soils (Wesseling, 1974). Additionally, flooding can reduce the activity of mycorrhizae essential for symbiotic phosphorus uptake (Ellis, 1998). Flooding can also result in losses of nitrogen through denitrification and leaching. Where estimated nitrogen loss is significant in fields not yet tasseling and yield potential is reasonable, corn may respond to additional applied fertilizer.

Flooding causes greater crop yield losses when it occurs early in the season (Meyer et al., 1987; Kanwar et al., 1988; Mukhtar et al., 1990; Lizaso and Ritchie, 1997). When six-inch corn was flooded for 24, 48 and 72 h corn yields were reduced 18, 22, and 32% at a low N fertilizer level. At a high N level, these reductions ranged from 19 to 14% one year and <5% in another year (Ritter and Beer, 1969). When corn at a height of 30 inches was flooded for 24 and 96 h, yields were reduced 14 to 30%. With a high level of N in the soil, very little yield reduction occurred even with 96 h of flooding. When flooded near silking, no reduction in yield occurred at a high N level, but yield reductions up to 16% occurred with 96 h of flooding at the low level of N.

Mud and sediment caking leaves and stalks could damage plant tissue and allow development of fungal and bacterial diseases not typically seen. Due to early season stress the plant may be predisposed to root and stalk rots later and harvest timing of fields may need to be adjusted accordingly. A disease problem that may become greater due to flooding and cool temperatures is crazy top, a fungus that depends upon saturated soil conditions to infect corn seedlings. With warmer, wet or humid conditions Pythium can reduce stands despite fungicide seed treatments. There is limited hybrid resistance to these diseases and prediciting damage is difficult until later in the growing season.

Below are best management guidelines for harvesting, storing, and feeding flooded field and forage crops including corn, hay crops and pasture.

- Protect yourself from the harmful effects of silt dust on your health. If you do harvest your flooded crop, use a dust mask (N-95 or higher) or filtered cab to avoid breathing in dust.
- Flooded crops should be stored separately from the rest of your feed. In cases of production problems, this allows for feeding or disposal options without affecting your good feed.
- Flood water from streams and silt can be a source of pathogens. Farmers are strongly encouraged to work closely with their veterinarian and animal nutritionist when determining which vaccination and feeding protocol to use to further protect the herd from possible health issues associated with feeding flooded crop material.

**Harvesting Corn for Silage**

- No matter how bad the field looks take the time to properly assess the damage in each field and determine harvestability. Because each field and/or farm is affected differently, no one prescription fits all situations.
- If possible it is best to avoid chopping corn with large amounts of dirt or silt on it. Soil contamination is the primary source of Clostridium bacteria which increases the risk of poor fermented silage. Clostridial fermentation can also increase the risk of botulism toxins.
- It is generally recommended to not harvest corn with significant moldy ears. Mold lowers feed value and increases the risk of mycotoxins. However, do not assume that all flooded corn will have moldy ears. Ears with tight husks show no or few signs of mold. It
is important to monitor the corn regularly to assess mold growth and development. You may consider an early harvest if the mold worsens.

- Silt is abrasive, so it will be very hard on machinery. Operators will need to take extra care to ensure knives are sharp. Be prepared for extra repairs.
- Try to cut the corn above the silt line or at least above any heavy silt line. In areas where plants are heavily silted it may be more advantageous to harvest the corn as high moisture ear corn or snaplage. This process requires only the ear to be removed and leaves the remainder of the plant in the field.
- Good silage fermentation kills or inhibits the growth of many pathogens; therefore, follow all best management practices to promote good fermentation by harvesting at the correct moisture content (62 – 68% Moisture content, 32 – 38% DM), proper chop length, high filling rate, extra packing, and a tight seal to exclude oxygen. In addition, silage inoculants properly applied can help promote good fermentation by assuring adequate populations of lactic acid bacteria and silage preservatives such as buffered acids can help prevent mold and yeast growth.
- If possible the field should be left to reach the proper harvest moisture for silage. Do not chop immature corn unless necessary. Chopping immature corn can lead to other fermentation issues. If fungal growth seems imminent or increasing on the ears or in the stalk and you still intend to harvest, harvesting slightly earlier that you typically would can reduce the chances of an unacceptable mycotoxin load.
- Crop dry down rate may be faster than normal, so monitor plant maturity and whole plant moisture content routinely and be prepared to harvest when ready.
- Because of the relationship between packing density and oxygen exclusion, it may be better to err on the side of harvesting at slightly higher moisture levels than usual. Chopping corn at excessively high dry matter content will reduce lactic acid bacterial growth and likely inhibit proper fermentation allowing more spoilage.
- It is advisable to inoculate with lactic acid bacteria from a reputable company. It may cost a little more for a good inoculant, but do not skimp on rate or quality. If harvested at the proper moisture content, it is generally recommended to inoculate with a combination of homolactic lactic acid bacteria (to lower and stabilize the pH of the silage) and L. buchneri (to increase acetic acid formation which extends bunk life and reduces feed out losses). Growth of molds and fungi are inhibited by acetic acid. Including L. buchneri in the inoculant can cause excessive production of acetic acid if the corn is harvested below 32% DM. However, for specific products, talk to your inoculant dealer about any modifications in inoculant rate and type. Distribution of inoculants within the forage is also critical so talk to your dealer about applicators.
- Acetic acid and buffered propionic acid products are also effective to limit mold and yeast growth, but should not be mixed with bacterial inoculants in the same applicator tank. Follow specific product recommendations.
- Remember to store flood damaged corn separately from undamaged corn. If production problems are detected from this forage then there are options to either feed it to other livestock or plan to spread it on your fields as you would manure.
- Avoid feeding for 4 to 6 weeks to allow adequate time for good fermentation. Some mycotoxin levels can actually decline over time in the silo.
- Before feeding, collect a representative sample and have it tested for mycotoxins

**Flooded Stored Forages**

- Before feeding the flooded crop, collect a representative sample and have it tested for mycotoxins.
- For stored silage that was exposed to flood waters, it is important to dig into the silage (or open up a few bales) and assess the damage. Check the smell and color. If it looks and smells good, then it may be fine. Watch for mold growth.
- Discard forage that is visibly contaminated with silt or mold. In some cases, silt will even be found inside wrapped bales with the plastic still intact.
- For round bale silage, re-wrap or patch torn bales to avoid heating and spoilage and plan to feed these out soon. Flooded wrapped bales are apt to spoil; even if your bales look fine right after the flood, check a few in about a month to look for changes.
- Limit the amount of this feed in the ration mixing it with other good feeds. Monitor your animals closely.

**Feeding Flooded Forage**

- Flooded forage should be analyzed for nutritional value and mycotoxins. With added silt, you may find a higher dry matter and ash content and a lower protein and energy concentration.
- Frequency of testing will be determined by field risk assessment as well as by evaluation of the feed’s visual appearance and smell.
- Blending or diluting flooded feed with uncontaminated forage may be one means to reducing impact on herd health. However, check with your nutritionist and veterinarian to interpret mycotoxin test results before mixing feeds.
- Once you start feeding any flooded material, watch your animals closely. Mycotoxins and other potential
pathogens may cause health problems immediately or over time.

**Sampling and Testing for Mycotoxins**

The risk of mycotoxin development may increase in crops that have been flooded and covered in silt. Mycotoxins are poisons that are produced by fungi. These toxins can be detrimental to both animal and human health. Mycotoxins can cause problems in production, reproduction and intake problems, as well as possible irreversible damage to cows’ organs, including the liver and kidneys.

Fungi in the *Fusarium* family produce many of the common mycotoxins. The fungi itself is ubiquitous and found in the soil, plant residue and even blown around through air currents. Mycotoxins associated with *Fusarium™* are zearalenone, T-2 toxin, fumonisin, and deoxynivalenol, also called DON or vomitoxin. The following are mycotoxin risk levels for dairy cattle, expressed on a total ration, dry-matter basis.

- DON (vomitoxin); less than 5 to 6 parts per million
- Fumonisin; less than 25 parts per million
- T-2 toxin; less than 100 to 200 parts per billion
- Zearalenone; less than 300 parts per billion

Aflatoxin produced by the fungi Aspergillus, the most serious carcinogen, has been found in high levels in peanuts, corn, cotton seed, and grain and can contaminate milk. This toxin is a serious problem for human and animal health and can contaminate corn in warmer growing regions. Aflatoxin requires warm (85 F) and moist conditions. Where fall conditions are cool, aflatoxin is rarely found.

All flooded forages should be tested for mycotoxin after complete fermentation but soon enough so you have time to obtain feed if it has unacceptable levels. Samples should be taken from the storage facility and the TMR if available. The sampling strategy and frequency will depend on herd health monitoring. Mycotoxin analysis can be completed at many commercial labs.

**Forage Inventory and Farm Decisions**

Take an accurate inventory of your volume and quality of stored forage. Estimate how much feed you will need this winter and whether it is possible to avoid using the flooded forage. Talk to your feed consultant about cost-effective options for replacing lost feed. Right now is the time to make the calculations. If you find you will have to borrow money to buy feed, talk to a banker early.

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**Timely Video: Anthesis (Flowering) in Wheat**

Shawn Conley, Soybean and Wheat Extension Specialist

Anthesis (flowering) in wheat; how to identify this important growth stage. Dr. Shawn Conley, the Wisconsin soybean and small grains Extension specialist, visits a wheat field to demonstrate the process. For more information from Dr. Conley, visit [http://www.coolbean.info](http://www.coolbean.info)

To view the video click on the image below.

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**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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

**FORAGE CROPS,**

Alfalfa, Root/Crown Rot, *Pythium* sp., *Fusarium* sp., Iowa

**FRUIT CROPS,**

Apple, Sphaeropsis/Botryosphaeria Canker, *Sphaeropsis* sp., Washington

**VEGETABLES,**

Basil, Sunburn, None, Columbia

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

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**Wisconsin Winter Wheat Disease Update – June 2, 2014**

Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

Winter wheat in the southern portion of Wisconsin is at, or past, the flag leaf stage of growth. Disease reports have been few and far between this year. This is because wheat looks very healthy. No diseases where observed on the wheat I inspected this weekend. Septoria leaf blotch I had observed very early this season has subsided and cannot be found

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**Vegetable Crop Update 5/31/14**

The 7th issue of the Vegetable Crop Update is now available. This issue contains information on Blitecast and P-Days for late blight and early blight management, National late blight updates for the week, Spotted Wing Drosophila update for fruit, and the WI Irrigation Scheduler Program advertisement. Click [here](http://www.coolbean.info) to view this update.
now. No powdery mildew was observed in these fields. However, there have been several reports of very minor powdery mildew on wheat near the Janesville area. Weather conditions have been very conducive for powdery mildew, so continue to scout for this disease. If powdery mildew is observed at high levels of severity on flag leaves, then a fungicide application might be warranted.

No wheat rusts have been observed in the fields I have scouted this season. I have received no reports of rusts on wheat in Wisconsin either.

In the next week or two, much of the wheat in Southern Wisconsin will be heading and flowering. This is a critical time to control Fusarium head blight (scab). If conditions are wet and warm during the flowering (anthesis) period, the risk for scab will be higher. To assist in making decisions about scab management, consult the Fusarium Head Blight Prediction Center at [http://www.wheatscab.psu.edu](http://www.wheatscab.psu.edu). Currently, the risk for scab is low in most of the state. However, as temperatures get warmer and if it continues to rain, the risk can increase quickly.

If a fungicide is warranted for control of scab, products such Prosaro, Caramba, or similar that contain triazole active ingredients can offer suppression of scab and reduce deoxynivalenol (DON) accumulation in harvested grain. These products should be applied within a week or so of the beginning of flowering for reasonable control. Products containing strobilurin fungicides should be avoided on wheat that has headed. Research has demonstrated that levels of DON can be higher after treatment with strobilurin products after heading.

Continue to scout wheat regularly over the next couple of weeks. This will be a critical time to make in-season disease management decisions.

2014 Pest Management Field Day
Bryan Jensen, IPM Program

Please join us June 26 for the Pest Management Field Day. This field day will be held at the Arlington Agricultural Research Station and features UW staff and student who will provide information on current pest management topics and research results.

Tours will leave the Public Events Building promptly at 8:30 am and conclude by noon. A light lunch will be served at the conclusion. In the event of rain, speakers will present their topics inside the Public Events Building.

No preregistration is required and CCA Credits will be applied for.

Please note! Wisconsin Crop Weed Science (WCWS) herbicide evaluation results and plot tour: Vince Davis, Extension Weed Scientist, with his staff and students will lead an informal tour of the weed science field research plots after lunch.

Speakers and Topics include

| Shawn Conley, David Marburger and Adam Gaspar, Dept. of Agronomy | Environmental Impacts on Soybean Management Decisions |
| Mark Renz, Dept. of Agronomy | Pest Management Mobile |
| Chris Bloomingdale and Damon Smith, Dept. of Plant Pathology | Thrips Dispersal and Soybean Vein Necrosis Virus (SVNV) in Wisconsin Soybean |
| Damon Smith, Dept. of Plant Pathology | 2014 Alfalfa Fungicide Evaluation |
| Jamie Wilbur and Damon Smith, Dept. of Plant Pathology | Soybean White Mold Research Update and Treatment Evaluation |
| Tommy Butts, Dept. of Agronomy | Herbicide Resistance Research Update for Wisconsin Palmer Amaranth and Waterhemp Populations |
| Dave Stoltenberg and Stacey Marion, Dept. of Agronomy | Update on Giant Ragweed Resistance in Wisconsin |
| Liz Bosak, Dept. of Agronomy | Take Action Against Herbicide Resistance; Resources and Pigweeds Research Update |
| Joe Lauer, Dept. of Agronomy | The Value of Transgenic Hybrids in an IPM Program |

The Public Events Facility is located on the Arlington Agricultural Research Station, N695 Hopkins Road. If traveling from the south, exit I 90/94 onto Hwy 51 North. Look for the Arlington Ag. Research Station sign north of Deforest, turn left (west) onto Badger Lane. Travel 1 mile and turn left (south) onto Hopkins Rd. If traveling from the north, exit I 90/94 onto Hwy 60. Travel east through Arlington and turn south onto Hwy 51. For more detailed driving direction click on [http://www.ars.wisc.edu/arlington/directions.html](http://www.ars.wisc.edu/arlington/directions.html)
Pest Management Mobile, a Resource for Insect Management in Agronomic Crops

Eileen Cullen and Mark Renz, Extension Specialists; University of Wisconsin Extension

Pest Management Mobile provides access to a range of pest management information found in a3646 (Pest Management in Wisconsin Field Crops) through a mobile website http://pmm.uwex.edu. Below is a highlight of how to use this website for alfalfa insecticide treatment decision support. Users can also access information with respect to insecticides on corn and soybean and select fungicides (corn). Additional pest/crop combinations will be added later this summer.

Quick reference to key information about an insecticide: if you need to check on an attribute of an insecticide use the product details search feature. Simply start to type in the product name and as the product name becomes available from the list, select it from the drop down list of product names that appears. The resulting page will display key attributes of the product, such as active ingredient(s), restricted use pesticide status, restricted entry interval, and manufacturer (Figures 1A). By scrolling down (Figure 1B) and clicking on the tabs key information with respect to product use in registered crops can also be accessed (see Figure 1C for an example in established alfalfa).[1]

Feel free to utilize this free UW Extension resource to improve pest management decision support in the field. This information is not new, but found in Pest Management in Wisconsin Field Crops (a3646). For a copy of the print version or a free PDF of this publication please visit the extension publications website: http://learningstore.uwex.edu/Pest-Management-in-Wisconsin-Field-Crops2012-P155.aspx

Interactive search for pest management options:
Insecticides can also be compared by conducting an interactive search of products registered for user identified pests. For example, if interested in products registered for alfalfa weevil follow the steps (and Figures) below:

1. Select established or establishing alfalfa pests (Figure 2A),
2. Then select the insect pest(s) of interest = alfalfa weevil(Figure 2B).
3. A list of insecticides registered for the pest(s) on the crop will be displayed (Figure 2C).

Insecticide products are listed alphabetically. Key information about each insecticide can be accessed by clicking on the product name (see figure 1C for an example of the result). As the key determinant for an insecticide treatment decision is whether the insect pest population has reached economic threshold level in the field, this information is also available in Pest Management Mobile. It can be viewed by selecting the insecticide of interest after the product search and pest query (Figure 2D).

[1] If boxes contain a large amount of text like in Figure 1C, rotation of the smartphone or tablet to landscape will improve the readability of this information.
Assessing Flood Damage to Soybean

Shawn Conley, State Soybean and Wheat Specialist University of Wisconsin, Madison
Grover Shannon, University of Missouri, Division of Plant Sciences

Severe flooding has many low-lying soybean fields underwater. As the water dissipates yield potential and replant questions will arise. Flooding can be divided into either water-logging, where only the roots are flooded, or complete submergence where the entire plants are under water (VanToai et al., 2001). Water-logging is more common than complete submergence and is also less damaging. Soybeans can generally survive for 48 to 96 hours when completely submersed (Image 1). The actual time frame depends on air temperature, humidity, cloud cover, soil moisture conditions prior to flooding, and rate of soil drainage. Soybeans will survive longer when flooded under cool and cloudy conditions. Higher temperatures and sunshine will speed up plant respiration which depletes oxygen and increases carbon dioxide levels. If the soil was already saturated prior to flooding, soybean death will occur more quickly as slow soil drainage after flooding will prevent gas exchange between the rhizosphere and the air above the soil surface. Soybeans often do not fully recover from flooding injury.

Image 1. Flooded soybean field located at Arlington WI, June 8th 2008.
Crop injury from water logging is difficult to assess. Water-logging can reduce soybean yield 17 to 43\% at the vegetative growth stage and 50 to 56\% at the reproductive stage (Oosterhuis et al., 1990). Yield losses are the result of reduced root growth, shoot growth, nodulation, nitrogen fixation, photosynthesis, biomass accumulation, stomatal conductance, and plant death due to diseases and physiological stress (Oosterhuis et al., 1990; VanToai et al., 1994 and 2003). A significant amount of genetic variability for flooding tolerance among soybean varieties occurs in maturity groups II and III (VanToai et al., 1994) and likely exists for maturity group I soybeans as well.

Increased disease incidence in the surviving plants may also occur and limit yield potential. The main culprit will likely be phytophthora given the warm wet weather; however phythium, rhizoctonia, or fusarium may also occur. Differential response among varieties will be tied to the sources of genetic resistance to these diseases.

Once we can get back into the fields the decision to replant will be based on the yield potential of the current stand relative to the cost and yield potential of the replanted soybean field (Table 1). Before any decision to tear up a field is made make sure you contact your crop insurance agent to discuss coverage and you have the replant seed on your farm or at least en route. As we all know seed supplies are tight and replant acres will be high. Also remember to check herbicide labels for plant back restrictions if you are planning to plant soybean into a flooded corn field.

Table 1. Expected relative soybean yield at four replanting dates compared to predicted yields for a range of plant populations resulting from an optimum planting date of May 1-20 for full season maturity or short season maturity varieties.

<table>
<thead>
<tr>
<th>Early plant population</th>
<th>May 1-20</th>
<th>June 1</th>
<th>June 10</th>
<th>June 20</th>
<th>July 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ppa x 1000</td>
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<td>-------</td>
<td>--------</td>
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</tr>
<tr>
<td>200</td>
<td>100(^1)</td>
<td>86</td>
<td>89</td>
<td>90</td>
<td>75</td>
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<td>180</td>
<td>98</td>
<td>85</td>
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<td>83</td>
<td>77</td>
<td>69</td>
<td>67</td>
<td>59</td>
</tr>
</tbody>
</table>

\(^1\)Yield potential of full season varieties are in bold while yield potential of earlier maturity group soybeans are given in normal text.

Since full season maturity group soybeans are unrealistic for planting this late only early and mid-group soybean cultivars should be considered. The average yield potential for soybean planted in late June in southern WI is in the 30 to 35 bu yield range (Figure 1). For yield potential and harvestability, (a combine may not be able to pick up the lower pods) a grower should plant if possible a mid maturity group soybean instead of an early maturity group for their geographic area.
To maximize yield potential in late planted soybean, a minimum of 180,000 plants per acre is required in a drilled system as yield potential in rowed beans would be significantly reduced due to decreased canopy development. To achieve 180,000 plants per acre a grower may have to seed as many as 225,000 seeds per acre.

**Literature Cited:**


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Wisconsin Pest Bulletin 6/5/14
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. 6 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 31, 2014 through June 6, 2014.

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

Wisconsin Winter Wheat Disease Update – June 6
Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

Winter wheat in the southern portion of Wisconsin is heading and will be flowering in the next few days. This is a critical time to control Fusarium head blight (scab). Currently the Fusarium Head Blight Prediction Center (http://www.wheatscab.psu.edu) is predicting low risk for head blight for most of the state of Wisconsin. Rain is forecast for this weekend and early next week. This may increase the risk for head blight, so growers and consultants should watch the weather and the FHB Prediction Center carefully if their wheat is flowering.
Areas of the state also have malting barley and risk for FHB can be high if conditions are favorable during barley head emergence. Timing of fungicide application should occur as the head is emerging to protect open flowers if the weather is conducive for FHB.

If a fungicide is warranted for control of scab, products such as Prosaro, Caramba, or similar that contain triazole active ingredients can offer suppression of scab and reduce deoxynivalenol (DON) accumulation in harvested grain. These products should be applied within a week from the beginning of flowering for reasonable control. Products containing strobilurin fungicides should be avoided on wheat that has headed. Research has demonstrated that levels of DON can be higher after treatment with strobilurin products after heading.

No rust or powdery mildew has been observed in wheat that I have looked at. Reports from area extension personnel and consultants also confirm these observations. Wheat appears to be relatively disease free in much of the state this year.

**Vegetable Crop Update 6/6/14**

The 8th issue of the Vegetable Crop Update is now available. This issue contains a welcome to our “new” organic production specialist, General vegetable disease updates, Late blight updates, Blitecast and P-Days for late blight and early blight management, and the Fungicides for late blight control in WI potatoes, 2014 updated list. Click [here](#) to view this update.

**Soybean Yellowing at V2 Growth**

Shawn Conley, Soybean and Wheat Extension Specialist

Dr. Shawn Conley, the WI Soybean and small grains Extension specialist, visits a wheat field to answer this question. For more information from Dr. Conley, visit [www.coolbean.info](http://www.coolbean.info) Integrated Pest Management (IPM), University of Wisconsin.

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**Arlington Weed Garden Open for 2014**

Mark Renz, Extension Weed Scientist

Although summer hasn’t officially started, the weed garden is open and ready for business at the Arlington Ag. Research Station. Thanks to a generous donation by the Wisconsin Certified Crop Advisor Association we have renovated the plots and now have over 90 common weeds found in Wisconsin agronomic crops emerged and available for viewing. While many of the summer annual weeds are still very small, this is an excellent time to practice weed identification while plants are small. If you live near the Arlington Research Station (N695 Hopkins Road, Arlington WI 53911), or are travelling near this facility, please stop by. The weed garden is located on the south side of the public events parking lot. This garden will remain open through September, so weeds can be viewed at various stages of growth. For a list (and map) of species in the weed garden check the mailbox in the northeast corner.

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**Follow us on**

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**Wisconsin Pest Bulletin 6/12/14 and 6/19/14**

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.


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**Wisconsin 2014 Pest Management Field Day**

Bryan Jensen, University of Wisconsin IPM Program

Pest Management Field Day
June 26, 2014, 8:30 am
Arlington Agricultural Research Station.

Our field day features several topics presented by University of Wisconsin faculty, staff and students. Pre-registration is NOT required and the field day has been accepted for 2.0 CEU in Pest Management.

Speakers and Topics include:

- **Environmental Impacts on Soybean Management Decisions**
  Shawn Conley, UW-Extension/Madison soybean and small grains specialist, and David Marburger and Adam Gaspar UW-Madison Department of Agronomy

- **Pest Management Mobile**
  Mark Renz, UW-Extension/Madison weed scientist:

- **Thrips Dispersal and Soybean Vein Necrosis Virus (SVNV) in Wisconsin Soybean**
  Damon Smith, UW-Extension/Madison plant pathologist and Chris Bloomingdale, UW-Madison Department of Plant Pathology:

- **2014 Alfalfa Fungicide Evaluation**
  Damon Smith, UW-Extension/Madison plant pathologist:

- **Soybean White Mold Research Update and Treatment Evaluation**
  Damon Smith, UW-Extension/Madison plant pathologist and Jamie Wilbur UW-Madison Department of Plant Pathology

- **Herbicide Resistance Research Update for Wisconsin Palmer Amaranth and Waterhemp Populations**
  Tommy Butts, UW-Madison Department of Agronomy

- **Update on Giant Ragweed Resistance in Wisconsin**
  Dave Stoltenberg and Stacey Marion, UW-Madison Department of Agronomy:
• Take Action Against Herbicide Resistance; Resources and Pigweeds Research Update
  Liz Bosak, UW-Madison Department of Agronomy

• The Value of Transgenic Hybrids in an IPM Program
  Joe Lauer, UW-Extension/Madison corn specialist

Tours will leave the Public Events Building promptly at 8:30 a.m. and conclude by noon. In the event of rain, speakers will present their topics inside the Public Events Building. A light lunch will be served at the conclusion.

Stay after lunch for a Wisconsin Crop Weed Science (WCWS) herbicide evaluation results and plot tour. Vince Davis, UW-Extension weed scientist, with his staff and students will lead an informal tour of the weed science field research plots.

No preregistration is required and CCA Credits will be applied for.

The Public Events Facility is located on the Arlington Agricultural Research Station, N695 Hopkins Road. If traveling from the south, exit I 90/94 onto Hwy 51 North. Look for the Arlington Ag. Research Station sign north of Deforest. Turn left (west) onto Badger Lane. Travel 1 mile and turn left (south) onto Hopkins Rd. If traveling from the north, exit I 90/94 onto Hwy 60. Travel east through Arlington and turn south onto Hwy 51. For more detailed driving direction click on http://www.ars.wisc.edu/arlington/directions.html

Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic
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 June 7, 2014 through June 13, 2014.

FRUIT CROPS

Apple/Pear, Cytospora Canker, Cytospora sp., Monroe
Apple/Pear, Fire Blight, Erwinia amylovora, Monroe
Strawberry, Root/Crown Rot, Phytophthora sp., Pythium sp., Fusarium sp., Cylindrocarpon sp., Chippewa, Wood

VEGETABLES

Basil, Downy Mildew, Peronospora belbahrii, Dane
Tomato, Gray Mold/Botrytis Blight, Botrytis cinerea, Portage

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

Wisconsin Winter Wheat Disease Update for June 19, 2014
Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

I have scouted winter wheat fields and variety trials from Arlington Wisconsin up through Chilton Wisconsin this week, between rain showers. Wheat in these areas is nearly finished flowering. The window of opportunity to spray fungicides in these areas to control Fusarium head blight (scab) in winter wheat has now passed.

Figure 1 FHB Prediction Center Risk Assessment for June 19

Currently the Fusarium Head Blight Prediction Center (http://www.wheatscab.psu.edu) is predicting moderate to high risk for head blight for the Door county peninsula and areas immediately adjacent to Green Bay (Fig. 1). Winter wheat that is currently flowering in this area of the state is at high risk for infection by the fungus that causes scab. The prediction center is currently predicting low levels of scab in other parts of the state. This should be monitored closely by growers with barley. Some late-planted barley will be emerging from the boot soon and this is the window of opportunity to control scab if conditions are conducive. With all the rain and warm temperatures across the state this week, I would suspect that the risk for scab on barley and any remaining flowering winter wheat will be elevated this weekend across much of the state.
If a fungicide is warranted for control of scab on winter wheat in the Door County area or barley, products such as Prosaro, Caramba, or similar that contain triazole active ingredients can offer suppression of scab and reduce deoxynivalenol (DON) accumulation in harvested grain. These products should be applied within a week from the beginning of flowering for reasonable control. Products containing strobilurin fungicides should be avoided on wheat that has headed. Research has demonstrated that levels of DON can be higher after treatment with strobilurin products after heading.

While scouting winter wheat fields at University of Wisconsin variety trials in the southern and eastern part of Wisconsin this week, I observed no rust or powdery mildew. Trace levels of barley yellow dwarf were noted at all locations. At the Fond du Lac variety trial, high levels of Cephalosporium stripe (Fig. 2) were noted on certain varieties. This location has seen short rotations between wheat crops, likely contributing to this epidemic. We also noted high incidence (90%) of bacterial leaf blight on several varieties at this location. Some bacterial leaf streak was also observed, but incidence was less than 10%. Very low levels of Stagnospora/Septoria leaf blotch were noted. Most varieties had just completed flowering at this location and no scab was observed as of yet.

At the Chilton Variety trial, diseases are nearly absent. The only disease noted on several varieties was bacterial mosaic at low incidence (<5%). Cereal leaf beetle damage was moderate across many varieties in this trial. Larvae were also found on flag leaves, but levels were below the economic threshold as of Tuesday. Again at this location, most varieties had just completed flowering and no scab was observed as of yet.

Reports of seedling diseases are also starting to roll in as a result of the very wet conditions and frequent rainfall. Pythium damping off and root rot is a likely culprit in many of these
fields. Cool wet soil conditions at planting and during seedling emergence favor this disease. There are many species of Pythium that can infect soybean and soybean pathologists are currently conducting a study to identify these species. An informative pocket guide has been developed. You can download a PDF version of the pocket guide by clicking here. You will note that management focuses on adjusting planting date and using seed treatments to protect against infection by Pythium species. Foliar fungicide application is NOT recommended for this disease.

Figure 2. Purple-brown lesions characteristic of early Septoria brown spot symptoms.

Other seed and seedling diseases might also be plaguing soybeans with all of the wet weather. Other pathogens include Rhizoctonia and Phytophthora. To learn more about other seed and seedling issue of soybean in Wisconsin, click here and scroll down to “seedling diseases.” You will find helpful resources pertaining to many of the common seedling issues. Also for specific information on Phytophthora root and stem rot of soybean, you can download a UWEX fact sheet by clicking here.

Growers and consultants should scout soybeans for disease frequently during this cool wet weather. Hopefully the rain will subside soon. Some dry weather will help slow down the advancement of many soybean diseases.

Potential for Nitrogen Loss Following Heavy Rainfalls
Carrie Laboski, Soil Fertility/Nutrient Management Extension Specialist

Some areas in the state have experienced heavy rainfall that has resulted in water standing in fields. If you are concerned about potential N loss following heavy rainfall please read:

http://www.npketc.info/?p=180

Vegetable Crop Update 6/15/14

The 9th issue of the Vegetable Crop Update is now available. This issue contains an Herbicide update - Upbeet for garden beet, Late blight updates, Blitecast and P-Days for late blight and early blight management, and information on Basil downy mildew. Click here to view this update.

UW Crop Diagnostic Training Center Workshops for 2014

Registration is open for UW-Madison Integrated Pest Management Program’s two Crop Diagnostic Training Center workshops for 2014. The Diagnostic Troubleshooting Workshop will be held July 15, 2014. The Crop & Pest Management Workshop will be held August 5, 2014.

FAST and easy ONLINE registration by credit card: https://patstore.wisc.edu/ipm/register.asp

Both workshops will be hosted at the Arlington Agricultural Research Station. Be aware that this is not a traditional field day. These training sessions are designed to be primarily in-field and hands-on. We advise that attendees come prepared to be in the field and ready for all types of weather. CCA CEUs are available as listed, but are subject to change pending approval from the Certified Crop Advisor Program.

Contact Dan Heider at 608-262-6491, or email djheider@wisc.edu

To view the flyer for these workshops follow the link below or scroll down to the end of this newsletter.


Follow us on
Diagnostic Troubleshooting Workshop

July 15, 2014, Arlington Ag Research Station
CCA CEU’s: 4.0
Tiered fee: $75 before 7/1/11, $90 after 7/1/11

- 9:00 Registration and introduction
- 12:00 Lunch (provided)
- 2:15 Adjourn

This Workshop gives you the opportunity to fine tune your crop diagnostic skills in a fun and interactive setting. Small groups will rotate through field problems with UW Specialists role playing as farmers.

Through digging up plants, asking questions and consulting references, participants will make a diagnosis of the problem being observed and a recommendation for correction. Each participant will experience eight separate diagnostic scenarios.

Crop & Pest Management Workshop

August 5, 2014, Arlington Ag Research Station
CCA CEU’s: 0.5 Crop, 3.5 Pest, 1.0 Nutrient Management
Tiered fee: $75 before 7/25/14, $90 after 7/25/14

- 8:30 Registration and introduction
- 12:00 Lunch (provided)
- 2:45 Adjourn

This workshop will cover agronomic concerns ranging from identification of crop and pest production problems to management options within production systems.

Nutrient uptake and partitioning in soybean - Shawn Conley, Extension Soybean and Small Grains Specialist

- Soybean nutrient requirements effects on the growth and development of high yielding soybeans

Herbicide Mode of Action - Vince Davis, Extension Weed Specialist

- Herbicide mode of action and emerging crop technologies; their use and resistance management strategies

The trait game - Bryan Jensen, UW Integrated Pest Management Specialist

- Management strategies for Bt resistant western corn rootworm; their efficacy and effectiveness in delaying the development of resistance

SCN / SDS Interaction - Damon Smith, Extension Plant Pathology Specialist

- Soybean cyst nematode and sudden death syndrome symptoms; current research on interactions between SCN and the SDS causing fungus

Spray drift mitigation in crop pest management - Daniel Heider, UW Integrated Pest Management Specialist

- Drift reduction, emerging herbicide resistant technologies, nozzles and other drift reduction technology in field settings

Both workshops begin in the Public Events Facility of the Arlington Agricultural Research Station. Be aware that this is not a “traditional” field day. Training sessions are designed to be primarily in-field and hands-on. We advise that you come prepared for all types of weather.

FAST and easy ONLINE registration by credit card:
https://patstore.wisc.edu/ipm/register.asp

Contact: Dan Heider, 608-262-6491, djheider@wisc.edu

CCA CEU’s are subject to change pending approval from the Certified Crop Advisor Program.
Vegetable Crop Update 6/20/14 and Disease Supplement 6/24/14

The 10th issue of the Vegetable Crop Update is now available. This issue contains an Insecticide/Nematicide update - Vydate L for dry bulb onion thrips and stubby root nematodes, late blight updates, blitecast and P-Days for late blight and early blight management, and a crop diagnostic training workshops advertisement - Dan Heider. Click here to view this update.

The 1st Disease Supplement is also available. This supplement contains information on late blight forecasting as well as other updates. Click here to view the first Disease Supplement.

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 June 14, 2014 through June 20, 2014.

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

FIELD CROPS,
Corn, Anthracnose, Colletotrichum graminicola, Green
Corn, Seedling Blight, Fusarium spp., Green

FORAGE CROPS,
Alfalfa, Root Rot, Pythium sp., Fusarium sp., Green Lake

FRUIT CROPS,
Apple, Fire Blight, Erwinia amylovora, Chippewa
Apple, Root Rot, Pythium sp., Fusarium sp., Chippewa

VEGETABLES,
Basil, Downy Mildew, Peronospora belbahrii, Dane
Garlic, Uncharacterized Viral Disease, Unidentified plant virus, Waukesha
Tomato, Bacterial Canker, Clavibacter michiganensis subsp. michiganensis, Monroe

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

Wisconsin Winter Wheat Disease Update – June 24, 2014

Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

I have spent the last several days rating winter wheat variety trials and fungicide trials at the Arlington Agricultural Research Station in Arlington, Wisconsin, Columbia Co. Wheat in this area is mostly in the mid-to-late milk stage.

Leaf rust was observed at low levels in border rows and plots not sprayed with fungicide. Incidence (number of plants with symptoms) in some plots is near 50%. However, severity (area of leaf covered by rust pustules) on flag leaves is low at 5% or less. At this stage impact on yield by leaf rust will likely be low and fungicide sprays to control the disease at this stage are NOT recommended.

Septoria/Stagonospora leaf blotch was also observed on lower leaves of most plots. Very few plots had leaf blotch symptoms on the flag leaves, and if they did, severity was in the 5% range. Impact on yield by leaf blotch at this location will be low. Again, fungicides are NOT recommended on winter wheat at this growth stage.
Very little Fusarium head blight (scab) has been observed on winter wheat from Arlington, Wisconsin on up through to Chilton, Wisconsin. Currently the Fusarium Head Blight Prediction Center (http://www.wheatscab.psu.edu) is predicting moderate to high risk for head blight for much of the state of Wisconsin (Fig. 1). Winter wheat in much of the state is likely past flowering now, and thus the window of opportunity to treat for head blight has passed. However, some late-planted barley may be emerging from the boot at this time and this is the window of opportunity to control scab on barley, especially with the risk being moderate to high.

If a fungicide is warranted for control of scab on barley, products such Prosaro, Caramba, or similar that contain triazole active ingredients can offer suppression of scab and reduce deoxynivalenol (DON) accumulation in harvested grain. These products should be applied within a week from the beginning of flowering for reasonable control. Products containing strobilurin fungicides should be avoided after heading. Research has demonstrated that levels of DON can be higher after treatment with strobilurin products after heading.

Foliar applied fungicides for control of alfalfa diseases

Damon L. Smith, Extension Field Crops Pathologist, University of Wisconsin
Scott Chapman, Research Associate, University of Wisconsin
Bryan Jensen, IPM Program, University of Wisconsin

An evaluation of foliar applied fungicides for control of diseases of alfalfa was implemented in Wisconsin in 2014. This work is a continuation of fungicide evaluation that has been ongoing since 2011. In previous trials, yield advantage by using fungicide was only observed about 20% of the time when fungicide was used. In addition, the yield advantage is often not high enough to cover the cost of the fungicide application. In 2014 we wanted to continue to evaluate some newer products on the market and determine if there was a yield increase and added value when used. Methods and results from the first cutting in 2014 are below.

The trial was established at the Arlington Agricultural Research Station located in Arlington, WI. The alfalfa cultivar ‘Spring Gold’ was seeded on 20 Aug 2012 in a field with a Ringwood silt loam soil (6 to 12% slopes). The experimental design was a randomized complete block with four replicates. Plots were 40 ft long and 10 ft wide. Standard alfalfa production practices as described by the University of Wisconsin Cooperative Extension Service were followed. Treatments consisted of a non-treated control and five fungicide treatments. Fungicides were applied using a CO₂ pressurized backpack sprayer equipped with 8001 TurboJet flat fan nozzles calibrated to deliver 20 GPA. Fungicides were applied once plants had reached a height of 6 in. Date of fungicide application was 4 May 2014. Natural sources of pathogen inoculum were relied upon for disease. Disease and defoliation was evaluated immediately after harvest by visually estimating both parameters with the aid of standard area diagrams. A small-plot harvester was used to cut a 31-in wide by 37.4 ft long area of each plot to determine wet yield. A subsample of alfalfa was also collected from each replicate (~0.50 lb.), weighed, then dried and weighed again to determine dry matter yield. Value added per acre was also determined for each treatment using the following method. First yield differences compared to the control were calculated (yield advantage). Price advantage per acre was then determined by multiplying the yield advantage by $0.10/lbs dry matter (price based on June 13, 2014 hay report). Finally, $30 (average price for a fungicide application) was subtracted from all price advantages to determine the value added to each acre by using fungicide. All disease, defoliation, yield, and added value data were analyzed using a mixed model analysis of variance ($P=0.05$).

Weather was very wet and cool prior to the first harvest. Based on these weather patterns the primary disease present at the first harvest was spring black stem. No significant differences in average severity of spring black stem were
identified among all treatments. No significant differences in defoliation were identified among treatments. Dry matter yield was significantly higher than the non-treated check for all plots that received fungicide. Added value was not significantly different from the non-treated control for all plots that received fungicide. While there was an average yield increase when fungicide was used for this cutting, significant added value over the non-treated control was not observed when fungicide was applied. Phytotoxicity was not observed with any treatment.

<table>
<thead>
<tr>
<th>Treatment and Rate/Acre</th>
<th>Spring Black Stem Severity (%)</th>
<th>Defoliation (%)</th>
<th>Dry Matter Yield (Tons/a)</th>
<th>Added Value by using Fungicide (USD/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-treated Check</td>
<td>10.6</td>
<td>10.0</td>
<td>1.74 b</td>
<td>$0.00</td>
</tr>
<tr>
<td>Quadris 6.0 fl.oz. + Warrior II 1.6 fl.oz. + Induce 0.25% v/v</td>
<td>5.6</td>
<td>7.5</td>
<td>1.92 a</td>
<td>$6.30</td>
</tr>
<tr>
<td>Approach 12.0 fl.oz. + Induce 0.25% v/v</td>
<td>4.4</td>
<td>5.0</td>
<td>1.93 a</td>
<td>$7.93</td>
</tr>
<tr>
<td>Approach 12.0 fl.oz.</td>
<td>6.3</td>
<td>6.3</td>
<td>1.95 a</td>
<td>$11.00</td>
</tr>
<tr>
<td>Quadris 6.0 fl.oz. + Induce 0.25% v/v</td>
<td>4.3</td>
<td>7.5</td>
<td>1.95 a</td>
<td>$10.89</td>
</tr>
<tr>
<td>Approach 6.0 fl.oz.</td>
<td>5.6</td>
<td>6.3</td>
<td>1.97 a</td>
<td>$14.73</td>
</tr>
<tr>
<td>Approach 6.0 fl.oz. + Induce 0.25% v/v</td>
<td>6.3</td>
<td>7.5</td>
<td>1.99 a</td>
<td>$19.00</td>
</tr>
<tr>
<td>EXP 2</td>
<td>5.6</td>
<td>6.3</td>
<td>1.99 a</td>
<td>$18.84</td>
</tr>
<tr>
<td>EXP 1</td>
<td>5.6</td>
<td>7.5</td>
<td>2.01 a</td>
<td>$23.44</td>
</tr>
<tr>
<td>Headline 6.0 fl.oz. + Induce 0.25% v/v</td>
<td>4.4</td>
<td>6.3</td>
<td>2.05 a</td>
<td>$31.50</td>
</tr>
<tr>
<td>LSD (α=0.05)</td>
<td>ns</td>
<td>ns</td>
<td>0.15</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Values are based on the average disease severity or defoliation prior to harvest on 3 Jun.

*Means followed by the same letter are not significantly different based on Fisher’s Least Significant Difference (LSD; α=0.05).

*Yield based on harvest on 3 Jun.

*ns = no least significant difference (α=0.05).

*Values determined after accounting for hay yield compared to the non-treated control and subtracting average price of fungicide application ($30/a); prices based on $0.10/ lbs. dry matter; June 13, 2014 Hay Report.
Resilient Agriculture: Adapting to a Changing Climate – A Conference for Farmers, Scientists, and Ag. Professionals

Dick Wolkowski, CSCAP Project Extension Educator

August 5-7, 2014
Ames, Iowa

Corn production is essential in America. This highly versatile crop is an economic powerhouse, employing millions and producing food, feed and fuel. American farmers heavily invest their time, land and money in the crop’s production. As global and domestic demand for corn continues to rise there is increasing uncertainty about how long-term US climate trends will impact corn-based cropping systems. Farmers and scientists are seeking new ways to ensure continued crop productivity and profitability, while minimizing environmental impacts.

This conference will bring together scientists, farmers and invited ag. industry partners to discuss climate uncertainty, impacts on agriculture and our water and soil resources, and most importantly what can be done to make the agricultural landscape both environmentally healthy and productive. Farmers and professional crop advisers are invited to attend. CCA CEU credits will be available. You’ll meet and talk with other farmers, scientists and industry leaders who are exploring ways to make corn-based systems more resilient to weather extremes.

This conference is sponsored by the Climate Change, Mitigation, and Adaptation in Corn-based Cropping Systems Project, a USDA funded study that gathers data from 35 field sites and thousands of farmers in 9 Midwestern states, with the goal of creating a suite of practices for corn-based systems that:

- protect the soil and enhance soil organic matter and nutrient stocks
- reduce off-field nitrogen losses that contribute to water pollution
- limit greenhouse gas emissions from corn production systems
- better withstand weather variability effects from temperature extremes, droughts and floods
- ensure productivity under different climatic conditions
Information on the program and registration can be found at: http://www.sustainablecorn.org/conf-pages/2014NationalConference.html. If you have questions contact Dr. Wolkowski at rpwolkow@wisc.edu.

**Vegetable Crop Update 6/27/14**

The 11th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, Blitecast and P-Days for late blight and early blight management, onion fungicide updates, a plant disease diagnostic clinic report, and a Hancock ARS Potato Field Day Agenda. Click [here](#) to view this update.

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**Bloomin Beans, Glyphosate, and Wheel Track Damage**

Shawn Conley, Soybean and Wheat Extension Specialist

The WI soybean crop ranges anywhere from just planted (JP) to beginning flower (R1). As we enter the soybean reproductive growth phase there are a few things to keep in mind. The first is that soybean will produce flowers for ~3 to five weeks, depending upon planting date and environment. During that time soybean will abort anywhere from 20 to 80% of the flowers that they produce. Generally it is the first and last flush of flowers produced that are most likely to be aborted.

![R1 soybean growth stage](image1)

Next, the timing window for glyphosate applications in our early planted soybean is quickly closing. Glyphosate labels indicate that applications can be made through R2 or full flower. The R3 growth stage begins when one of the four top nodes with a fully developed leaf has a 3/16 inch long pod. Applications made after the R3 stage begins are off-label applications. On average it takes ~ 4 days to move from R1 (beginning flower) to R2 (full flower) and ~10 days from R2 to the start of R3 (beginning pod).

Last but not least, **wheel track damage made from ground applications** may start to reduce yield. Sprayer wheel traffic from first flower (R1) through harvest can damage soybean plants and reduce yield (Hanna et al. 2008). Our research suggests that an adequate soybean stand (more than 100,000 plants per acre) planted in late April though mid-May can compensate for wheel tracks made when a field is sprayed at R1. Yield loss can occur, however, when wheel tracks are made at R1 or later in thin soybean stands (less than 100,000 plants per acre) or late planted soybeans. Regardless of stand, plants could not compensate for wheel tracks made at R3 (early pod development) or R5 (early seed development). The average yield loss per acre is based on sprayer boom width (distance between wheel track passes). In our trials yield losses averaged 2.5, 1.9, and 1.3% when sprayer boom widths measured 60, 90, and 120 foot, respectively. Multiple trips along the same wheel tracks did not increase yield loss over the first trip.

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt,
Plant Disease Diagnostics Clinic

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 June 21, 2014 through June 27, 2014.

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

**FIELD CROPS,**
Corn, Seedling Blight, *Pythium* sp., *Fusarium* spp., Barron
Soybean, Herbicide Damage, None, Adams

**FRUIT CROPS,**
Apple, Black Rot, *Diplodia* sp., Walworth
Apple, Phomopsis Canker, *Phomopsis* sp., Marathon
Apple, Valsa Canker, *Valsa* sp./*Cytospora* sp., Marathon
Apple, Winter Injury, None, Portage, Walworth
Grape, Anthracnose, *Sphaceloma ampelinum*, Columbia
Peach, *Peach Leaf Curl*, *Taphrina deformans*, Dane
Peach, Winter Injury, None, Dane

**VEGETABLES,**
Pepper, Bacterial Spot, *Xanthomonas campestris* pv. *vesicatoria*, Dane
Rhubarb, Ramularia Leaf Spot, *Ramularia* sp., Dane
Rhubarb, Slug Injury, None, Dane
Tomato, Herbicide Damage, None, Clark

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

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

Managing White Mold in Soybean

Damon Smith, Extension Field Crops Pathologist, University of Wisconsin
Kiersten Wise, Extension Specialist for Field Crop Diseases, Purdue University
Martin Chilvers, Extension Field Crops Pathologist, Michigan State University
Carl Bradley, Extension Plant Pathologist, University of Illinois
Daren Mueller, Extension Plant Pathologist, Iowa State University

Farmers in the Great Lakes area of the U.S. may be concerned about white mold (also called Sclerotinia stem rot) in soybean this year. The disease, caused by the fungus *Sclerotinia sclerotorium*, is not common every year in the Great Lakes region, but farmers that have battled the disease in the past will want to assess the risk of white mold development as soybeans approach flowering (growth stage R1 – plants have at least one open flower at any node).

White mold development is favored by cool, cloudy, wet, humid weather at flowering. The disease is more problematic in soybeans in high-yield environments where high plant populations, narrow row spacing, and an early-closing canopy are commonly used. No single management strategy is 100% effective at eliminating white mold, and in-season options for at-risk fields are limited. For more information on white mold, the disease cycle, and additional management options click here and scroll down to “White Mold.”

Wilting and plant death as a result of Sclerotinia stem rot. Photo Credit: Craig Grau.

There are fungicides available for in-season management of white mold, however not all commonly used fungicides are labeled for use against white mold in soybean. For information on which fungicides are labeled for disease control and recommendations on fungicide efficacy, please click here. Fungicide recommendations are developed by the NCERA-137 national soybean disease committee, and recommendations are based on replicated research data collected from University trials.

In Wisconsin in 2013 numerous products were evaluated for white mold control in soybean. Results of this trial can be viewed by clicking here and scrolling down to pages 6 and 7. Consistent with results of the NCERA-137 research, our Wisconsin research identified several products having a rating of ‘good’ for white mold management, including Aproach, Endura, and Proline. If using fungicides for white mold management, keep in mind that efficacy may be based on the
ability of the fungicide to penetrate into the canopy, and the timing of the fungicide application. **Fungicides will be most effective at reducing the impact of white mold when applied at, or close to, growth stage R1.** Wisconsin research data indicates that fungicides applied up to growth stage R3 (early pod – pods are 3/16-inch long at one of the four uppermost nodes) may be effective, but later applications will likely not be effective at reducing disease. Once symptoms of white mold are evident, fungicides will have no effect on reducing the disease. Fungicide applications for white mold management may be most useful on fields where varieties rated as susceptible to white mold are planted in a field with a history of the disease.

If a soybean field is diagnosed with high levels of white mold, this field should be harvested last. This will help reduce the movement of the survival structures of the white mold fungus by harvesting equipment, to fields that are not infested. Also, be sure to clean all harvesting equipment thoroughly at the end of the season to avoid inadvertent infestation of fields. Rotations of 2-3 years between soybean crops can help reduce the level of the fungus causing white mold in fields. Using corn or small grains crops such as wheat, barley, or oats in rotation with soybean is recommended.

There are several resources available to help farmers and agribusiness personnel manage white mold. Extension plant pathologists across the North Central Region have developed a publication in collaboration with the North Central Soybean Research Program to describe the disease and optimal management strategies. This publication, titled, “Management of White Mold in Soybean” is available by clicking here.

This group also developed a podcast series to facilitate learning about white mold on-the-go. This series can be accessed by clicking here.

There is also a University of Wisconsin Cooperative Extension video that shows symptoms of white mold and discusses management options for the disease. The video can be found on YouTube by clicking here.
Management of Soybean Diseases
Foliar Fungicide Efficacy for Control of Foliar Soybean Diseases—April 2014

The North Central Regional Committee on Soybean Diseases and the Regional Committee for Soybean Rust Pathology (NCERA-212 and NCERA-208) have developed the following information on foliar fungicide efficacy for control of major foliar soybean diseases in the United States. Efficacy ratings for each fungicide listed in the table were determined by field-testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based upon level of disease control achieved by product, and are not necessarily reflective of yield increases obtained from product application. Efficacy depends upon proper application timing, rate, and application method to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table, unless otherwise noted. **Table includes systemic fungicides available that have been tested over multiple years and locations. The table is not intended to be a list of all labeled products.** Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NL = Not Labeled for use against this disease; U = Unknown efficacy or insufficient data to rank product efficacy.

<table>
<thead>
<tr>
<th>Class</th>
<th>Active Ingredient (%)</th>
<th>Product/Trade name</th>
<th>Rate/ A (fl oz)</th>
<th>Aerial web blight</th>
<th>Anthracnose</th>
<th>Brown spot</th>
<th>Cercospora leaf blight</th>
<th>Frogeye leaf spot</th>
<th>Phomopsis/ Diaportha (Pod and stem blight)</th>
<th>Soybean rust</th>
<th>White mold</th>
<th>Harvest restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gli-Strobilurins Group 11</td>
<td>Azoxyastrobin 22.8%</td>
<td>Quadris 2.08 SC</td>
<td>8.0 - 16.5</td>
<td>VG</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>G-VG</td>
<td>P</td>
<td>14 days</td>
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<tr>
<td></td>
<td>Fluoxastrobin 40.3%</td>
<td>Aftershock 480 SC Evito 480 SC</td>
<td>2.0 - 6.7</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>U</td>
<td>NL</td>
<td>30 days</td>
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<tr>
<td></td>
<td>Picoxyastrobin</td>
<td>Aproach 2.08 SC</td>
<td>8.0 - 12.0</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>G</td>
<td>G</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>Pyraclostrobin 23.6%</td>
<td>Headline 2.08 EC/8C</td>
<td>8.0 - 12.0</td>
<td>VG</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>21 days</td>
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<tr>
<td>DMI Triazoles Group 3</td>
<td>Cyproconazole 3.8%</td>
<td>Alto 100 L</td>
<td>2.75 - 6.6</td>
<td>U</td>
<td>U</td>
<td>VG</td>
<td>U</td>
<td>F</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>30 days</td>
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<tr>
<td></td>
<td>Flutriafol 11.3%</td>
<td>Topguard 1.04 SC</td>
<td>7.0 - 14.0</td>
<td>U</td>
<td>VG</td>
<td>VG</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG-E</td>
<td>G</td>
<td>21 days</td>
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<tr>
<td></td>
<td>Propiconazole 41.8%</td>
<td>Till 3.8 EC Multiple Generics</td>
<td>2.0 - 4.0</td>
<td>P</td>
<td>VG</td>
<td>G</td>
<td>NL</td>
<td>F</td>
<td>NL</td>
<td>NL</td>
<td>VG</td>
<td>NL</td>
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<td>NL</td>
<td>NL</td>
<td>NL</td>
<td>VG</td>
<td>NL</td>
<td>VG</td>
<td>G</td>
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<td>Tetraconazole 20.6%</td>
<td>Domark 230 ME</td>
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<td>NL</td>
<td>VG</td>
<td>VG</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG-E</td>
<td>G</td>
<td>21 days</td>
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<td>MBC Thiophanates methyl</td>
<td>Thiofanate-methyl</td>
<td>Topsin-M Multiple Generics</td>
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<td>U</td>
<td>U</td>
<td>U</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>G</td>
<td>G</td>
<td>21 days</td>
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<tr>
<td>Class</td>
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<td>Aerial web blight</td>
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</tr>
<tr>
<td>6DHI Carboximides Group 7</td>
<td>Botanil 70%</td>
<td>Endura 0.7 DF</td>
<td>8.5 – 11.0</td>
<td>U</td>
<td>NL</td>
<td>VG</td>
<td>U</td>
<td>P</td>
<td>NL</td>
<td>NL</td>
<td>G</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Azoxyastrobin 18.2% Difenoazonole 11.4%</td>
<td>Quadris Top 2.72 BC</td>
<td>8.0 – 14.0</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>Azoxyastrobin 7.0% Propiconazole 11.7%</td>
<td>Avaris 1.86 BC Quilt 1.86 SC HM-0512 1.88 SC</td>
<td>14.0 – 20.5</td>
<td>U</td>
<td>U</td>
<td>G</td>
<td>U</td>
<td>G</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Azoxyastrobin 13.5% Propiconazole 11.7%</td>
<td>Quilt Xcel 2.2 SE</td>
<td>10.5 – 21.0</td>
<td>E</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>R6</td>
</tr>
<tr>
<td></td>
<td>Fluoxastrobin 13.0% Tebuconazole 26.0%</td>
<td>Evito T 2.89 F</td>
<td>4.0 – 8.0</td>
<td>U</td>
<td>F</td>
<td>VG</td>
<td>P-F</td>
<td>F</td>
<td>U</td>
<td>U</td>
<td>NL</td>
<td>30 days</td>
</tr>
<tr>
<td></td>
<td>Pyraclostrobin 28.6% Fluxapyroxad 14.3%</td>
<td>Prinexor 4.17 BC</td>
<td>4.0 – 8.0</td>
<td>E</td>
<td>VG</td>
<td>E</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>P-F</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Tebuconazole 11.4% Propiconazole 11.4%</td>
<td>Stratego 250 EC</td>
<td>10.0</td>
<td>G-VG</td>
<td>VG</td>
<td>G</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Tebuconazole 32.3% Prothioconazole 10.3%</td>
<td>Stratego YLD 4.18 EC</td>
<td>4.0 – 4.85</td>
<td>VG</td>
<td>VG</td>
<td>VG</td>
<td>F</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>NL</td>
<td>21 days</td>
</tr>
</tbody>
</table>

1 Multiple fungicides are labeled for soybean rust only, powdery mildew, and Alternaria leaf spot, including tebuconazole (multiple products) and Laredo (myclobutanil). Contact fungicides such as chlorothalonil may also be labeled for use.
2 Cercospora leaf blight efficacy relies on accurate application timing, and standard R3 application timings may not provide adequate disease control. Fungicide efficacy may improve with earlier or later applications. Fungicides with a solo or mixed QoI or MBC mode of action may not be effective in areas where QoI or MBC resistance has been detected in the fungal population that causes Cercospora leaf blight.
3 Fungicides with a solo or mixed QoI mode of action may not be effective in areas where QoI resistance has been detected in the fungal population that causes frogeye leaf spot.
4 White mold efficacy is based on an R1 application timing, and lower efficacy is obtained at an R3 application timing, or if disease symptoms are already present at the time of application.
5 Harvest restrictions are listed for soybean harvested for grain. Restrictions may vary for other types of soybean (edamame, etc.) and soybean for other uses such as forage or fodder.
6 Multiple generic products containing this mode of action may also be labeled in some states.
7 Proline has a supplemental label (2ee) for soybean, only for use on white mold in IL, IN, IA, MI, MN, NE, ND, OH, SD, WI. A separate 2ee for NY exists for white mold.
8 Stratego YLD has a supplemental label (2ee) for white mold on soybean only in IL, IN, IA, MI, MN, NE, ND, OH, SD, WI.

Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use. This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in the NCERA-212 or NCERA-208 group assume no liability resulting from the use of these products.
Management of Corn Diseases
Fungicide Efficacy for Control of Corn Diseases—April 2014

The Corn Disease Working Group (CDWG) has developed the following information on fungicide efficacy for control of major corn diseases in the United States. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based upon level of disease control achieved by product, and are not necessarily reflective of yield increases obtained from product application. Efficacy depends upon proper application timing, rate, and application method to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. Table includes systemic fungicides available that have been tested over multiple years and locations. The table is not intended to be a list of all labeled products. Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NL = Not Labeled for use against this disease; U = Unknown efficacy or insufficient data to rank product.

<table>
<thead>
<tr>
<th>Class</th>
<th>Active Ingredient (%)</th>
<th>Product/Trade name</th>
<th>Rate/A (fl oz)</th>
<th>Anthraosone leaf blight</th>
<th>Common rust</th>
<th>Eyespot</th>
<th>Gray leaf spot</th>
<th>Northern leaf blight</th>
<th>Southern rust</th>
<th>Harvest Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gol Strobilurins Group 11</td>
<td>Azoxystrobins 22.8%</td>
<td>Quadris 2.08 SC</td>
<td>8.0 - 16.6</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>E</td>
<td>G</td>
<td>G</td>
<td>7 days</td>
</tr>
<tr>
<td>Group 11</td>
<td>Pyraclostrobins 22.8%</td>
<td>Headline 2.09 SC</td>
<td>8.0 - 12.0</td>
<td>VG</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>VG</td>
<td>G</td>
<td>7 days</td>
</tr>
<tr>
<td>Group 11</td>
<td>Plocystrobins</td>
<td>Aprocl 2.08 SC</td>
<td>8.0 - 12.0</td>
<td>VG</td>
<td>VG-E</td>
<td>VG</td>
<td>F-VG</td>
<td>VG</td>
<td>U</td>
<td>7 days</td>
</tr>
<tr>
<td>DMI Triazoles Group 3</td>
<td>Propiconazole 41.8%</td>
<td>Tilt 5.8 EC Multiple Generics</td>
<td>2.0 - 4.0</td>
<td>NL</td>
<td>VG</td>
<td>E</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>30 days</td>
</tr>
<tr>
<td>Group 3</td>
<td>Prothioconazole 41.0%</td>
<td>Proline 480 SC</td>
<td>6.7</td>
<td>U</td>
<td>VG</td>
<td>E</td>
<td>U</td>
<td>VG</td>
<td>G</td>
<td>14 days</td>
</tr>
<tr>
<td>Group 3</td>
<td>Tebuconazole 38.7%</td>
<td>Foilour 5.8 F Multiple Generics</td>
<td>4.0 - 8.0</td>
<td>NL</td>
<td>U</td>
<td>NL</td>
<td>U</td>
<td>VG</td>
<td>U</td>
<td>36 days</td>
</tr>
<tr>
<td>Group 3</td>
<td>Tetraconazole 20.5%</td>
<td>Domark 250 ME</td>
<td>4.0 - 8.0</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>E</td>
<td>U</td>
<td>G</td>
<td>36 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Azoxystrobin 7.0%</td>
<td>Quilt 200 SC</td>
<td>7.0 - 14.0</td>
<td>U</td>
<td>VG-E</td>
<td>E</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>30 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Propiconazole 11.7%</td>
<td>Quilt 200 SC</td>
<td>7.0 - 14.0</td>
<td>U</td>
<td>VG-E</td>
<td>E</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>30 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Azoxystrobin 13.6%</td>
<td>Quilt 200 SC</td>
<td>10.6 - 14.0</td>
<td>VG</td>
<td>VG-E</td>
<td>VG-E</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>30 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Propiconazole 11.7%</td>
<td>Quilt 200 SC</td>
<td>10.6 - 14.0</td>
<td>VG</td>
<td>VG-E</td>
<td>VG-E</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>30 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Pyraclostrobins 15.8%</td>
<td>Headline AMP 1.86 SC</td>
<td>10.0 - 14.4</td>
<td>U</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>20 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Metconazole 6.1%</td>
<td>Prilaxor 4.17 SC</td>
<td>4.0 - 8.0</td>
<td>U</td>
<td>VG</td>
<td>U</td>
<td>VG</td>
<td>U</td>
<td>G</td>
<td>21 days</td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Pyraclostrobins 28.6%</td>
<td>Stratego 360 EC</td>
<td>10.0 - 12.0</td>
<td>U</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>G</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td>Mixed mode of action</td>
<td>Fluxapyroxad 14.33%</td>
<td>Stratego YLD 4.12 SC</td>
<td>4.0 - 6.0</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>14 days</td>
</tr>
</tbody>
</table>

1Additional fungicides are labeled for disease on corn, including contact fungicides such as chlorothalonil. Certain fungicides may be available for diseases not listed in this table, including Gibberella and Fusarium ear rot. Applications of Proline 480 SC for use on ear rots requires a FIFRA Section 2(ce) and is only approved for use in Illinois, Indiana, Iowa, Louisiana, Maryland, Michigan, Mississippi, North Dakota, Ohio, Pennsylvania, and Virginia.

2Harvest restrictions are listed for field corn harvested for grain. Restrictions may vary for other types of corn (sweet, seed or popcorn, etc.), and corn for other uses such as forage or fodder.
Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use. This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in the CDWG assume no liability resulting from the use of these products.
**Vegetable Crop Update 7/5/14**

The 12th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, blitecast and P-Days for late blight and early blight management, cucurbit downy mildew updates, bacterial disease in vegetable crops, and the Hancock ARS Potato Field Day agenda. Click here to view this update.

**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 June 28, 2014 through July 4, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIELD CROPS,</td>
</tr>
<tr>
<td>Corn, Anthracnose, Colletotrichum graminicol, Lafayette</td>
</tr>
<tr>
<td>Corn, Eyespot, Kabatiella zeae, Lafayette</td>
</tr>
<tr>
<td>Soybean, Target Spot, Corynespora cassiicola, Marathon</td>
</tr>
<tr>
<td>FRUIT CROPS,</td>
</tr>
<tr>
<td>Apple, Winter Injury, None, Eau Claire, Jackson</td>
</tr>
<tr>
<td>Strawberry, Root Rot, Pythium sp., Brown</td>
</tr>
<tr>
<td>Strawberry, Winter Injury, None, Brown</td>
</tr>
<tr>
<td>VEGETABLES,</td>
</tr>
<tr>
<td>Pepper, Bacterial Spot, Xanthomonas campestris pv. vesicatoria, Dane</td>
</tr>
</tbody>
</table>

**Weeds**

Date suggests glyphosate resistance of two Wisconsin common water hemp populations

**Data suggest glyphosate resistance of two Wisconsin water hemp populations**

Thomas R. Butts and Vince M. Davis, Department of Agronomy, University of Wisconsin-Madison

Common water hemp (Amaranthus rudis) is a dioecious, small seeded, broadleaf weed species native to North America, specifically common in the Midwest region of the United States. This weed species has become increasingly problematic for corn and soybean growers due to its prolific growth characteristics and highly competitive ability. Among its fellow pigweed (Amaranthaceae) family members, common water hemp is second only to Palmer amaranth (Amaranthus palmeri) in growth rate and size reaching heights of nearly ten feet 4. Furthermore, common water hemp can produce over one million seeds per female plant under ideal growing conditions 8. This intensifies the likelihood and speed that herbicide-resistant biotypes can increase in a population and transfer from one location to another through seed dispersal. If common water hemp is left unmanaged in corn and soybean, growers can see yield reductions of 74 and 56%, respectively 5,7.

Control of common water hemp has become increasingly difficult due to its ability of evolving resistance to numerous herbicide sites-of-action. To date, this weed species has been identified as resistant to six different sites-of-action, including an ALS-resistant biotype located in Wisconsin. Several common water hemp populations have also evolved resistance to multiple herbicide sites-of-action, further complicating control methods 1,5. Glyphosate-resistant common water hemp biotypes have already been confirmed in fifteen other states including nearby Illinois, Indiana, Iowa, and Minnesota 1. Our current research reported here suggests we will add Wisconsin to this list as data from our first greenhouse experiment indicates at least two Wisconsin common water hemp populations are resistant to glyphosate out of 14 populations examined.
The two weed populations examined were collected from crop production fields in Eau Claire and Pierce counties. They were identified through the *Late-Season Weed Escape Survey in Wisconsin Corn and Soybean Fields* conducted in 2012 and 2013 by former graduate research assistant, Ross A. Recker. Plants that were collected in the field were likely to have survived a postemergence glyphosate application based on in-field observations of herbicide symptomology, plant locations, personal communication with growers, and other additional data documented during the survey. To confirm glyphosate resistance, seed was collected from 30 mature plants in the field, progeny were grown in the UW-Madison greenhouse, and 10 plants per glyphosate rate were sprayed with Roundup PowerMAX® plus ammonium sulfate at 17 lbs. per 100 gallons of spray solution when they reached three inches tall. Glyphosate rates used were 0, 0.22 (5.5), 0.43 (11), 0.87 (22), 1.74 (44), and 3.48 (88) kg ae ha\(^{-1}\) (fl. oz. ac\(^{-1}\)). Plant dry biomass data were collected 28 days after application (DAA). Comparisons between our putative resistant and susceptible biotypes were determined by the effective glyphosate dose needed to reduce plant dry biomass 50% (ED\(_{50}\)).

The ten Pierce County plants sprayed at the 0.87 kg ae ha\(^{-1}\) (22 fl. oz. ac\(^{-1}\)) rate all survived and grew to an average of three times their spray date height (Figure 1). At the 1.74 kg ae ha\(^{-1}\) (44 fl. oz. ac\(^{-1}\)) rate, nine of ten plants survived and grew to an average of two times their spray date height (Figure 2). The ED\(_{50}\) of glyphosate for the Pierce County and susceptible populations was 2.23 and 0.18 kg ae ha\(^{-1}\), respectively (Figure 3). This indicates the Pierce County population has a 12.5-fold level of resistance.

The ten Eau Claire County plants sprayed at the 0.87 kg ae ha\(^{-1}\) (22 fl. oz. ac\(^{-1}\)) rate all survived and grew to an average of five times greater than their spray date height (Figure 4). All ten plants also survived the 1.74 kg ae ha\(^{-1}\) (44 fl. oz. ac\(^{-1}\)) rate and quadrupled in size from their spray date height (Figure 5). The Eau Claire County population was not able to be analyzed using the log logistic Dose Response Model in R due to inadequate high rates of glyphosate to reduce dry biomass at 28 DAA. Therefore, linear glyphosate response models were established for the Eau Claire County and susceptible populations and analyzed using ANOVA tables which indicated significant differences at all glyphosate rates (Figure 6) (Table 1).
There are several key components to an effective control strategy for glyphosate-resistant common waterhemp. The use of alternative herbicide sites-of-action, such as PPO inhibitors, and tank-mixing multiple herbicide sites-of-action will improve glyphosate-resistant weed control. An early planting date will allow crops to gain a head-start and out compete common waterhemp due to its late emergence timing. Herbicide applications should be made at the correct timing when weeds are small and actively growing to ensure the greatest efficacy of the herbicide based on label recommendations. Furthermore, special care should be taken to clean tillage and harvest equipment thoroughly as they can quickly spread weed seed among fields. The focus of these best management practices is to diversify weed control measures, reduce weed seed additions to the soil seedbank, and utilize control measures in the most effective method possible.

This research experiment will be repeated to officially confirm glyphosate resistance in these common waterhemp populations. For updates on Wisconsin weeds please visit our Wisconsin Crop Weed Science website at http://wcws.cals.wisc.edu/. Further information on controlling common waterhemp or other glyphosate-resistant weeds can be found at: http://takeactiononweeds.com/. Finally, if you believe you may be facing glyphosate-resistant weeds in your fields, contact your local county extension agent and/or Dr. Vince Davis at vmdavis@wisc.edu or (608) 262-1392.

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Wisconsin Pest Bulletin 7/10/14
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. 10 of the Wisconsin Pest Bulletin is now available at: http://datcpservices.wisconsin.gov/pb/index.jsp

Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic
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 July 5, 2014 through July 11, 2014.

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

FIELD CROPS,
Corn, Nitrogen Burn, None, Iowa
Soybean, Seedling Blight, Fusarium spp., Lafayette

FRUIT CROPS,
Apple, Phyllosticta Leaf Spot, Phyllosticta sp., Portage
Apple, Root Rot, Pythium sp., Fusarium spp., Dane, Washington
Apple, Sphaeropsis Canker, Sphaeropsis sp., Portage
Apple, Winter Injury, None, Dane, Portage, Washington, Winnebago
Grape, Black Rot, Phyllosticta ampelicida, Jefferson
Grape, Downy Mildew, Plasmopara viticola, Dane

VEGETABLES,
Asparagus, Alternaria Leaf Spot, Alternaria sp., Waushara
Asparagus, Anthrascose, Colletotrichum sp., Waushara
Asparagus, Phomopsis Canker, Phomopsis sp., Waushara
Asparagus, Root/Crown/Stem Rot, Fusarium oxysporum, Waushara
Asparagus, Rust, Puccinia asparagi-Waushara
Celery, Fusarium Yellows, Fusarium oxysporum, Waushara
Celery, Root Rot, Pythium sp., Waushara
Kohlrabi, Crown Gall, Agrobacterium tumefaciens, Winnebago
Tomato, Black Walnut Toxicity, None, Dane
Tomato, Blossom End Rot, None, Dane
Tomato, Herbicide Damage, None, Columbia
Tomato, Septoria Leaf Spot, Septoria lycopersici, Dane, Racine

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.
**Fusarium Head Blight and Other Winter Wheat Diseases in Wisconsin, 2014**

Damon L. Smith, Extension Field Crops Pathologist, University of Wisconsin-Madison

Shawn P. Conley, Extension Soybean and Small Grains Agronomist, University of Wisconsin-Madison

Winter wheat in most of Wisconsin is maturing nicely and starting to dry down in the southern portions of the state. For most of the season, wheat diseases have been at low levels in Wisconsin. However, certain areas of the state have been identified with high levels of Fusarium head blight (scab) in the last week. These areas include Fond du Lac up through to Chilton and likely northward. Growers and consultants should scout fields now to estimate the level of scab present in their fields.

**What does scab look like?** Diseased spikelets on an infected grain head die and bleach prematurely (Fig. 1). Healthy spikelets on the same head retain their normal green color. Over time, premature bleaching of spikelets may progress throughout the entire grain head. If infections occur on the stem immediately below the head, the entire head may die. As symptoms progress, developing grains are colonized causing them to shrink and wrinkle. Often, infected kernels have a rough, sunken appearance, and range in color from pink or soft gray, to light brown. As wheat dries down, visual inspection of heads for scab will become more difficult.

**Why is identifying scab important?** Scab identification is important, not only because it reduces yield, but also because it reduces the quality and feeding value of grain. In addition, the FHB fungus may produce mycotoxins, including deoxynivalenol (also known as DON or vomitoxin), that when ingested, can adversely affect livestock and human health. The U.S. Food and Drug Administration has set maximum allowable levels of DON in feed for various animal systems, these are as follows: beef and feedlot cattle and poultry < 10ppm; Swine and all other animals < 5ppm.

**What should I do to prepare for wheat harvest?**

1. Scout your fields now to assess risk. Wheat near our Fond du Lac location is maturing making it very difficult to assess the incidence and severity of the infection. Understanding a fields risk will help growers either field blend or avoid highly infected areas so entire loads are not rejected.

2. Adjust combine settings to blow out lighter seeds and chaff. Salgado et al. 2011 indicated that adjusting a combine’s fan speed between 1,375 and 1,475 rpms and shutter opening to 90 mm (3.5 inches) resulted in the lowest discounts that would have been received at the elevator due to low test weight, % damaged kernels, and level of the mycotoxin deoxynivalenol (DON; vomitoxin) present in the harvested grain.

3. Know your elevators inspection and dockage procedure (each elevator can have a different procedure).

4. Scabby kernels does not necessarily mean high DON levels and vice versa.

5. DON can be present in the straw so there is concern regarding feeding or using scab infected wheat straw. DO NOT use straw for bedding or feed from fields with high levels of scab (Cowger and Arellano, 2013).

6. Do not save seed from a scab-infected field. *Fusarium graminearum* can be transmitted via seed. Infected seeds will have decreased growth and tillering capacity as well as increased risk for winterkill.

7. Do not store grain from fields with high levels of scab. DON and other mycotoxins can continue to increase in stored grain.

8. [For more information on Fusarium head blight click here.](#)

9. [For More information on harvesting click here.](#)

**Other Wheat Diseases in Wisconsin**

In general foliar diseases on wheat were present in low levels this year. Some Septoria/Stagnospora leaf blotch was observed on wheat around the Arlington and Fond du Lac areas. Severity was low at 10-20% on the lower leaves and less than 5% on the flag leaves. Yield loss from Septoria/Stagnospora leaf blotch will be negligible this year.

Leaf rust was observed on several varieties of winter wheat throughout the wheat growing area of the state this year. Severity on flag leaves was 10% or less and it did not typically become apparent until late in the growing season. Yield loss from leaf rust will also be low this year.

Stripe rust was virtually non-existent this season in Wisconsin. Only two leaves at our Arlington variety trial were found with stripe rust pustules. Stem rust was also observed at this location in one plot, and not found at any other site that we visited this year. Yield loss from stripe rust and stem rust will be negligible this year in Wisconsin.

Powdery mildew was not observed in any field we visited this year.
At the Fond du Lac variety trial, high levels of Cephalosporium stripe were noted on certain varieties. This location has seen short rotations between wheat crops, likely contributing to this epidemic. We also noted high incidence (90%) of bacterial leaf streak on several varieties at this location and the Chilton, Wisconsin location.

References

Tasseling Corn - Scout Now for Foliar Diseases and What about Fungicide?
Damon L. Smith, Extension Field Crops Pathologist, University of Wisconsin

I have been riding through much of the southern tier of Wisconsin this week and am noticing quite a few corn fields that are beginning to tassel. This growth stage presents itself as a good time to scout for foliar diseases of corn and make decisions on in-season management for any diseases you might find.

As for which diseases might be important this year? I wish I had a crystal ball. However, if I had to make an educated guess, three come to mind: Northern corn leaf blight, Eyespot, and Anthracnose leaf blight.

Figure 1. NCLB symptoms on a corn leaf.

**Northern Corn Leaf Blight (NCLB):** The most diagnostic symptom of NCLB is the long, slender, cigar-shaped, gray-green to tan lesions that develop on leaves (Fig. 1). Disease often begins on the lower leaves and works its way to the top leaves. This disease is favored by cool, wet, rainy weather, which has seemed to dominate lately. Higher levels of disease might be expected in fields with a previous history of NCLB and/or fields that have been in continuous and no-till corn production. The pathogen over-winters in corn residue, therefore, the more residue on the soil surface the higher the risk for NCLB. Management should focus on using resistant hybrids and residue management. In-season management is available in the form of several fungicides that are labeled for NCLB. However, these fungicides should be applied at the early onset of the disease and only if the epidemic is expected to get worse.

Figure 2. Eyespot symptoms on a corn leaf.

**Eyespot:** Eyespot typically first develops as very small pen-tipped sized lesions that appear water-soaked. As the lesions mature they become larger (¼ inch in diameter) become tan in the center and have a yellow halo (Fig. 2). Lesions can be numerous and spread from the lower leaves to upper leaves. In severe cases, lesions may grow together and can cause defoliation and/or yield reduction. Eyespot is also favored by cool, wet, and frequently rainy conditions. No-till and continuous corn production systems can also increase the risk for eyespot, as the pathogen is borne on corn residue on the soil surface. Management should focus on the use of resistant hybrids and residue management. In-season management is available in the form of fungicides. Again, fungicides should be applied early in the epidemic and may not be cost effective for this disease alone.

Figure 3. Anthracnose leaf blight symptoms on a corn leaf.

**Anthracnose leaf blight (ALB):** ALB symptoms include oval or elongated lesions that are brown in color and surrounded by a yellow or orange area (Fig. 3). Sometimes on older lesions, small black hair-like structures (setae) can be observed erupting from the leaf surface in the center of the
lesions. In severe cases, ALB can result in leaf death that can affect yield. Again, the ALB pathogen overwinters on corn residue. Therefore fields in no-till and/or continuous corn production might be at higher risk for ALB. Long periods of rainy overcast and warm weather can favor ALB. Fields with poor soil fertility can also be at higher risk for ALB development. Management should focus on selecting resistant hybrids and residue management. Some fungicides are labeled for management of ALB, but control and yield increase in response to applications have been inconsistent.

Over the last several years there has been a lot of interest in applying foliar fungicides on corn to protect or increase yield. There are many products on the market and we tested several of these at various timings in 2013 on hybrid grain corn. The results of that trial can be found by clicking here and scrolling to page 2. In this study we had very low levels of common rust. Yield was highly variable in the trial and only one product/timing resulted in a yield increase over the non-treated plots. This high level of variability and inconsistency in treatment has also been observed in trials conducted throughout the corn belt of the U.S. over the last several years.

In a recent summary of foliar fungicide trials on corn from 2010-2013, 985 site/trials were conducted. No single product was identified to be more effective than another in these trials, however disease ratings were not the focus. When timing of fungicide application was analyzed, the best time to apply a fungicide and expect some yield increase over the non-treated control was between the VT and R2 growth stages. The average yield increase across all trials and years at the VT to R2 timing was 3.5 bushels per acre.

### Break-Even Scenarios

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Figure 4. Break-even scenarios for corn foliar fungicide application costs.

While there seems to be an overall positive response in yield with the application of fungicide, that increase is likely not high enough to recover the cost of application. A quick review of fungicide prices and expected application costs reveals that to apply fungicide one time might cost around $28 USD. Figure 4 shows a table of various costs to apply fungicide along the top, corn prices along the left column, and the bushel advantage required by the fungicide application to break-even with the cost of fungicide application in the center. The red box in figure 4 shows our 3.5-bushel average advantage that we saw across the region-wide trial. The arrow shows the corn price needed to recover the cost of one $28 fungicide application. This $8.00/bushel corn price is more than twice today’s average corn price!

The previous point on economics was made in the absence of disease on corn, however. When might we expect more consistent yield benefit from a fungicide? The answer is in the situations where disease levels are high of course! These situations include the following factors:

1. Hybrids susceptible to foliar disease are used in fields with a history of disease
2. Continuous corn production systems
3. No-till or reduced tillage systems
4. Late-planted corn
5. Where irrigation is used
6. Weather conditions are favorable for disease development

If one or more of these factors are important in your field, then scouting during the tasseling period will be important. Gauge the present levels of disease and look at the weather forecast to see if the epidemic might increase. Then make a consideration on if a fungicide application is needed in your field. Consider the economics of that application and also the fact that repeated application of fungicide can also promote fungicide resistance in some of the pathogens you might be targeting. So spray responsibly.

For more information about fungicides and fungicide mode of action visit my fungicide information page by clicking here.

### Vegetable Crop Update 7/11/14

The 14th issue of the Vegetable Crop Update is now available. This issue contains potato production updates, late blight updates, blitecast and P-Days for late blight and early blight management, a cucurbit downy mildew update, and a hops update. Click here to view this update.

### Harvest Considerations for Fusarium Head Blight (Scab) Infected Wheat Fields

Shawn Conley, Soybean and Wheat Extension Specialist

Subsection taken from Smith and Conley 2014. Fusarium Head Blight and Other Winter Wheat Diseases in Wisconsin, 2014

A survey of the Wisconsin Winter Wheat Variety Trials indicates that some fields will be at risk for dockage or outright rejection of winter wheat grain later this month. Environmental conditions that lead to high risk coupled with susceptible genetics and the grower’s inability to simply get fungicides applied all contributed to this issue. As we move forward into harvest here are a few point to consider to help mitigate dockage and deoxynivalenol (DON or vomitoxin) risk moving forward.
1. Scout your fields now to assess risk. Wheat near our Fond du Lac location is maturing making it very difficult to assess the incidence and severity of the infection. Understanding a fields risk will help growers either field blend or avoid highly infected areas so entire loads are not rejected.

2. Adjust combine settings to blow out lighter seeds and chaff. Salgado et al. 2011 indicated that adjusting a combine’s fan speed between 1,375 and 1,475 rpms and shutter opening to 90 mm (3.5 inches) resulted in the lowest discounts that would have been received at the elevator due to low test weight, % damaged kernels, and level of the mycotoxin deoxynivalenol (DON; vomitoxin) present in the harvested grain.

3. Know your elevators inspection and dockage procedure (each elevator can have a different procedure).

4. Scabby kernels does not necessarily mean high DON levels and vice versa.

5. DON can be present in the straw so there is concern regarding feeding or using scab infected wheat straw. DO NOT use straw for bedding or feed from fields with high levels of scab (Cowger and Arellano, 2013).

6. Do not save seed from a scab-infected field. Fusarium graminearum can be transmitted via seed. Infected seeds will have decreased growth and tillering capacity as well as increased risk for winterkill.

7. Do not store grain from fields with high levels of scab. DON and other mycotoxins can continue to increase in stored grain.

8. For more information on Fusarium head blight, visit this information page: [http://fyi.uwex.edu/fieldcroppathology/fusam-head-blight-scab-of-wheat/](http://fyi.uwex.edu/fieldcroppathology/fusam-head-blight-scab-of-wheat/)

References


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**Harvesting Wet Fields of Alfalfa**

Carole Curtis

June 2014 has the dubious distinction of being the fifth wettest June in recorded history. Therefore, it’s no surprise that July began with 11 percent of Wisconsin’s first cutting of hay still standing in the fields.

“Clearly, we have significant problems in some places,” Dr. Dan Undersander, University of Wisconsin Extension professor of agronomy, said during a World Class Webinar on forage being presented by Professional Dairy Producers of Wisconsin.

The dilemma is alfalfa declines 4-5 points in relative forage quality per day, so the longer it sits in the field, the lower the quality. Those that got first cutting off can look to second cutting for heifer feed, while those coming into second cutting should be able to get it in pretty good shape. Those looking at first cutting will be getting some lower quality feed to deal with, Undersander observed.

One thing farmers might not be aware of is that the yield of next cutting will be reduced if alfalfa is left in the field. “We focus so much on the present that we don’t realize the longer we leave the existing cutting in the field, the more we reduce our yield for the year and the next cutting,” he said.

**Take shoots into consideration**

As a stand gets tall, shoots for the next cutting begin to grow. At the bud stage, the shoots are typically not visible enough for dairy farmers to notice at cutting.

However, as the plant moves into its flower stage, the growing shoots are clearly visible and can be up to 4 inches or more tall. “At this point, it is worthwhile to check your fields before cutting,” Undersander said. “If you can cut above those shoots, then you have the stems left to continue growing and next cutting will come back in a timely manner.”

If the crop is cut below the top of the shoots, the growing tips are severed. “Then you have not only taken off the cutting that is there, but you’ve cut off the regrowth for the next cutting and the plant has to start all over,” he explained.

The plant will come back a little weaker and yields for the next cutting will be later and delayed. “So if you have to cut
late, think about checking the stand and seeing if it would be beneficial to cut higher,” Undersander advised.

Alfalfa regrowth needs to be taken into consideration because some varieties recover quicker than others. “Some of the varieties being grown can be 10 or 25 percent flower and you won’t have to worry too much about those shoots in there,” Undersander said.

With other varieties, the shoots will be 4-6 inches taller. Farmers must then decide whether they are going to cut off the growing tips or cut above them. For some late fields, that might mean cutting at six inches. “It’s not desirable, but we’re looking at what’s the least of several bad situations that we could participate in,” Undersander said.

Stick with wide swathes

Undersander has also been fielding lots of questions whether hay laid in wide swaths will dry well on soggy soils. “I would suggest to you that wide swathes are particularly important on these wet fields,” he stressed.

If alfalfa is put into directly into windrows, it is definitely not going to dry very well, Undersander said. It is far better to spread out a wide swath on wet soil and at least have the surface of that swath exposed to sunlight and drying. “If you immediately put it in windrows, only the surface of that windrow dries and, when you come back 24 hours later, that windrow will be as green inside as it was when you cut it,” he pointed out.

Try to limit damage to the field

Harvesting when the soil is wet can really damage a field. “There are no good answers here. I saw a mower stuck in a field the other day; another where a caterpillar was pulling a truck out of a field,” Undersander shared. “Imagine the damage that’s doing.”

While farmers might need to let one cutting get a little more mature to let the soil dry out, there are several options to consider when harvesting on wet soil.

It might be worthwhile to use wagons with flotation tires, instead of trucks. It will slow down the harvest tremendously, but it might save that field for next cutting. “When we’re putting ruts several inches deep, we’re virtually eliminating that field from future harvest,” Undersander said.

Another option, when coming out of wet conditions, is to harvest older fields first and hold off on younger fields for a few days when there is the possibility they can dry a bit. If the older fields suffer damage, they are more in line to be torn up anyway.

Consider taking partial loads off. “None of these are things we’d like to do, but they might be worthwhile if we want to keep the field from being deeply rutted and torn up,” Undersander said.

White tipped/bleached Canada thistle, a good thing

Mark Renz, University of Wisconsin Extension Weed Specialist

Wet springs, bring good and bad things from a weed perspective. First the bad: we often see much more Canada thistle in our pastures, row crops, and roadsides in Wisconsin in wet springs. While this weed can tolerate a wide range of habitats and weather patterns, infestations are more common and visible under these conditions. The past two years I have seen populations establish and expand, due to the spring precipitation mixed with the overgrazing and lack of desirable plant regrowth due to previous years’ drought. As most know, Canada thistle can be very competitive and reduce crop yield, forage utilization and reduce habitat quality in natural areas.

The good news is that wet springs increase the chances of a disease infecting and injuring Canada thistle. The most common is a disease called Pseudomonas syringae pv. tagetis, PST for short. This disease is a bacteria that naturally occurs in Wisconsin and infects Canada thistle shoots. While it can also infect many other broadleaf species in the sunflower family, it is most commonly found on Canada thistle in Wisconsin. Symptoms of infection are a distinct bleached or white color of the shoot (see picture 1). Infected shoots have slower development and can increase mortality of Canada thistle populations. Effectiveness appears to be dependent on the strain of PST, level of infection/reinfection and likely many other factors. Driving throughout the state the last several weeks I have seen many pastures, fields and roadsides with large-scale infections (see picture 2).
Regardless of the level of damage, infected plants are less competitive. In pastures and other grassland settings this is a welcome addition to Canada thistle management plans. To promote the spread of this disease, research suggests land managers mow infected (bleached) shoots when water is present on the leaves. Mowing damages the leaves of uninfected plants and spreads the bacteria to throughout the field. The added moisture improves the chances of the bacteria infecting Canada thistle. Once a leaf is infected it rarely survives. While Canada thistle plants require reinfection every year, populations of PST are likely present to reinfect plants every year if conditions are right. So embrace the white Canada thistle shoots as one more tool to suppress Canada thistle. This year we certainly need all the tools we can get!

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What's New

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2014 Agronomy/Soils Field Day Highlights UW-Madison Research

The Departments of Agronomy and Soil Science in conjunction with the Arlington Agricultural Research Station will host their annual field day on August 27, 2014. The field day will highlight UW-Madison research on emerging technologies, greenhouse gases in agriculture, and relevant crop production issues. The field day will begin at 8:00 am and run until 2:30 pm. Lunch will be provided by the Badger Crops Club for a $5 donation.

Agenda

8:00 Registration & coffee
8:30 Soils, Forages, and Greenhouse Gas Tours depart
10:30 Grains, Forages, and Greenhouse Gas Tours depart
12:00 Lunch with demonstration of UAV with aerial photography
1:00 Grains and Soils Tours depart

Note: All tours are only offered twice. Tours depart promptly as scheduled.

Tours

Grains
- Herbicide resistance in Wisconsin corn and soybean: Take Action (Vince Davis)
- Prescription seeding rates and climate impact on Midwestern soybean (Shawn Conley & Ethan Smidt)
- Maximum yield systems research for corn (Joe Lauer)
- Going “Old School” to manage corn rootworms (Bryan Jensen)

Forages
- Perennial forages are essential for long term carbon storage in Wisconsin’s prairie soils (Gregg Sanford)
- Cautions when harvesting wet forage (Dan Undersander)
- What level of weed control is needed to ensure alfalfa establishment? (Mark Renz)
- Common Alfalfa Diseases for 2014 and Management Options (Damon Smith)

Soils
- Strategies for crop residue management (Francisco Arriaga)
- N sensor research for corn and wheat (Carrie Laboski & Haily Henderson)
- Using rolled cover crops in organic and conventional soybean production (Erin Silva)

Greenhouse Gases in Wisconsin Agriculture
- Introduction to greenhouse gases (Matt Ruark)
- Greenhouse gas emissions from three crop rotations in
Wisconsin (Maciek Kazula & Joe Lauer)
- Influence of weed management on nitrous oxide emissions
  (Becky Bailey & Vince Davis)
- Greenhouse gases from dairy-based rotations
  (Sarah Collier & Matt Ruark)
- Greenhouse gases and biofuel production
  (Randy Jackson)

Visit the exhibits between tours and during lunch: Apps for Ag; Nutrient & Pest Management Program; Integrated Pest Management Program; SnapPlus; and more!!

The Arlington Research Station is located on Hwy. 51, about 5 miles south of Arlington. Watch for Field Day signs. GPS coordinates: 43.300467, -89.345534

For more information contact the Dept. of Agronomy 608/262-1390 or the Dept. of Soil Science 608/262-0485.

In the event of rain, presentations will be held inside.

To view the flyer for this event, click on the link below or scroll down to the end of this newsletter.


Resilient Ag Conference Now Open to Crop Advisors and Farmers: CCA Certification Credits Available

Lori Abendroth, Sustainable Corn Project Manager
Lynn Laws, Sustainable Corn Project Communications Specialist

UPPER MIDWEST… Crop Advisors can earn continuing education credits for CCA certification through in-person and online attendance of the Resilient Agriculture Conference, August 5-7, in Ames, Iowa. Farmers and crop advisors throughout the upper Midwest are encouraged to attend in person or online, as most conference sessions will be live-streamed, with the exception of the field activities.

The conference is co-sponsored by the USDA’s Sustainable Corn Project which is working to identify ways to build greater resiliency into corn-based cropping systems, in response to the effects of climate change in the Corn Belt, such as a longer growing season and extreme rain events. Scientists with the Sustainable Corn Project have been collecting and analyzing data from 35 field sites in 8 states, studying the results of various practices, such as drainage water management, cover crops, and much more. At the conference, the scientists will share their findings and a panel of farmers from four different states in the Midwest, will talk about what they have done on their farms to build resiliency into their operations.

“With weather variability like we have had these past two years, it’s difficult to know when it’s time to plant corn. This and other changes we’re experiencing in climate patterns make it necessary to adopt management practices that provide the best results in all years,” said Garry Niemeyer, a farmer in Illinois and past president of the National Corn Growers Association. “A farmer concerned with risk management for his operation should consider attending the Resilient Agriculture conference, where all of these issues and many more will be addressed.”

During the conference, farmers also will participate in hands-on activities in the field to increase their understanding of the practices being researched and to learn how to use new decision support tools.

Registration, other conference details and information about the Sustainable Corn Project can be found at www.sustainablecorn.org. Registration is open through July 28.

The conference is sponsored by the USDA’s Sustainable Corn Project and the 25x’25 Alliance.

Wisconsin Pest Bulletin 7/17/14

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. 11 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Think Twice Before Applying Nitrogen to Poorly Nodulated Soybean Fields

Shawn Conley, Soybean and Wheat Extension Specialist

Over the last 3 days my phone, email and twitter account has been blowing up with questions surrounding poorly nodulated soybeans and my thoughts regarding applying foliar nitrogen to alleviate those symptoms. I have been reluctant to write this article for two reasons.

This article will contradict some of my colleagues’ thoughts (Identifying and responding to poor nodulation in soybean) however I would agree with their scenario of applying nitrogen to early-seeded, non-nodulating soybean planted on virgin ground.

I like to speak from data and I don't have a ton of data to speak from

So with these caveats in mind here is my thought process for asking growers and crop consultants to think twice before applying nitrogen to poorly nodulated soybean fields.
First lets start with the problem. A record number of soybean acres were planted in 2014. To get those acres both virgin ground as well as long term continuous corn acres were converted to soybean. For the most part (unless someone forgot) those acres did receive a 1x or 2x rate of inoculant. Unfortunately the perfect storm of delayed planting, poor planting conditions, compaction and poor environmental conditions all led to saturated anaerobic soil conditions that limited rhizobia infection. These poor establishment conditions were then followed by poor early season growth conditions (cool saturated soils) delayed herbicide applications, increased herbicide rates and weed competition that further stressed the plants and limited infection.

So with all this stress in mind why do I suggest no additional nitrogen?

1. Once soils dry out and aerobic conditions resume the ethylene stress response in plants quickly dissipation and normal N-fixation can resume. This will lead to nodulation occurring on lateral roots as infection occurs behind the root tip of actively growing root. Furthermore once plant roots resume normal growth they will be able to take advantage of residual and mineralized soil nitrogen which will alleviate the pale green coloration.

2. Be realistic with your yield potential. Many of the fields in question are late planted, with stunted soybeans and thin stands. A short soybean crop will require much less N than a big one. Salvagiotti et al; (2008) indicated in "Nitrogen uptake, fixation and response to fertilizer N in soybeans: A review" that the most likely soybean response to additional nitrogen was in high yield environments.

3. Be realistic with your expected yield loss in non-nodulated virgin soil environments. Somewhere the idea of a 20 bu yield loss has been floating around the coffee shops. Our most recent data from a virgin soil site in 2010 showed an average +4.6 bu yield gain (range: -0.9 to 9.6 bu depending upon product) from inoculants. The untreated uninoculated check averaged 73.5 bu per acre. Also remember no history of soybean = low soil borne disease pressure and beautiful healthy roots!

4. What are your 2014 beans marketed at $14.00 or $11.92 and dropping?

5. What source of nitrogen are you going to apply and what is that cost per pound coupled with application cost and crop damage?

- Simple math equation (please insert your number for mine). 70 pounds of urea @ $0.55 per pound + $8 application cost + $10.26 yield loss from running down soybeans (90 foot applicator = 1.9% on 45 bu $12 beans) = $56.76. At $12 soybeans you would need 4.73 bu to break even. Our average response in 2010 was 4.6 bu.

I know not everyone will agree with my thought process but understand that I am cognizant of the realities of today’s production ag world….high land rent costs coupled with high commodity prices = grower risk aversion. If you do apply nitrogen please leave at least one yield check and be fair to that yield check placement. Given our climate variability this will not be the last time we deal with this question and having data to streamline recommendations in future years makes us all better stewards and producers.

*Reviewed by Dr. Seth Naeve, Extension Soybean Agronomist, University of Minnesota.

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### Vegetable Crop Update 7/18/14 and Disease Supplement #2

The 14th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, blitecast and P-Days for late blight and early blight management, a cucurbit downy mildew update, a basil downy mildew update, a cucurbit powdery mildew update, Plant Disease Diagnostic Clinic updates, and Spotted Wing Drosophilus updates. Click here to view this issue.

Disease Supplement #2 is also available. This supplement contains a late blight update. Click here to view this supplement.

### Additional WI Late Blight Update

Amanda Gevens, Extension Plant Pathologist in Potatoes and Vegetables

The late blight collected from potato in Portage County on Friday July 18, 2014 is of the US-8 genotype/strain. This type is resistant to mefenoxam/metalaxyl fungicides (ie: Ridomil) and is an A2 mating type. While all other Phytophthora infestans genotypes from the U.S. in 2014, so far, have bee US-23, the US-8 type predominated in the 1990's and was found in Portage County in 2013. US-8 is known to infect both tomato and potato (much like the US-23 genotype).

At this time, it is important for potatoes and tomatoes in the Portage County area (plus roughly 50 miles radius) to be preventively managing late blight with effective fungicides. Anti-spourulant fungicides are particularly useful at this time. A 5- to 7-day spray interval is recommended. For production further away from this site, a 7 day program should be appropriate.

There is rain in the forecast for Tues for parts of the state – and then more precipitation forecasted for the week’s end.
**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 July 12, 2014 through July 18, 2014.

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<td>Unidentified virus, Dane</td>
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<td>Strawberry,</td>
<td>Stem End Rot</td>
<td><em>Gnomonia</em> sp., Waushara</td>
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<td>Basil,</td>
<td>Downy Mildew</td>
<td><em>Peronospora belbahrii</em>, Dane</td>
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<td>Anthracnose</td>
<td><em>Colletotrichum orbiculare</em>, Rock</td>
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<td>Stem and Bulb/Bloat Nematode</td>
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<td><em>Xanthomonas campestris</em>, Racine</td>
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<td>Mustard Greens,</td>
<td>White Rust</td>
<td><em>Albugo candida</em>, Racine</td>
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<td>Squash,</td>
<td>Phytophthora Crown/Root Rot</td>
<td><em>Phytophthora capsici</em>, Green Lake</td>
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<tr>
<td>Tomato,</td>
<td>Bacterial Canker</td>
<td><em>Clavibacter michiganensis</em> subsp. <em>michiganensis</em>, Portage</td>
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</tr>
</tbody>
</table>

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

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**Cercospora Leaf Blight and Purple Seed Stain of Soybean**

Damon L. Smith, Extension Field Crops Pathologist, University of Wisconsin

Over the last several weeks, soybean samples have been coming into the Plant Disease Diagnostic Lab with symptoms of Cercospora leaf blight (CLB). I have also received numerous questions about the disease and have observed CLB in several soybean fields around the state.

![Figure 1: Bronzing of soybean leaves caused by Cercospora leaf blight](image)

**What does Cercospora leaf blight look like?** Symptoms of CLB often appear during the reproductive phase of soybeans, but can appear earlier if conditions are conducive. Typically the upper leaves of the plant that are exposed to the highest levels of sunlight will show symptoms. These symptoms include a bronze (Fig. 1) to purple (Fig. 2) blotchy appearance on the leaves. Subsequent angular lesions can manifest on the upper and lower leaf surfaces. Lesions can grow together causing leaf death and defoliation under severe cases. The fungus that causes this damage is *Cercospora kikuchii*, which is the same fungus that causes purple seed stain of soybean (Fig. 3). Heavily infected seed can cause seedling blight and reduce stands. Less severely infected seed can survive but may be stunted or show reduced vigor. Typically in Wisconsin, damage by CLB is often not severe. Leaf discoloration is the typical symptom and defoliation is usually limited. However, frequent scouting during the early reproductive phase of soybean can help with monitoring the severity of CLB during seed set.

**How does Cercospora leaf blight spread?** Primary inoculum can come from infected seeds or from old soybean debris on the soil surface. Infections are favored by humid conditions that result in heavy dew events. Warmer air temperatures (at or above 82 F) favor conidial formation and dispersal, which can result in secondary infection. Incidence of the seed stain phase of disease has been correlated with higher levels of spore dispersal during the season.
How should Cercospora leaf blight be managed? Soybean cultivars vary in their resistance to CLB. In fields were CLB has been a problem, cultivars with resistance should be chosen. Residue management is also important. Fields with short rotations and/or reduced tillage can have higher levels of CLB. Good quality seed should also be planted. Seed lots with high levels of purple seed stain should be avoided. Some recent data suggests that the severity of CLB might be reduced by the use of a foliar fungicide in fields with high incidence of disease. For information on efficacy of products for CLB, click here. Note that many products are labeled as just “fair” and no product was rated “good” for CLB. Therefore, a CLB management plan SHOULD NOT focus solely on foliar fungicide use, but should use an integrated management approach. In addition, severity from CLB in Wisconsin will often not be high enough to justify fungicide treatment. Scout carefully!

Reference
AGRONOMY/SOILS FIELD DAY
Wednesday, August 27, 2014
Arlington Agricultural Research Station

AGENDA

8:00  Registration & Coffee

8:30  Soils, Forages, and Greenhouse Gas Tours depart

10:30 Grains, Forages, and Greenhouse Gas Tours depart

12:00 Lunch provided by Badger Crops Club ($5 donation)
       Demonstration of UAV with aerial photography

1:00  Grains and Soils Tours depart

Note: All tours are only offered twice. Tours depart promptly as scheduled.

TOURS

Grains
• Herbicide resistance in Wisconsin corn and soybean:
  Take action (Vince Davis)
• Prescription seeding rates and climate impact on
  Midwestern soybean (Shawn Conley & Ethan Smidt)
• Maximum yield systems research for corn (Joe Lauer)
• Going "old school" to manage corn rootworms
  (Bryan Jensen)

Soils
• Strategies for crop residue management (Francisco Arriaga)
• Nitrogen sensor research for corn and wheat (Carrie Laboski & Haily Henderson)
• Using rolled cover crops in organic and conventional soybean production (Erin Silva)

Greenhouse Gases & Wisconsin Agriculture
• Introduction to greenhouse gases (Matt Ruark)
• Greenhouse gas emissions from three crop rotations in Wisconsin (Maciek Kazula & Joe Lauer)
• Influence of weed management on nitrous oxide emissions (Becky Bailey & Vince Davis)
• Greenhouse gases from dairy-based rotations (Sarah Collier & Matt Ruark)
• Greenhouse gases and biofuel production (Randy Jackson)

Forages
• Perennial forages are essential for long-term carbon storage in Wisconsin’s prairie soils (Gregg Sanford)
• Cautions when harvesting wet forage (Dan Undersander)
• What level of weed control is needed to ensure alfalfa establishment? (Mark Renz)
• Common alfalfa diseases for 2014 and management options (Damon Smith)

Visit exhibits between tours and during lunch: Apps for Ag; Nutrient & Pest Management Program; Integrated Pest Management Program; SnapPlus; and more!

The Arlington Research Station is located on Hwy. 51, about 5 miles south of Arlington and 15 miles north of Madison. Watch for Field Day signs. GPS coordinates: 43.300467, -89.345534

For more information contact the Dept. of Agronomy 608/262-1390 or the Dept. of Soil Science 608/262-0485

In the event of rain, presentations will be held inside.

Sponsored by the UW-Madison College of Agricultural and Life Sciences and UW-Extension.

► Certified Crop Advisors: 6.0 CEU credits requested ◄
Crop and Pest Management Workshop August 5th
Registration is still open for UW-Madison Integrated Pest Management Program’s Crop & Pest Management Workshop to be held August 5, 2014.

**FAST and easy ONLINE registration by credit card:**
[https://patstore.wisc.edu/ipm/register.asp](https://patstore.wisc.edu/ipm/register.asp)

**Crop & Pest Management Workshop**
Date: August 5, 2014
Location: Arlington Ag Research Station
CCA CEU’s: 1.0 Crop, 3.0 IPM, 1.0 Nutrient Management
Tiered fee: $75 before 7/25/14, $90 after 7/25/14

A multi-disciplinary and in-depth workshop covering agronomic concerns ranging from identification of crop and pest production problems to management options within production systems.

**Topics Covered:**

**Nutrient uptake and partitioning in soybean** – Shawn Conley, Extension Soybean and Small Grains Specialist
Soybean nutrient requirements change with developmental stage
Learn to understand these nutrient requirements and their effects on the growth and development of high yielding soybeans

**Herbicide Mode of Action** – Vince Davis, Extension Weed Specialist
Understanding herbicide mode of action is critical to developing effective resistance management strategies
This session will emphasize herbicides and emerging crop technologies, their use and resistance management strategies

**The trait game** – Bryan Jensen, UW Integrated Pest Management Specialist
This session begins with a brief discussion on the biology and current management problems of Bt resistant western corn rootworm
Learn to evaluate multiple corn rootworm management strategies for their efficacy and effectiveness in delaying the development of resistance

**SCN / SDS Interaction** – Damon Smith, Extension Plant Pathology Specialist
Soybean cyst nematode and sudden death syndrome are both major yield limiting problems in soybean
Learn to recognize/diagnose crop symptoms and discover where current research is on interactions between SCN and the SDS causing fungus

**Spray drift mitigation in crop pest management** – Daniel Heider, UW Integrated Pest Management Specialist

For more information:
[https://ipm.wisc.edu](https://ipm.wisc.edu)
[https://ag.wisc.edu](https://ag.wisc.edu)
Drift reduction has made great strides, but new emerging herbicide resistant technologies will require you to remain vigilant on drift.

Evaluate nozzles and other drift reduction technology in a field setting to better understand drift and how to manage it.

The workshop will be hosted at the Arlington Agricultural Research Station. Be aware that this is not a “traditional” field day. These training sessions are designed to be primarily in-field and hands-on. We advise that attendees come prepared to be in the field and ready for all types of weather.

Contact Dan Heider at 608-262-6491, or email djheider@wisc.edu

Click on the link below to view the flyer for this workshop.

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**Vegetable Crop Update 7/26/14 and Disease Supplement #3**

The 15th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, Blitecast and P-Days for late blight and early blight continued management, a Cucurbit downy mildew update, an update on Onion downy mildew in MI, and Plant Disease Diagnostic Clinic updates.

Click [here](http://ipcm.wisc.edu/download/CDTC2014-flyer6.pdf) to view this issue.

Disease Supplement #3 of the Vegetable Crop Update is also available. This supplement provides updates on the status and management of late blight in tomato and potato in Wisconsin.

Earlier today (Wednesday), late blight was confirmed on conventionally managed tomato in Milwaukee County, WI. We do not yet know the genotype of the pathogen, but we will report this information in upcoming UWEX Veg Crop Update newsletters. This is the second WI county with a late blight report for 2014.

Please note management recommendations in this supplement for ALL producers of tomato and potato. This is a community disease and one that all growers of susceptible crops must be aware of and manage to limit crop losses and potentially great economic losses. Also, overall management helps to limit the need for more intensive fungicide use which is beneficial to people, the environment, and the economic bottom line of all producers.

Click [here](http://ipcm.wisc.edu/download/CDTC2014-flyer6.pdf) to view this supplement.

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**Wisconsin Pest Bulletin 7/24/14**

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. 12 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

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**New Video: How to validate your corn root worm management**

Bryan Jensen, IPM Program

Mid to late July in Wisconsin is the time you can validate your corn rootworm management decisions by checking for root damage. This is the time period just after feeding damage would have occurred, and just before regrowth would start to mask the damage.

Knowing how your 2014 corn rootworm control practice performed can go a long way to improving your comfort level as you make decisions for 2015. Digging, washing and evaluating corn roots can also answer questions you might have regarding the potential for damage on first year corn. You cannot assume lodged corn is a result of rootworm feeding nor can you assume straight standing corn does not have rootworm feeding. Digging roots prior to significant root regeneration can answer several questions and make decision more effective in 2015. Please review this video is you have any questions.

Click on the image below to view this video.
## Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 July 19, 2014 through July 25, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIELD CROPS,</strong> Soybean, Bacterial Blight, <em>Pseudomonas savastanoi</em> pv. <em>Glycinea</em>, Lafayette</td>
</tr>
<tr>
<td>Soybean Bacterial Blight, Cercospora Blight, <em>Cercospora kikuchii</em>, Washington</td>
</tr>
<tr>
<td>Soybean Bacterial Blight, Phytophthora Root Rot, <em>Phytophthora</em> sp., Lafayette</td>
</tr>
<tr>
<td><strong>FORAGE CROPS,</strong> Alfalfa, Aphanomyces Root Rot, <em>Aphanomyces euteiches</em>,, Vernon, Allamakee (IA)</td>
</tr>
<tr>
<td>Alfalfa, Root/Crown Rot, <em>Fusarium</em> sp., <em>Pythium</em> sp., <em>Rhizoctonia</em> sp., Vernon, Allamakee (IA)</td>
</tr>
<tr>
<td><strong>FRUIT CROPS,</strong> Apple, Root Rot, <em>Pythium</em> sp., Door</td>
</tr>
<tr>
<td>Apple, Sphaeropsis Canker, <em>Sphaeropsis</em> sp., Jackson, Marinette</td>
</tr>
<tr>
<td>Apple, Winter Injury, None, Door, Jackson, Cherry, <em>Powdery Mildew</em>, <em>Oidium</em> sp., Dane</td>
</tr>
<tr>
<td>Cranberry, Protoventuria Early Leaf Spot, <em>Protoventuria</em> sp., Wood</td>
</tr>
<tr>
<td>Grape, Downy Mildew, <em>Plasmopara viticola</em>, Dane</td>
</tr>
<tr>
<td><strong>VEGETABLES,</strong> Beet, Cercospora Leaf Spot, <em>Cercospora beticola</em>, Fond du Lac</td>
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<td>Cabbage, Black Rot, <em>Xanthomonas campestris</em>, Outagamie</td>
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<tr>
<td>Garlic, Fusarium Basal Plate Rot, <em>Fusarium oxysporum</em>, Jackson</td>
</tr>
<tr>
<td>Onion, Fusarium Basal Plate Rot, <em>Fusarium oxysporum</em>, Jackson</td>
</tr>
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<td>Onion, Stemphylium Leaf Blight, <em>Stemphylium</em> sp., Green Lake</td>
</tr>
<tr>
<td>Tomato, Septoria Leaf Spot, <em>Septoria lycopersici</em>, Dane</td>
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</tbody>
</table>

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

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## Wisconsin Soybean Phytophthora Root Rot Survey Update

Damon Smith, Extension Field Crops Plant Pathologist

Anette Phibbs, Plant Pathologist with the Wisconsin Department of Agriculture and Consumer Protection, reports that the 2014 survey of early vegetative soybeans shows high levels of Phytophthora root rot disease caused by *Phytophthora sojae*. Nearly half of soybean fields sampled from June 6 to July 16 in 35 surveyed counties were infected with this fungus-like pathogen. Lab testing of root samples showed 26 out of 53 (49%) fields tested positive for *P. sojae*. Fields that tested positive were found in the following 15 counties: Barron, Clark, Dane, Green, Jefferson, Kenosha, Lafayette, Manitowoc, Marathon, Ozaukee, Rock, Sheboygan, St. Croix, Walworth, Winnebago. Counties were the problem was not encountered should not expect to be free from the disease. This is the highest prevalence of soybean root rot since the start of this survey in 2008. During the flood prone spring of 2010 the pest survey team found 38% of fields infected. This high prevalence of Phytophthora root rot throughout the surveyed area is no doubt due to heavy rainfalls causing saturated soils and relatively low temperatures this spring which have been very conducive to this water mold. A relatively new *Phytophthora* species, *P. sansomeana*, was detected in soybean roots in Calumet, Dunn and Eau Claire Counties. This pathogen was first detected in Wisconsin soybeans in 2012 in Jefferson, Marathon and Sheboygan counties; again in 2013 in Dane, Green, Outagamie and Sheboygan counties. Research into *P. sansomeana*’s potential effect on soybean and corn are ongoing.

For more about Phytophthora root rot of soybean, visit an informational webpage by clicking here and scrolling down to “Phytophthora Stem and Root Rot” or download a UWEX fact sheet by clicking here. Specific questions can be directed to Damon L. Smith, Field Crops Extension Pathologist, University of Wisconsin-Madison at dsmith26@wisc.edu.
Bur and Wild Cucumber; Two Native Vines Common in Wisconsin
Mark Renz, Extension Weed Specialist, UW-Madison

Now is the time of year when we start to notice vines climbing trees, crops, and even structures. While Wisconsin has over 50 plants categorized as vines, bur (*Sicyos angulatus* L.) and wild (*Echinocystis lobata* (Michx.) Torr. & A.Gray) cucumber are two of the most common found in Wisconsin. If you see a vine that has small white flowers in August, chances are that it is one of these two species. While many characteristics are present to differentiate between the two, the easiest is to look at the leaves, as they are quite distinct. See below for pictures from the Arlington Ag. Research Station taken in Late July of this year.

Both are native annuals fairly well distributed throughout the state. While these germinate in late April to early May (seedlings look very similar to cucumber seedlings), they are usually not identified until they produce small white flowers (July-August) when vines are over 10 feet in length. Vines typically are intertwined in other plant material, making it extremely difficult to remove the entire vine. If possible, look for where the vine attaches to the soil and pull/cut the stem at this point. The remaining tissue will die as its supply from the roots has been severed. Several herbicides are also effective, but make sure the plant it is wrapped around is tolerant to the herbicide you plan to use.

If seen in an agricultural setting I recommend managing this plant before it produces seed as these will require management in future years. If in natural or non-crop areas, admire it as unique native vegetation of Wisconsin.

For more information about wild cucumber and some great photos see: [http://wimastergardener.org/?q=WildCucumber](http://wimastergardener.org/?q=WildCucumber)
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Wisconsin Pest Bulletin 7/31/14
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. 13 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Plant Disease Diagnostic Clinic (PDDC)
Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and
Catherine Wendt, Plant Disease Diagnostics Clinic
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 July 26, 2014 through
August 1, 2014.

FIELD CROPS,
Corn, Anthracnose, Colletotrichum graminicola, Grant, Rock
Corn, Fusarium Root Rot, Fusarium sp., Rock
Corn, Yellow Leaf Blight, Phylllosticta maydis, Rock
Soybean, Alfalfa Mosaic, Alfalfa mosaic virus, Columbia,
Grant
Soybean, Pythium Root Rot, Pythium sp., Grant
Soybean, Soybean Cyst Nematode, Heterodera glycines,
Marathon

FORAGE CROPS,
Alfalfa, Aphanomyces Root Rot, Aphanomyces euteiches, Wood
Alfalfa, Phytophthora Root Rot, Phytophthora sp., Wood
Alfalfa, Root/Crown Rot, Fusarium oxysporum, Pythium sp.,
Wood

FRUIT CROPS,
Peach, Root/Crown Rot, Phytophthora sp., Pythium sp.,
Racine
Raspberry, Raspberry Leaf Spot, Cylindrosporium rubi,
Winnebago
Raspberry, Root/Crown Rot, Pythium sp., Rhizoctonia
solani, Fusarium sp., Cylindrocarpon sp., Winnebago

NEEDED WOODY ORNAMENTALS,
Fir (Balsam), Root/Crown Rot, Phytophthora sp., Chippewa

VEGETABLES,
Alfalfa Mosaic Virus on Soybean in Wisconsin

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

Calls, photos, and plant samples have been coming in over the last week (8/1/2014) pertaining to soybeans exhibiting abnormal growth and varying degrees of leaf mosaic (interwoven green and yellow areas). These symptoms are indicative of Alfalfa mosaic virus (AMV) on soybean.

Figure 1. Alfalfa mosaic virus symptoms on soybean leaves in the field.

Alfalfa mosaic virus

Alfalfa mosaic virus is transmitted in low levels in soybean seed (Tolin, 1999). Aphids transmit AMV. Symptoms of AMV can vary from localized dead lesions on leaflets (Fig. 1), to large areas of yellowing (Fig. 2). Plants can also be stunted and produce few pods. In Wisconsin, research has shown that yield reductions can can occur as a result of AMV. However, in those studies, only AMV incidence levels of 30% or greater resulted in yield loss (Mueller and Grau, 2007).

Figure 2. Severe symptoms of Alfalfa mosaic virus on soybean leaflets.

When trying to scout or diagnose a field with AMV consider the incidence (number of plants exhibiting symptoms) level of the symptomatic plants. Giesler and Ziems (2006) conducted a survey of AMV, BPMV, and SMV in Nebraska in 2001 and 2002. In that survey it was possible to find an occasional field with incidence of these viruses as high as 90-100%. However, the majority of fields that tested positive for one or more of these viruses, had incidence levels of 50% or less. High incidence levels (>50%) are considered unusual for AMV in commercial soybean fields. Therefore, incidence of leaf cupping or other abnormal leaf growth at incidence levels of 90% or 100% are more likely suggestive of an abiotic disorder, such as herbicide injury.

Co-infection of soybean by AMV and Soybean mosaic virus (SMV) can also occur (Malapi-Nelson et al., 2009). Co-
infection can make symptoms of AMV much more severe. In cases where severely infected plants are identified with AMV, tests of SMV may also result in confirmation of that aphid-transmitted virus too.

How is the AMV Spread?

AMV is transmitted by mechanical wounding and also by aphids (several species, not just soybean aphid). AMV can also be transmitted at low levels in soybean seed.

Management

No in-season management is recommended. Spraying insecticides to control aphids in order to reduce virus transmission has shown to be unsuccessful. One reason for this is that many species of aphids can move into a soybean field and transmit the virus. The best solution for managing AMV (and also SMV) is to choose a soybean variety with the best resistance to AMV and SMV you can find in your area. Remember, spraying aphids below threshold with an insecticide will only control the vector and won’t solve your virus problem.

To learn more about AMV and SMV click here.

References


Vegetable Crop Update 8/2/14 and Disease Supplement #4

The 16th issue of the Vegetable Crop Update is now available. This issue contains late blight updates - Portage and Milwaukee Cos., Blitecast and P-Days for late blight and early blight continued management, Cucurbit downy mildew updates - none in WI so far, Onion downy mildew in WI - first find in Jefferson Co., and Plant Disease Diagnostic Clinic updates. Click here to view this update.

The 4th Disease Supplement of the Vegetable Crop Update is now available. This supplement provides an update on the status of late blight character in Milwaukee County. The tomato late blight was typed as US-23 (A1 mating type, sensitive to mefenoxam/metalaxyl, aggressive on tomato and potato). Click here to view this supplement.

Updating base acres and payment yields under the new Farm Bill

Paul D. Mitchell, Agricultural and Applied Economics, UW-Madison

The USDA-FSA just announced that they will begin sending letters to eligible farmers that report two types of information: 1) their current base acres and payment yields, and 2) their historical acres planted and considered planted for program crops during 2009-2012. This information will be coming at a busy time of year for most farmers, but it is important for farmers to check the accuracy of this information and begin assembling crop production records to combine with this information, as it will impact their options for commodity program signup this winter and the level of their payments under these programs.

The new Farm Bill gives farmers three sign up options for commodity support: PLC, county ARC or individual ARC. PLC is Price Loss Coverage and is essentially the same the previous counter cyclical payments programs, but with higher target prices. ARC is Agriculture Risk Coverage, a revenue support program that makes payments based on county revenue outcomes on a crop by crop basis (county ARC) or based on whole farm revenue outcomes (individual ARC). Final program details for PLC and ARC have yet to be announced, and the signup date and deadline for the decision has yet to be determined, but will likely come this winter. Expect more information about PLC and ARC this fall.

The first step for commodity program signup under the new Farm Bill is the potential for farmers to update their base acres and program yields. Once updates are completed, then the signup for PLC and ARC can begin. This letter from the FSA is the start of the base acre and program yield updating process. This short fact sheet explains what to do with the letter and who to prepare for the next step. Current information will be available on the USDA-FSA Information Page: Base Reallocation, Yield Updates, Price Loss Coverage (PLC) & Agricultural Risk Coverage (ARC): https://www.fsa.usda.gov/FSA/webapp?area=home&subject=arpl&topic=landing.

Confirm your Data

Total base acres for each FSA farm cannot be increased under the new Farm Bill, but farmers will be able to shift the mix of their base acres to match the crops they planted in the four years 2009-2012. Given crop prices during this period, many farmers may have planted more corn and soybeans than their current base acre allocations. Updating base acres for these farmers will allow them to shift more base acres to corn and soybeans, crops that likely have higher potential payments. Farmers should confirm that the current base acres and associated crops on their letter match the base acres and crops for which they had received direct payments in years past. Farmers should also confirm that the historical planted and considered planted acres on their report from FSA match what
they actually planted during 2009-2012, since these historical acreages will define their options for updating their base acres. Once dates for the updating process are announced, farmers can correct any discrepancies with their FSA office. Farmers will not be required to update their base acre crop mix, but many will likely find it beneficial, as the crops associated with their base acres will define their payments for PLC and/or ARC.

**Prepare for the Next Step**

The new Farm Bill also allows farmers to update their payment yields. If elected, the new payment yield for a crop will be 90% of the farm average yield per planted and considered planted acre during the five years 2008-2012. Farmers will likely want to update their payment yields if these yields are higher than their current payment yields, since higher payment yields improve their options under the new Farm Bill commodity support programs.

Higher payment yields increase PLC payments when these payments are triggered, and they increase the ARC Farm Guarantee for the individual ARC program, making ARC payment more likely to be triggered and larger if they are triggered. However, payment yields will not affect payments for the county ARC program, since these payments are only triggered by county yields and national prices. Another reason to update payment yields is that it may be several years before payment yields can again be updated and any new commodity support programs under future farm bills will likely use similar measures to determine payments.

The letter from the FSA will not include any of production information. To be prepared when signup dates and deadlines are announced for updating program yields, farmers may wish to pull together their 2008-2012 historical production records for their farms. For most farmers, crop insurance records will prove useful for this process, but FSA will make the final determination regarding the sufficiency of production records.

**Final Comments**

The new Farm Bill created several new commodity support programs. For most farmers, updating base acres and program yields will likely to their first experience with the new Farm Bill, but several more programs and options are coming. Besides PLC and ARC, for which signup has yet to be announced, signup for the new dairy Margin Protection Program (MPP) begins September 2, and the sales closing date is September 30 for the new crop insurance Supplemental Coverage Option (SCO) available for winter wheat farmers in several Wisconsin counties. In the meantime, farmers should confirm the acreage data in the letter they receive from the FSA, begin to assemble their crop production data, and wait for the FSA to announce signup dates so they can correct any crop acreage discrepancies and update their payment yields.

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**2014 WI Soybean Yield Contest Entry Deadline is September 1**

Shawn Conley, Soybean and Wheat Extension Specialist

Wisconsin soybean growers have until September 1, 2014 to enter the Wisconsin Soybean Yield Contest. Two winners from each of four geographical districts in the state will receive awards (Image 1.). "Please note the divisional lines were redrawn for 2014 based on a rolling 10 year average yield". The first place award in each district includes a $1,000 cash prize; second-place honors include a $500 prize. Winners will be selected for having the highest soybean yield based on bushels per acre at 13% moisture. The awards ceremony is scheduled for January 29, 2015 during the Corn/Soy Expo at WI Dells.

For more detailed information regarding the program and contest rules please visit www.coolbean.info or 2014 Wisconsin Soybean Yield Contest Rules.

Entry forms can be found at 2014Wisconsin Soybean Yield Contest Entry Form.

A list of the 2013 winners and a management summary of their practices is also provided.

For more information please contact Dr. Conley at spconley@wisc.edu. Good luck and have a safe and productive 2014 growing season!

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Image 1: Geographic Division Map
Farm Bill in Action: New Type of Crop Insurance Policy for Winter Wheat Available

Paul D. Mitchell, Agricultural and Applied Economics, UW-Madison

The USDA-Risk Management Agency (RMA) released the policy details for Supplemental Coverage Option (SCO), a new crop insurance policy mandated by the 2014 Farm Bill. This fall, SCO is available for winter wheat in select Wisconsin counties, and next spring, SCO will be available for corn and soybeans in several Wisconsin counties. This fact sheet explains how SCO works for winter wheat and the highlights some important implications of SCO for farmer signup for commodity support programs sometime this fall and winter.

The SCO Concept

SCO is a second crop insurance policy that is layered with the standard individual policies Revenue Protection (RP), RP with the Harvest Price Exclusion (RP-HPE) or Yield Protection (YP), so that a farmer must also buy RP, RP-HPE, or YP to buy SCO. For these individual crop insurance policies, expected revenue (or yield) is determined for the farm, then the farmer chooses a coverage level as a percentage of this expected revenue (or yield) as an insurance guarantee. For example, if a farmer chose a 75% coverage level, then the farmer at a minimum always gets 75% of expected revenue (or yield), since the policy indemnifies losses exceeding 25%. In other words, the first 25% of losses below expected revenue (or yield) are covered by the farmer as a deductible. SCO is a county policy that covers part of this deductible for the individual policy.

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The sales closing date is September 30 for any winter wheat crop insurance policy in Wisconsin. The final planting date for insured winter wheat varies across Wisconsin counties, from September 30 across the north to October 5 in the south (see map to the left). Winter wheat is insurable in every Wisconsin county, but a

 Counties with SCO available for winter wheat

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written agreement is needed to insure it in the counties in white on the map.

**SCO and Commodity Support**

The 2014 Farm Bill created two new commodity support programs: Price Loss Coverage (PLC) and Agriculture Risk Coverage (ARC). Signup dates and program details have yet to be announced for these programs, but the expectation is for updating of base acres and payment yields to occur this fall, and then program signup in winter. PLC is very similar to the previous counter cyclical payments program, but with higher support prices, while ARC is a revenue support program. An important issue is that SCO can only be purchased if a farm is enrolled in PLC, but not ARC. In other words, crop acres enrolled in ARC are not eligible for SCO coverage (though individual coverage can still be purchased). This restriction puts farmers considering SCO for winter wheat in a tough spot, since if they purchase SCO, they have implicitly decided to sign up for PLC without knowing the programmatic details or even when the signup date is. As a result, for this year only, farmers can buy SCO and then decide by December 15 whether to pay the premium or to opt out at no cost. December 15 is the acreage reporting date for the winter wheat crop insurance policy and the expectation is that programmatic details for PLC and ARC will be available by then so that farmers can make more informed decisions about SCO, PLC and ARC.

At this time, it is difficult to make recommendations regarding signup for PLC versus ARC. The Farm Bill funded development of farmer decision aids and these should be released soon, but must await the release of programmatic details for PLC and ARC. Thus the recommendation at this time is for farmers potentially interested in PLC to maintain their options and wait for more information. Thus, farmers who grow wheat in the 11 counties where SCO is now available for 2015 may want to “buy” SCO by the September 30 sales closing date to maintain their options. These farmers can then delay SCO premium payment and the actual PLC/SCO versus ARC decision until December 15 when the actual decision for SCO must be finalized (i.e., SCO premiums are due). Note that farmers can sign up for PLC for some crops and ARC for other crops, so that conceptually a farm could enroll their winter wheat base acres in PLC and buy SCO, but use county ARC for their corn and soybean acres (or vice versa). Also, SCO will be available for corn and soybeans in most Wisconsin counties in 2015. Finally, though the PLC versus ARC decision is a onetime decision for the life of this Farm Bill, SCO is an annual purchase decision. As a result, farmers who decide to enroll in PLC for winter wheat do not have to buy SCO this fall in order to be able to buy it in subsequent years.

In general, SCO was developed to give farmers support in years with “shallow losses” when revenues are lower than normal, but above levels that trigger crop insurance indemnities. Farmers who do not find such shallow losses a problematic risk will not find SCO particularly beneficial. The layering of coverage from individual policies and county-level SCO policies is not exact, since farm yields are only correlated with county yield. Farmers whose yields are more closely correlated with the county yield will likely find more value from SCO. The layering of coverage between SCO and the PLC price support program is also not exact. SCO uses the same futures-based price as crop insurance, while PLC uses the national marketing year average price, plus both have different levels for triggering payments. PLC uses a reference price of $5.50 for wheat ($3.70 for corn and $8.40 for soybeans), while the SCO price trigger depends on the chosen coverage level. As a result, in any given year, one of the programs could make payments due to low prices while the other would not.

**Additional Resources**


**Advanced Cropping Technologies Field Days**

A field day highlighting new technologies that can be incorporated in no-till and conventional production will be held Wednesday, August 20, on the Evenstad Farm just east of Belmont on County Hwy G. The program will run from 10:00 a.m. to 1:00 p.m. with lunch served at noon.

The Evenstads are experimenting with nitrogen levels on a field size scale in their no-till production and their study will provide the background for topics to be covered. Dr. Carrie Laboski, UW-Extension Soils Specialist, will explain how maximum return to nitrogen is determined in the Evenstad study and she will discuss the crop sensing technology that is being evaluated as part of this study. Crop sensing is being
studied to determine the accuracy of using crop color to assess nitrogen status and N fertilizer need. The equipment used to apply the range of nitrogen levels studied across the field will be on display.

Dr. Brian Luck, UW-Extension Precision Ag Specialist, will be discussing remote sensing and the sensing technology that is available to farmers. Remote sensing uses color or visible wavelengths and undetectable wavelengths to assess crop condition and help identify nutrient deficiencies, disease problems and weed infestations. This technology will help in treating only affected areas in time to remedy the problem and reduce yield loses. Dr. Luck will also address precision ag technologies that improve equipment control, and the impact this technology has on production management.

Tim Youngquist, Iowa State University Agricultural Specialist, will be discussing his research on prairie buffer strips as an alternative to traditional sod buffers. Prairie buffers can help reduce sediment movement off the field which can be reduced by as much as 95 percent, while phosphorus loss can be reduced by 90 percent and total nitrogen loss by nearly 85 percent.

The public is welcome to attend this field day. Please call the Grant County Extension Office at 608-723-2125 or the Lafayette County Extension Office at 608-776-4820 to register for this event. This program is being presented at no charge but registering will help the Extension Office determine food and refreshment needs. Call Ted Bay at either Extension office if you have questions about this event.

Biggest Weed Contest to be held at the Weed Doctor’s Booth at Farm Technology Days in Stevens Point, Wisconsin

Mark Renz, UW-Madison Extension Weed Scientist

What does a cold winter, a wet spring, and a moderate summer produce? A bumper crop of big weeds! Yes once again weed scientists with University of Wisconsin Extension are holding the biggest weed contest at the 2014 Farm Technology days in Steven’s Point Wisconsin (August 12-14). Reports have already been coming in of people nurturing big weeds to be the 2014 prize winner. Have a weed in your field that you think is big? Cut it down and bring it to Farm Technology days and enter it in the contest.

To submit an entry stop by the Weed Doctors booth in the Progress Pavilion. We will measure the height and width of the specimen and enter it into the daily and overall contests for biggest weed. Winners will not only receive the notoriety as an expert grower of big weeds, but have a choice of weed identification books. The only rules of the contest are that

1. weeds can’t be woody plants (e.g. trees)
2. weeds can’t be poisonous plants
3. weeds must be “donated” for display at the Doctors booth.

Last year’s winner (Japanese knotweed) was 15 ft tall and 6 ft wide. It beat out giant ragweed which came in second and third, but the slender stature of this plant failed to surpass the enormous knotweed plant. Think you have a big weed, pull it and submit it next week; you might have a winning entry.
Insects and Mites
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Wisconsin Pest Bulletin 8/7/14
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. 14 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 August 2, 2014 through August 8, 2014.

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

FIELD CROPS,
Corn, Goss’s Wilt, Clavibacter michiganensis subsp. nebraskensis, Grant

FRUIT CROPS,
Apple, Cedar-Apple Rust, Gymnosporangium sp., Grant
Apple, Fire Blight, Erwinia amylovora, Brown
Apple, Frogeye Leaf Spot, Botryosphaeria obtuse, Grant/Wood
Apple, Phomopsis Canker, Phomopsis sp., Wood
Apple, Sooty Mold, None, Brown
Blueberry, Powdery Mildew, Oidium sp., Eau Claire

VEGETABLES,
Cucumber, Root Rot, Pythium sp., Dane
Melon, Anthracnose, Colletotrichum orbiculare, Dane
Tomato, Septoria Leaf Spot, Septoria lycopersici, Dodge, Rock, Sauk
Tomato, Verticillium Wilt, Verticillium sp., Rock

SOIL,
Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Dane, Rock, Pierce, Sheboygan

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

Goss’s Wilt Confirmed for First Time in 2014 in Wisconsin
Damon Smith, Extension Field Crops Pathologist, Department of Plant Pathology, University of Wisconsin-Madison

This week the University of Wisconsin Plant Disease Diagnostic Clinic confirmed Goss’s wilt in dent corn from Grant County in Wisconsin (CLICK HERE TO SEE THE REPORT). Goss’s wilt has been confirmed in past years in Wisconsin, but this is the first confirmation of the disease for the 2014 season.

Symptoms and Signs
Goss’s wilt is caused by the bacterium Clavibacter michiganensis subsp. nebraskensis. First visual symptoms

Soybean, Charcoal Rot, Macrophominaphaseolina, Sauk
Soybean, Phytophthora Root Rot, Phytophthora sp., Columbia, Sauk, Jefferson
Soybean, Stem Canker, Phomopsis sp., Columbia, Jefferson

Apple, Cedar-Apple Rust, Gymnosporangium sp., Grant
Apple, Fire Blight, Erwinia amylovora, Brown
Apple, Frogeye Leaf Spot, Botryosphaeria obtuse, Grant/Wood
Apple, Phomopsis Canker, Phomopsis sp., Wood
Apple, Sooty Mold, None, Brown
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Cucumber, Root Rot, Pythium sp., Dane
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SOIL,
Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Dane, Rock, Pierce, Sheboygan

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usually appear as gray or yellow stripes on leaves that tend to follow the leaf veins (Fig. 1). Often “freckles”, or brown or green irregular spots, can be observed within the leaf lesions (Fig. 2). Freckles are an excellent diagnostic symptom to confirm Goss’s wilt. Vascular tissue (Fig. 3), husks, and kernels can sometimes take on an orange hue. Occasionally, bacterial ooze or dried ooze can be observed on symptomatic leaves.

Figure 1. Foliar symptoms of Goss’s wilt on a corn leaf. Photo Credit: Larry Osborne, Bugwood.org.

Factors that Cause Disease Development

The Goss’s wilt bacterium overwinters in old corn residue. The bacterium enters the plant through wounds or natural openings. Yield losses will depend on the susceptibility of the hybrid being grown. Factors that put corn fields at higher risk include:

1. Reduced Tillage
2. Continuous corn rotation
3. Planting a susceptible hybrid
4. Hail, wind, or severe weather events causing injury on corn plants

Management

There is currently no research-based method of in-season management of Goss’s wilt. There are some foliar products being marketed for the control of Goss’s wilt, but no efficacy data are currently available. Because this disease is caused by a bacterium, the application of fungicide will not control the disease. Planting resistant hybrids in fields with a history of Goss’ wilt is recommended. Residue management and crop rotations should also be implemented in at-risk fields.

Figure 2. “Freckles” on a corn leaf with Goss’s wilt. Photo credit: Larry Osborne, Bugwood.org.

Figure 3. Orange vascular tissue of a corn plant with Goss’s wilt. Photo credit: Howard F. Schwartz, Colorado State University, Bugwood.org.

Additional Goss’s Wilt Information

University of Nebraska – [http://pdc.unl.edu/agriculturecrops/corn/gosswilt](http://pdc.unl.edu/agriculturecrops/corn/gosswilt)

Purdue University – [https://www.extension.purdue.edu/extmedia/bp/BP-81-W.pdf](https://www.extension.purdue.edu/extmedia/bp/BP-81-W.pdf)

Reference


Vegetable Crop Update 8/9/14

The 17th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, Blitecast and P-Days for late blight and early blight management, a cucurbit downy mildew update, an onion and basil downy mildew update, and Plant Disease Diagnostic Clinic updates. Click [here](http://example.com) to view this issue.
Wisconsin Winter Wheat Performance Tests
2014

Shawn Conley, Adam Roth, John Gaska, Damon Smith

The Wisconsin Winter Wheat Performance Tests are conducted each year to give growers information to select the best-performing varieties that will satisfy their specific goals. The performance tests are conducted each year at four locations in Wisconsin: Janesville, Fond du Lac, Chilton, and Arlington. Trials include released varieties, experimental lines from University breeding programs, and lines from private seed companies. The primary objective of these trials is to quantify how varieties perform at different locations and across years. Growers can use this data to help select which varieties to plant; breeders can use performance data to determine whether to release a new variety.

Follow the link below or scroll down to the end of this newsletter to view the results.


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[Facebook icon] [Twitter icon]
Wisconsin Winter Wheat Performance Tests 2014

Shawn Conley, Adam Roth, John Gaska and Damon Smith
Department of Agronomy
College of Agricultural and Life Science
University of Wisconsin-Madison

www.coolbean.info
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The Wisconsin Winter Wheat Performance Tests are conducted each year to give growers information to select the best-performing varieties that will satisfy their specific goals. The performance tests are conducted each year at four locations in Wisconsin: Janesville, Fond du Lac, Chilton, and Arlington. Trials include released varieties, experimental lines from University breeding programs, and lines from private seed companies. The primary objective of these trials is to quantify how varieties perform at different locations and across years. Growers can use this data to help select which varieties to plant; breeders can use performance data to determine whether to release a new variety.

2014 Year in Review

Acreage and Growing Conditions

Wisconsin saw a 10% decrease in winter wheat acres harvested (260,000) in the 2013-2014 growing season compared to the previous year. Despite poor establishment due to the 2013 drought and extreme cold conditions throughout the winter and severe winterkill in the spring of 2014, the forecasted yield for the 2014 crop is 67 bu/a, up 9 bu/a from last year. Wheat establishment in the fall of 2013 was a challenge due to extreme drought across much of the WI winter wheat growing regions. Wheat germinated late and had poor tiller development prior to winter dormancy. This led to some thin spring stands and weed control problems. Wheat broke dormancy in April and continued to progress one to two weeks behind normal for much of the growing season. Winterkill and severe spring flooding led to thousands of wheat acres to be sprayed out and replanted to either corn or soybean. Furthermore, saturated fields delayed or prohibited many operations to the wheat crop including spring nitrogen, herbicide, and fungicide applications.

Overall, winter wheat yield and test weights were average in 2014. Wheat yields at the Arlington, Chilton, and Fond du Lac locations averaged 98, 103, and 98 bu/a, respectively. The Janesville site was abandoned due to severe winterkill. The Lancaster site was relocated to Fond du Lac county in the fall of 2013.

(Donor: USDA National Agricultural Statistics Service (www.nass.usda.gov))

Diseases

Statewide incidence and severity of powdery mildew was very low in 2014. Low incidence of barley yellow dwarf virus visual symptoms was observed at all variety trial locations. Stripe rust was nearly non-existent at all locations. Leaf rust was identified at all locations in late June, however severity was low on flag leaves (<10%). Some incidence of bacterial leaf streak was also identified in early June at all trial locations. Severity on some varieties was moderate while low or non-existent on others. Cephalosporium stripe was also identified in some plots at the Fond du Lac trial site. The timing of flowering coincided with weather conditions that were favorable for Fusarium head blight in 2014 at the Fond du Lac and Chilton trial locations. Fusarium head blight incidence and severity was low at the Arlington location.
Using This Data to Select Top-Yielding Varieties

As with any crop, variety selection is the most important factor to consider in maximizing winter wheat yield and profitability. When choosing a winter wheat variety, several factors must be considered. These include winter survival, insect and disease resistance, heading date, lodging, test weight, and most importantly, yield. Since no variety is ideal for every location, it is important to understand the crop environment and pest complex that affects your specific region to maximize yield.

- **Yield** is based on the genetic potential and environmental conditions in which the crop is grown. Therefore, by diversifying the genetic pool that is planted, a grower can hedge against crop failure. Select those varieties that perform well not only in your area but across experimental sites and years. This will increase the likelihood that, given next year’s environment (which you cannot control), the variety you selected will perform well. (Table 2 gives an overview of yields across all locations.)

- **Test weight** is also an important factor to consider when selecting a variety. The minimum test weight to be considered a U.S. #2 soft red winter wheat is 58 lb/ bu. Wheat at lower test weights will be discounted. Both environment and pests may greatly affect test weight; therefore, selecting a variety that has a high test weight potential in your region is critical to maximizing economic gain.

  - Select a variety that has the specific disease resistance characteristics that fits your needs. By selecting varieties with the appropriate level of resistance, crop yield loss may be either reduced or avoided without the need of pesticides. Careful management of resistant cultivars through crop and variety rotation are required to ensure that these characteristics are not lost.

- **Plant height and lodging potential** are also important varietal characteristics that may be affected by your cropping system. If the wheat crop is intended for grain only, it may be important to select a variety that is short in stature and has a low potential for lodging. This may decrease yield loss due to crop spoilage and harvest loss as well as increase harvesting rate. However, if the wheat crop is to be used as silage or is to be harvested as both grain and straw, then selecting a taller variety may be warranted.

Experimental Procedures

**At Planting**

- **Site details**: Summarized in front cover image.
- **Seedbed preparation**: Conventional and no-till methods.
- **Seeding rate**: 1.5 million seeds per acre.
- **Seed treatments**: Identified in Table 1.
- **Fertilizer and herbicides**: Nitrogen was applied in spring according to UWEX recommendations. Phosphorus and potassium were applied as indicated by soil tests. Herbicides were applied for weed control as necessary.
- **Planting**: A grain drill with a 9 row cone seeder was used to plant the plots, all 25 feet in length. To account for field variability and for statistical analysis, each variety was grown in four separate plots (replicates) in a randomized complete block design at each location.

**Midseason**

- **Disease assessments**: Foliar disease assessments were made at all trial locations during June at Feekes 10.5.4 (kernels watery ripe). Assessments were made in the field by visual estimation of incidence (number of plants with symptoms) and average severity (magnitude of damage on plants with symptoms) across the plot using pre-made rating scale diagrams generated using the SeverityPro software (F. Nutter, Iowa State University).

  - At Feekes 11.2 (soft dough) Fusarium head blight assessments were made at all trial locations. Entire plots were visually assessed for Fusarium head blight incidence and severity using pre-made rating scale diagrams. Incidence and severity were used to calculate the Fusarium head blight index. Data is shown in tables 4 and 5.

**Harvest**

- **Yield**: The center seven rows of each plot were harvested with a self-propelled combine. Grain was weighed and moisture and test weight were determined in the field using electronic equipment on the plot harvester. Yield is reported as bu/a (60 lb/bu) at 13.5% moisture content.

- **Lodging**: Lodging scores were based on the average erectness of the main stem of plants at maturity. 1 = all plants erect, 2 = slight lodging, 3 = plants lodged at 45° angle, 4 = severe lodging, 5 = all plants flat.

**Data Presentation**

- **Yield**: Listed in Tables 2-5. Data for both 2013 and 2014 are provided if the variety was entered in the 2013 trials.
- **Least significant difference**: Variations in yield and other characteristics occur because of variability in soil and other growing conditions that lower the precision of the results. Statistical analysis makes it possible to determine, with known probabilities of error, whether a difference is real or whether it may have occurred by chance. Growers can use the appropriate least significant difference (LSD) value at the bottom of the tables to determine true statistical differences. Where the difference between two selected varieties within a column is equal to or greater than the LSD value at the bottom of the column, there is a real difference between the two varieties in nine out of ten instances. If the difference is less than the LSD value, there may still be a real difference, but the experiment has produced no evidence of it.
<table>
<thead>
<tr>
<th>Brand &amp; Company Information</th>
<th>2014 Varieties</th>
<th>Seed Treatments</th>
</tr>
</thead>
</table>
| **AgriMAXX** [www.agrimaxxwheat.com](http://www.agrimaxxwheat.com)  
AgriMAXX Wheat Company (855-629-9432) | 413, 427, 438, 447 | Vibrance Extreme, Cruiser SFS |
| **Dienner** [www.biotownseeds.com](http://www.biotownseeds.com)  
BioTown Seeds (219-984-6038) | D492W  
D512W  
XW 1401  
XW 1402 | Warden Cereals, Nitro Shield, Ascend, QuickRoots  
EverGol, QuickRoots  
Dividend Extreme, Cruiser SFS  
Warden Cereals HR, ApronXL, Maxim |
| **DuPont Pioneer** [www.pioneer.com](http://www.pioneer.com)  
| **Dyna-Gro** [www.dynagroseed.com](http://www.dynagroseed.com)  
Dyna-Gro Seed (608-822-5000) | 9042, 9223 | Foothold Extra, Awaken St |
| **Equity Seed** [www.go2dei.com](http://www.go2dei.com)  
Direct Enterprises (888-895-7333) | Guardian, Sienna, Exp 13W34 | Athena |
| **FS Seed** [www.fsseed.com/midwest](http://www.fsseed.com/midwest)  
Growmark, Inc. (309-660-5576) | FS 602, FS 622, FS 626  
FS 625  
WX14A | CruiserMaxx Vibrance Cereals, Thiram, Storicide II  
CruiserMaxx Vibrance Cereals, Storicide II  
CruiserMaxx Vibrance Cereals |
| **Jung** [www.jungseedgenetics.com](http://www.jungseedgenetics.com)  
Jung Seed Genetics (815-441-5030) | 5855, 5930  
5888  
Exp 1099 | Cruiser SFS, Vibrance Extreme  
Warden Cereals, Cruiser SFS  
Thiamethoxam, Mefenoxam, Difenconazole |
| **Kratz Farms** [www.kratzfarms.com](http://www.kratzfarms.com)  
Kratz Farms, LLC (262-644-9426) |KF 15188  
KF 15241  
KF 15314 | Vibrance Extreme  
Rancona, Metalaxyl, Macho 600ST  
Vibrance Extreme, Cruiser SFS |
| **L-Brand** [www.limagraincerealseeds.com](http://www.limagraincerealseeds.com)  
Limagrain Cereal Seeds (309-569-0008) | L-400 | Warden Cereals |
| **L-Brand/VanTreek** [www.limagraincerealseeds.com](http://www.limagraincerealseeds.com)  
VanTreek’s Seed Farm (920-467-2422) | L-241 | Rancona, Metalaxyl |
| **Legacy** [www.legacyseeds.com](http://www.legacyseeds.com)  
Legacy Seeds Inc. (715-467-2555) | LW 1155, LW 1335, LW1370, LW 1375, LXW 1370,  
LXW 1160 LXW 1480, LXW 1485  
LW 1440, LXW 1475  
LXW 1425 | Sativa IM RTU, SabrEx  
Sativa IM RTU, SabrEx  
Athena  
CruiserMaxx Vibrance Cereals |
| **PIP** [www.pipseeds.com](http://www.pipseeds.com)  
Partners in Production (877- GRO-SEED) | 704, 721, 722, 729, 732, 733, 734, 735, 736,  
737, 738, 740, 741, 748, 752, 760, 766, 767,  
782, 783, 792 | Charter, Imidacloprid  
Charter, Imidacloprid  
Charter, Imidacloprid |
| **Pro Seed Genetics**  
Pro Seed Genetics Cooperative (920-388-2824) | PRO 200  
PRO 240, PRO 260, PRO 320A  
PRO Ex 310, PRO Ex 370, PRO Ex 400  
PRO Ex 380  
PRO Ex 410 | Bio-Forge, Macho 600ST, Dividend Extreme  
Bio-Forge, Macho 600ST, Rancona, Metastar, Storicide II  
Bio-Forge, Macho 600ST, Rancona, Metastar  
Bio-Forge, Macho 600ST, Maxim, ApronXL, Warden Cereals HR  
Bio-Forge, Macho 600ST |
| **Public**  
WI Foundation Seeds (608-262-9954) [www.wisconsinfoundationseeds.wisc.edu](http://www.wisconsinfoundationseeds.wisc.edu) | Hopewell, Kaskaskia, Red Devil Brand, Sunburst  
Otsego  
Red Dragon Brand | Bio-Forge, Macho 600ST, Rancona, Metastar, Storicide II  
Bio-Forge, Rexil MD, Macho 600ST  
Bio-Forge, Macho 600ST, Vibrance Extreme |
| **Syngenta** [www.agriprowheat.com](http://www.agriprowheat.com)  
Syngenta Seeds (765-412-5420) | SY 474, SY 483, M09L-9547 | Vibrance Extreme, Cruiser SFS |
| **Van Treeck**  
VanTreek’s Seed Farm (920-467-2422) | XL 334 | Rancona, Metastar |
### Table 2. Combined 2014 Winter Wheat Performance Test Results (continued on next page)

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* Yield is not significantly different (0.10 level) than that of the highest yielding cultivar

1 Four test sites included Arlington, Chilton, Janesville, and Lancaster
### Table 3. Arlington 2014 Winter Wheat Performance Test Results

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* Yield is not significantly different (0.10 level) than that of the highest yielding cultivar
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* Yield is not significantly different (0.10 level) than that of the highest yielding cultivar

1 FHB Index (Fusarium head blight index) = (% severity x % incidence) / 100
Table 5. Fond du Lac 2014 Winter Wheat Performance Test Results (continued on next page)

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1 FHB Index: 1 = none, 3 = high, 5 = very high

2014 means
Table 5. Fond du Lac 2014 Winter Wheat Performance Test Results (continued from previous page)

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<sup>*</sup> Yield is not significantly different (0.10 level) than that of the highest yielding cultivar

<sup>1</sup> FHB Index (Fusarium head blight index) = (% severity x % incidence) / 100
The Wisconsin Winter Wheat Performance Tests were conducted by the Departments of Agronomy and Plant Pathology, College of Agricultural and Life Sciences and the University of Wisconsin-Extension in cooperation and with support from the Wisconsin Crop Improvement Association.

Check the following publications for additional information on small grain production and seed availability. Both are updated annually.

*Pest Management in Wisconsin Field Crops* (A3646) available at learningstore.uwex.edu
*The Wisconsin Certified Seed Directory* available at wcia.wisc.edu

For information on seed availability of public varieties:

**Wisconsin Crop Improvement Association**
554 Moore Hall, 1575 Linden Drive, Madison, WI 53706
(608) 262-1341, wcia.wisc.edu

To access crop performance testing information electronically, visit: www.coolbean.info

**Authors:** Shawn Conley is a Professor in Agronomy; Adam Roth is a Senior Research Specialist, John Gaska is a Senior Research Agronomist in Agronomy, and Damon Smith is an Assistant Professor in Plant Pathology, College of Agricultural and Life Sciences, University of Wisconsin-Madison. S. Conley and D. Smith also hold appointments with University of Wisconsin-Extension, Cooperative Extension. Produced by Cooperative Extension Publishing.
2014 Agronomy/Soils Field Day on August 27th

The Departments of Agronomy and Soil Science in conjunction with the Arlington Agricultural Research Station will host their annual field day on August 27, 2014. The field day will highlight UW-Madison research on emerging technologies, greenhouse gases in agriculture, and relevant crop production issues. The field day will begin at 8:00 am and run until 2:30 pm. Lunch will be provided by the Badger Crops Club for a $5 donation.

Agenda

8:00 Registration & coffee

8:30 Soils, Forages, and Greenhouse Gas Tours depart

10:30 Grains, Forages, and Greenhouse Gas Tours depart

12:00 Lunch with demonstration of UAV with aerial photography

1:00 Grains and Soils Tours depart

Note: All tours are only offered twice. Tours depart promptly as scheduled.

Tours

Grains

- Herbicide Resistance in Wisconsin corn and soybean: Take action (Vince Davis)
- Prescription seeding rates and climate impact on midwestern soybean (Shawn Conley & Ethan Smidt)
- Maximum yield systems research for corn (Joe Lauer)
- Going “Old School” to manager corn rootworms (Bryan Jensen)

Forages

- Perennial forages are essential for long term carbon storage in Wisconsin’s prairie soils (Gregg Sanford)
- Cautions when harvesting wet forage (Dan Undersander)
- What level of weed control is needed to ensure alfalfa establishment? (Mark Renz)
- Common Alfalfa Diseases for 2014 and Management Options (Damon Smith)

Soils

- Strategies for crop residue management (Francisco Arriaga)
- N sensor research for corn and wheat (Carrie Laboski and Hailey Henderson)
- Using rolled cover crops in organic and conventional soybean production (Erin Silva)
- Greenhouse Gases in Wisconsin Agriculture
- Introduction to greenhouse gases (Matt Ruark)
- Greenhouse gas emissions from three crop rotations in Wisconsin (Maciek Kazula and Joe Lauer)
- Influence of weed management on nitrous oxide emissions (Becky Bailey and Vince Davis)
- Greenhouse gases from dairy-based rotations (Sarah Collier and Matt Ruark)
Greenhouse gases and biofuel production (Randy Jackson)

Visit the exhibits between tours and during lunch: Apps for Ag; Nutrient & Pest Management Program; Integrated Pest Management Program; SnapPlus; and more!!

The Arlington Research Station is located on Hwy. 51, about 5 miles south of Arlington. Watch for Field Day signs. GPS coordinates: 43.300467, -89.345534

For more information contact the Dept. of Agronomy 608/262-1390 or the Dept. of Soil Science 608/262-0485.

In the event of rain, presentations will be held inside.

---

**New video – How to scout for corn rootworm beetles**

Bryan Jensen, University of Wisconsin Integrated Pest Management (IPM) program

Corn rootworms (CRW) are a threat to agriculture in Wisconsin due to the damage they can have on corn crop yields. A new video has been created to show you “How to scout for corn rootworm beetles”.

Field averages greater than 0.75 beetles/plant in continuous corn can be expected to have significant egg-laying that would justify larval management the following year.

To scout, walk a “W” shape pattern to reach 10 random sampling areas of the corn field. Count the number of corn rootworm beetles on five plants in each random area of the field. Pick plants that are not right next to each other. Beetles can be found on the tassel, top and bottom of leaves and in the silk. Continue scouting in nine other random areas of the field so that you examine a total of 50 plants. Repeat this scouting procedure at 7-10 day intervals one or two more times.

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**Wisconsin Pest Bulletin 8/14/14**

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. 15 of the Wisconsin Pest Bulletin is now available at:

[http://datcpservices.wisconsin.gov/pb/index.jsp](http://datcpservices.wisconsin.gov/pb/index.jsp)

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**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 August 9, 2014 through August 15, 2014.

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

**FIELD CROPS**,

- Corn, Northern Corn Leaf Blight, *Exserohilum turcicum*, Sauk
- Soybean, Charcoal Rot, *Macrophomina phaseolina*, Adams
- Soybean, Soybean Cyst Nematode, *Heterodera glycines*, Adams

**FRUIT CROPS**,

- Apple, Frogeye Leaf Spot, *Botryosphaeria obtuse*, Columbia, La Crosse
- Apple, Phomopsis Canker, *Phomopsis* sp., Columbia
- Apple, Winter Injury, None, Buffalo, Columbia
- Cranberry, Bitter Rot, *Colletotrichum acutatum*, Wood
- Cranberry, Early Rot, *Phyllosticta vacinii*, Wood

**VEGETABLES**,

- Basil, Downy Mildew, *Peronospora belbahrii*, Kenosha
- Melon, Cercospora Leaf Spot, *Cercospora* sp., Green
- Onion, Downy Mildew, *Peronospora destructor*, Jefferson
- Onion, Stemphylium Leaf Blight, *Stemphylium* sp., Jefferson
- Potato, Late Blight, *Phytophthora infestans*, Portage
- Pumpkin, Phytophthora Root and Crown Rot, *Phytophthora* sp., Rock
- Squash, Angular Leaf Spot, *Pseudomonas syringae pv. lachrymans*, Sauk

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"Corn rootworm: How to scout for corn rootworm beetles..."
Tomato, Bacterial Canker, *Clavibacter michiganensis* ps. *Michiganensis*, Wood

Tomato, *Late Blight*, *Phytophthora infestans*, Racine

Tomato, Yellow Top, None, Dodge

**SOIL,**

Soybean Soil, Soybean Cyst Nematode, *Heterodera glycines*, Fond du Lac, Iowa, Juneau

For additional information on plant diseases and their control, visit the PDDC website at [pddc.wisc.edu](http://pddc.wisc.edu).

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### Big weeds found at the Farm Technology Days event in Portage County

**Mark Renz, Extension Weed Scientist**

Despite the cool summer we had plenty of weeds at the Weed Experts booth this past week. Of the many samples brought in for identification eight participants submitted nine weeds they felt deserved the title of biggest weed at the FTD event for 2014. While none of the samples topped the 13 ft mark like last year, several were quite wide, making up for the lack of height. Of the nine samples submitted, four were annuals, four biennials, and only one perennial plant (common milkweed).

Typically the biennial and perennial plants take the prize, but this year a giant ragweed was the grand champion. Wayne Greeler from Neillsville Wisconsin brought in this specimen what was over 10 ft tall, and seven feet wide. It is uncommon for a giant ragweed to get this wide but the extra girth allowed it to take the grand prize. Tuesday’s winner was another giant ragweed submitted by Ken McGwin from Montello. It was much taller than the grand champion (> 12 feet), but only four feet wide. As we calculate the winner by multiplying the height times the width, this plant fell short of the grand prize. Wednesday’s winner Mary Jane Fry from Pittsville did bring in a massive bull thistle, but its dimensions couldn’t match the winners from Tuesday or Thursday.

All submissions were found next to a barn, shed, fence, or tree. So apparently having a structure nearby helps. Remember this tip when we hold the event next year in Dane County. That is close enough to my home I may consider entering! All daily winners will receive a weed identification book, as thanks for hauling these winning specimens to farm tech days. Anyone who has tried to bring in one of these plants can attest that it is no easy task.

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### Soil Sampling Season Just Around the Corner

**Kim Meyer, Southwest Regional Specialist**

Fall is the ideal time of year to conduct routine soil sampling of your cropland. Not only are there typically more favorable weather conditions for soil sampling as compared to the spring season, but it will also give you the winter months to think about upcoming management decisions based on the soil analysis.

The University of Wisconsin Nutrient and Pest Management Program has a short how-to video on soil sampling basics. The video provides viewers a quick guide on how to prepare for soil sampling, how to soil sample, and how to fill out the soil sample submission sheet to take to the soil testing laboratory. The video ‘Basic Soil Sampling for Wisconsin Agriculture’ can be viewed from the Integrated Pest and Crop Management YouTube channel at [https://www.youtube.com/watch?v=SwBZp_AXYkY](https://www.youtube.com/watch?v=SwBZp_AXYkY), or click on the image below.

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When sampling soils for testing and obtaining fertilizer and lime recommendations, it is important to obtain samples that accurately represent the field from which they were taken. Accurate soil sampling will ensure that the estimated amount of nutrients that should be applied to the field provide the greatest economic return to the farmer. They will also provide information on the variation that exists in the field and show how nutrients are distributed across the farm, as well as provide a basis for monitoring the change in farm fertility over time.

Also available from the University of Wisconsin Extension is publication A2100, ‘Sampling Soils for Testing’. This publication addresses various soil sampling strategies, sampling procedures, as well as other considerations when practising no-till or various tillage systems. The publication A2100 can be downloaded for free at [http://learningstore.uwex.edu](http://learningstore.uwex.edu). The publication is available in the ‘Farming’ category, under ‘Soils’, and ‘Soil Fertility’. Contact your County Agriculture Extension Agent with questions.

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Vegetable Crop Update 8/15/14

The 18th issue of the Vegetable Crop Update is now available. This issue contains late blight updates, Blitecast and P-Days for late blight and early blight management, a Cucurbit downy mildew update, Plant Disease Diagnostic Clinic updates, and a Fresh Market Potato Variety Trial advertisement. Click here to view this issue.

Top 7 Recommendations for Winter Wheat Establishment in 2014

Shawn Conley, State Soybean and Small Grains Specialist, John Gaska, Outreach Specialist
David Marburger, Graduate Student

Top 7 winter wheat establishment recommendations:

1. Variety selection: please see the 2014 WI Winter Wheat Performance Test
2. Plant new seed (DO NOT plant saved seed).
3. A fungicide seed treatment is recommended for winter wheat in WI.
4. Wheat should be planted 1 inch deep.
5. The target seeding rate for wheat planted from September 15th to October 1st is 1,300,000 to 1,750,000 seeds per acre.
6. The optimal seeding rate for wheat planted after October 1st should be incrementally increased as planting date is delayed to compensate for reduced fall tillering.
7. Crop rotation matters.

To continue reading follow the link below or scroll down to the end of this newsletter:


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Top 7 Recommendations for Winter Wheat Establishment in 2014
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7. Crop rotation matters.

Variety Selection

As with any crop, variety selection is the most important factor to consider in maximizing winter wheat yield and profitability. When choosing a winter wheat variety, several factors must be considered. These include winter survival, insect and disease resistance, lodging, test weight, and most importantly, yield. Since no variety is ideal for every location, it is important to understand the crop environment and pest complex that affects your specific region to maximize yield.

Yield is based on the genetic potential and environmental conditions in which the crop is grown. Therefore, by diversifying the genetic pool that is planted, a grower can hedge against crop failure. Select those varieties that perform well not only in your area, but across experimental sites and years. This will increase the likelihood that, given next year’s environment (which you cannot control), the variety you selected will perform well.

Test weight is also an important factor to consider when selecting a variety. The minimum test weight to be considered a U.S. #2 soft red winter wheat is 58 lb/bu. Wheat at lower test weights will be discounted. Both environment and pests may greatly affect test weight; therefore, selecting a variety that has a high test weight potential in your region is critical to maximizing economic gain.

Select a variety that has the specific insect and disease resistance characteristics that fits your needs. By selecting varieties with the appropriate level of resistance, crop yield loss may be either reduced or
avoided without the need of pesticides. Careful management of resistant cultivars through crop and variety rotation, are required to ensure that these characteristics are not lost.

**Plant height** and **lodging potential** are also important varietal characteristics that may be affected by your cropping system. If the wheat crop is intended for grain only, it may be important to select a variety that is short in stature and has a low potential for lodging. This may decrease yield loss due to crop spoilage and harvest loss as well as increase harvesting rate. However, if the wheat crop is to be used as silage or is to be harvested as both grain and straw, then selecting a taller variety may be warranted.

For detailed information regarding winter wheat variety performance please visit [www.coolbean.info](http://www.coolbean.info) for results of the **2014 WI Winter Wheat Performance Test**.

**Plant New Seed in 2014**
- To maximize wheat yields in 2015, it is imperative that growers **plant certified** or private (professionally prepared) seed that is true to variety, clean, and has a high germination percentage (>85%).
- Many wheat fields received a glyphosate application as a harvest-aid. Due **NOT** save seed from those fields as germination rate can be adversely affected.
- Many WI wheat fields also experienced Fusarium Head Blight (FHB), also known as scab in 2014. Kernels from heads infected with scab may be shriveled or shrunken and lightweight. Some kernels may have a pink to red discoloration (Image 1). Others may be bleached or white in color.

![Image 1. Scabby and Tombstone Kernels (Photo courtesy of Karen Lackerman)](image)

If growers absolutely need to plant saved seed due to availability or other economic considerations, the following steps should be taken to increase the likelihood of establishing a legal and good wheat crop.

**Step One:** Determine if you can legally plant the wheat seed you saved. Today, many private wheat varieties now come with statements which buyers sign at the time of purchase, stating that they understand they are not authorized to use the harvested grain for seed. Most current public winter wheat varieties are Plant Variety Protected (PVP) and though you may replant them on your own land, you do not have the right to trade/sell seed of those varieties to others for planting.
Step Two: Once you have determined if you can legally plant the seed you saved, the next step is to clean the wheat seed. It is important that wheat seed be cleaned to remove small and damaged seeds and to eliminate weed seeds. Removing small and damaged seeds will not only aid in crop establishment, but will also provide a more uniform wheat seedling stand. Removing small and damaged seeds will also increase the thousand-kernel weight (TKW), which serves as a measure of seed quality. Wheat seed with TKW values greater than 30 grams tend to have increased fall tiller number and seedling vigor.

Step Three: Perform a germination test. Germination tests can either be completed at home or by sending a sample to the Wisconsin Crop Improvement Association. A home test can be performed by counting out 4 sets of 100 seeds and placing each of them in a damp paper towel. Place the paper towel into a plastic bag to conserve moisture and store in a warm location out of direct sunlight. After five days, count the number of germinated seeds that have both an intact root and shoot. This will give the grower an estimate of % germination. It is important to choose random seeds throughout the entire seed lot and conduct at least 4 - 100 seed counts. If germination is below 85%, consider increasing the seeding rate to compensate; however, we would caution growers from seeding any wheat with a germination test below 80%.

Step Four: Assess the need for a seed treatment. A number of fungicides and insecticides are labeled for use as seed treatments on winter wheat and are listed in Pest Management for Wisconsin Field Crops 2014 (UW-Extension A3646). Seed treatment fungicides protect germinating seed and young seedlings from seedborne and soilborne pathogens. Seed treatment fungicides will not improve germination of seed that has been injured by environmental factors and will not resurrect dead seed. Remember, seed treatment fungicides applied this fall will not protect against potential FHB infection next summer. If seed with scab must be used for planting, a seed treatment fungicide is a must.

Seeding Depth
Wheat should be planted ~1.0 inch deep depending upon soil moisture conditions. Wheat planted less than 0.5 inches deep may result in uneven germination due to seed exposure or dry soil conditions. Shallow planted wheat is also more susceptible to winterkill. Wheat planted more than 1.5 inches deep may result in death due to pre-mature leaf opening or poor tiller development and winter survival. Uniform seed placement and seeding depth are important in promoting crop health in the fall.

Seeding rate and planting date
The targeted fall stand for wheat planted from September 15th to October 1st is between 30 and 40 plants per square foot. This is about 25 seeds per foot in 7.5” rows. To achieve this goal, the seeding rate for soft red winter wheat is between 1,300,000 and 1,750,000 viable seeds per acre (Table 1, 2). Depending upon varietal seed size, this equates to 74 to 175 pounds of seed per acre (Table 3). Our data from the 2012/13 and 2013/14 growing seasons indicate a significant yield increase when increasing your seeding rate from 1.5 and 1.75 million seeds per acre; however that marginal yield increase is likely offset by the increased seed cost. The optimal seeding rate for wheat planted after October 1st should be incrementally increased as planting date is delayed to compensate for reduced fall tillering (Table 1).

Winter wheat and crop insurance (Information courtesy of Michele Austin, Director of Insurance Services; Badgerland Financial)

The Wisconsin winter wheat final planting date varies by county, ranging from September 30th to October 10th. If the wheat is seeded after the county's final plant date (late planting period) the crop insurance guarantee is reduced by 1% per day for the first 10 days. If wheat is seeded after the late planting period, the crop insurance guarantee is reduced to 60% of the original guarantee.

www.coolbean.info
**Special notes regarding the 2015 crop**

- The 2014 Farm Bill offers additional coverage on your winter wheat. You must sign up for the optional SCO (Supplemental Coverage Option) insurance with your crop insurance agent by September 30th for your winter wheat crop. This does not/cannot take the place of your traditional crop insurance policy. Contact your crop insurance agent for details.
- The Trend Adjustment option is available for some Wisconsin counties on Wheat. Talk to your crop insurance agent for more details.
- Winter wheat coverage is not available in all Wisconsin counties.
- Air seeded (flown on by airplane) wheat is not insurable and no premium is charged.
- The final day to turn in a 2014 winter wheat claim is October 31st.
- The 2015 wheat price discovery on CBOT (using September '14 contract) will be determined as follows (this price will be used for both yield protection and revenue protection plans of insurance):
  - The Projected Price tracks from August 15, 2014 - September 14, 2014
  - The Harvest price tracks from August 1, 2015 - August 31, 2015
  - There is a 200% maximum difference between the Base and Harvest Prices with no downside limit.

**Table 1. Wisconsin seeding rate recommendations based on planting date.**

<table>
<thead>
<tr>
<th>Seeds/acre Million</th>
<th>Seeds/sq ft</th>
<th>Row Width (in)</th>
<th>Seeds per foot row</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>0.4</td>
<td>9.2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>0.5</td>
<td>11.5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>0.6</td>
<td>13.8</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>0.7</td>
<td>16.1</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>0.8</td>
<td>18.4</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>0.9</td>
<td>20.7</td>
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<td>12</td>
</tr>
<tr>
<td>1.0</td>
<td>23.0</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>1.1</td>
<td>25.3</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>1.2</td>
<td>27.5</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>1.3</td>
<td>29.8</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>1.4</td>
<td>32.1</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>1.5</td>
<td>34.4</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>1.6</td>
<td>36.7</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>1.7</td>
<td>39.0</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>1.8</td>
<td>41.3</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>1.9</td>
<td>43.6</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>2.0</td>
<td>45.9</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>2.1</td>
<td>48.2</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>2.2</td>
<td>50.5</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>2.3</td>
<td>52.8</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>2.4</td>
<td>55.1</td>
<td>28</td>
<td>32</td>
</tr>
<tr>
<td>2.5</td>
<td>57.4</td>
<td>29</td>
<td>33</td>
</tr>
</tbody>
</table>
Table 2. Seeding rate impact on wheat yield. 2013-14 growing seasons.

<table>
<thead>
<tr>
<th>Seeding rate (million seeds a⁻¹)</th>
<th>Grain yield (bu a⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.25</td>
<td>88.8</td>
</tr>
<tr>
<td>1.50</td>
<td>88.5</td>
</tr>
<tr>
<td>1.75</td>
<td>90.8</td>
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<td>2.00</td>
<td>90.5</td>
</tr>
<tr>
<td>2.25</td>
<td>91.4</td>
</tr>
<tr>
<td>2.50</td>
<td>90.8</td>
</tr>
</tbody>
</table>

LSD (0.10) 1.8


Table 3. Seed size and seeding rate conversion table.

<table>
<thead>
<tr>
<th>Seeds/lb</th>
<th>Seeds per acre (x 1 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Pounds of seed/acre</td>
<td></td>
</tr>
<tr>
<td>10000</td>
<td>100</td>
</tr>
<tr>
<td>11000</td>
<td>91</td>
</tr>
<tr>
<td>12000</td>
<td>83</td>
</tr>
<tr>
<td>13000</td>
<td>77</td>
</tr>
<tr>
<td>14000</td>
<td>71</td>
</tr>
<tr>
<td>15000</td>
<td>67</td>
</tr>
<tr>
<td>16000</td>
<td>63</td>
</tr>
<tr>
<td>17000</td>
<td>59</td>
</tr>
</tbody>
</table>

*This table is based on 100% germination. Adjust your seeding rate by the % germ printed on your bag tag.

Crop Rotation:
Yield data from our long term rotation experiment located at Arlington, WI indicated that wheat grain yield was greatest when following soybean (Table 4) (2010-12, In review Crop Science). Our data suggests that growers should plant wheat after soybean first, then corn silage, corn for grain, and lastly wheat.

Table 4. Winter wheat grain yield following winter wheat, soybean, corn for grain, and corn silage.

<table>
<thead>
<tr>
<th>Rotation</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Wheat</td>
<td>-¹</td>
<td>-¹</td>
<td>38.5</td>
<td>38.5</td>
</tr>
<tr>
<td>Corn-Soybean-Wheat</td>
<td>66.9</td>
<td>89.9</td>
<td>94.4</td>
<td>83.7</td>
</tr>
<tr>
<td>Soybean-Corn(grain)-Wheat</td>
<td>57.8</td>
<td>59.0</td>
<td>81.6</td>
<td>66.1</td>
</tr>
<tr>
<td>Soybean-Corn(silage)-Wheat</td>
<td>72.9</td>
<td>80.5</td>
<td>81.5</td>
<td>78.3</td>
</tr>
</tbody>
</table>

¹Not able to collect data due to extremely low yields

If growers choose to plant second year wheat, several management factors should be considered to reduce risk. First plant a different wheat variety in the second year that possesses excellent resistance to residue-borne diseases. Under no circumstances should growers consider planting bin-run seed in second year wheat. By planting a different variety with strong disease resistance characteristics you can
reduce the likelihood of early disease pressure and significant yield loss. Growers should use a seed
treatment in wheat following wheat. Be aware that seed treatments are not a cure all for all common
diseases in continuous wheat systems (e.g. take-all). Growers should also consider increasing their
seeding rate to 1.8 to 2.0 million seeds per acre in wheat following wheat systems. This will aid in stand
establishment and increase the likelihood of a uniform stand going into the winter. Lastly, if using a no-
till system, planting into a seedbed that is free of living volunteer wheat is important in reducing the
incidence of Barley Yellow Dwarf Virus. Growers should consider a herbicide application to destroy
any living volunteer wheat prior to planting to prevent a “green bridge” for the aphids that vector this
virus.
Insects and Mites
Wisconsin Pest Bulletin 8/21/14

Plant Disease
Plant Disease Diagnostic Clinic (PDDC) Update
Wisconsin Corn and Soybean Disease Update – August 21, 2014

Crops
Vegetable Crop Update 8/23/14

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Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 August 16, 2014 through August 22, 2014.

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

FIELD CROPS,
Corn, Goss’ Wilt, Clavibacter michiganensis subsp. michiganensis, Lafayette
Soybean, Pod and Stem Blight, Pseudomonas sp., Buffalo
Soybean, Root Rot, Rhizoctonia solani, Pythium sp., Fusarium spp., Green Lake, Sheboygan

FRUIT CROPS,
Apple, Cytospora Canker, Cytospora sp., Florence
Cranberry, Early Rot, Phyllosticta vaccinii, Wood
Raspberry, Cane Blight, Coniothyrium fuckelii, Racine
Strawberry, Root Rot, Rhizoctonia solani, Pythium sp., Fusarium spp., Waupaca

VEGETABLES,
Basil, Downy Mildew, Peronospora belbahrii, Washington
Dill, Cercosporoid Leaf Blight, Passalora punctum, Barron
Pepper, Bacterial Spot, Xanthomonas sp., Shawano
Squash (Winter), Phytophthora Crown and Root Rot, Phytophthora capsici, Racine
Tomato, Black Dot Root Rot, Colletotrichum sp., Dane
Tomato, Bacterial Canker, Clavibacter michiganensis ps. Michiganensis, Racine
Tomato, Dagger Nematode*, Xiphinema sp., Dane
Tomato, Septoria Leaf Spot, Septoria lycopersici, Portage, Racine, Shawano

SPECIALTY,
Ginseng, Rusty Root, Rhexocercosporidium sp., Delta (MI)
Tobacco, Barn Rot, Rhizopus sp., Rock

*Diagnosis performed by the UW-Madison Nematode Diagnostic Lab

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

Wisconsin Corn and Soybean Disease Update – August 21, 2014
Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

I have spent the last several days rating and scouting corn and soybeans in the southern tier of Wisconsin. There are a few active diseases out there to keep track of.
Field Corn

In field corn we have found a few fields with low levels of northern corn leaf blight (NCLB). Levels of NCLB seem to be a bit higher in southwestern Wisconsin. Severity on lower leaves in field corn was in the 10 – 15% range, with no damage apparent on ear leaves. Around the Arlington, WI area, NCLB is very limited with only a few lesions evident every 100 ft. or so.

Eyespot is becoming more evident in field corn. In fields with corn debris from a previous crop, the severity levels are in the 25-30% range on lower leaves and 10-15% on ear leaves.

Low levels of common rust (less than 5%) can also be found on some field corn hybrids in Southern Wisconsin.

Southern rust has been reported as far north as east-central Nebraska. The southern rust epidemic is being monitored closely in the Midwest. No southern rust has been found or reported in Wisconsin (Fig. 1).

For more information about corn diseases in Wisconsin, see my previous article by clicking here.

Sweet Corn

Several fields with severe epidemics of NCLB on sweet corn have been reported. These were late-planted fields. Sweet corn is generally more susceptible to NCLB than field corn. Common rust and eyespot can also be found at varying levels on sweet corn in the central and southern portion of Wisconsin.

In research plots at the Arlington Agricultural Research Station, sweet corn planted on June 25th is beginning to tassel. Levels of NCLB are currently low in this field, but common rust is increasing rapidly. Some leaves have 20-25% severity. Any late-planted and/or susceptible varieties of sweet corn should be monitored closely for foliar disease and any decision to spray fungicide should be made by the tasseling/R1 growth stage.

Soybean

The most widespread disease on soybean that we have observed is Septoria brown spot. Overall levels of Septoria brown spot are low, and can mostly only be found on lower leaves, which is typical for this disease. In many cases a fungicide specifically for this disease is not warranted in Wisconsin, unless there are factors that might lead to increased levels of severity, including continuous soybean rotation, very susceptible varieties, or extremely conducive weather. Most soybean fields are past the R3 growth stage, when a fungicide application might be beneficial for control of foliar diseases. However, this disease should be monitored in fields that were planted late.

Downy mildew has also been observed on soybean in various areas from central to southern Wisconsin. Fungicide application for control of this disease has not proven beneficial in university research trials. Therefore, fungicide application is not recommended for this disease under most circumstances. In soybean fields that are irrigated, the frequency between irrigation events should be lengthened in order to reduce the levels of downy mildew. Warmer, dry weather will also further reduce the level of downy mildew.
facilitate future planting and management decision in that field. Fields with white mold should be harvested after fields that do not have white mold. The black survival structures (sclerotia; resemble rat droppings) of the white mold fungus can be easily spread on combines from one field to the next. If harvesting white mold infested fields last is not feasible, care should be taken to thoroughly clean combine mechanisms where soybean trash and debris can be trapped, between fields. For more information about white mold and management of the disease, click here. To watch a short video about white mold you can click here.

Other diseases such as brown stem rot, sudden death syndrome, and stem canker have been found at extremely low levels in soybean fields in Wisconsin this season. This situation should be monitored closely as soybeans approach the R6 and R7 growth stages. These two diseases may become more apparent at that time. Again, good record keeping of where these diseases are found can facilitate future management decisions for those fields.

Vegetable Crop Update 8/23/14

The 19th issue of the Vegetable Crop Update is now available. This issue contains late blight updates (confirmed reports in Portage, Milwaukee, Racine, Adams, and Waushara Counties), Blitecast and P-Days for late/early blight management, Cucurbit Downy Mildew updates, White mold in bean and vegetable crops, and Plant Disease Diagnostic Clinic Updates. Click here to view this issue.

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Wisconsin Pest Bulletin 8/28/14
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. 17 of the Wisconsin Pest Bulletin is now available at:
http://datcpservices.wisconsin.gov/pb/index.jsp

Plant Disease Diagnostic Clinic (PDDC) Update
Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 August 23, 2014 through August 29, 2014.

**FIELD CROPS,**
Corn, Common Rust, *Puccinia sorghi*, Jo Davies (IL)
Corn, Root Rot, *Pythium* sp., Dane
Corn, Southern Corn Leaf Blight, *Bipolaris maydis*, Jo Davies (IL)
Soybean, Brown Spot, *Septoria glycines*, Iowa
Soybean, Downy Mildew, *Peronospora manshurica*, Dane
Soybean, Phylosticta Leaf Spot, *Phylosticta* sp., Dane
Soybean, Phytophthora Root and Stem Rot, *Phytophthora* sp., Lafayette
Soybean, Pod and Stem Blight, *Phomopsis* sp., Dane

**FRUIT CROPS,**
Apple, Sphaeropsis Canker, *Sphaeropsis* sp., Lincoln
Blackberry, Septoria Leaf Spot, *Septoria rubi*, Vernon
Cranberry, Bitter Rot, *Colletotrichum acutatum*, Colletotrichum gloeosporioides, Jackson
Cranberry, Blotch Rot, *Physalospora vaccinii*, Jackson
Cranberry, Early Rot, *Phylosticta vaccinii*, Wood
Cranberry, Tobacco Streak, *Tobacco streak virus*, Wood
Grape, *Downy Mildew*, *Plasmopara viticola*, Milwaukee
Grape, Rupestris Speckle, None, Dane
Pear, Sphaeropsis Canker, *Sphaeropsis* sp., Racine

**VEGETABLES,**
Pepper, Tomato Spotted Wilt, *Tomato spotted wilt virus*, Columbia
Squash (Acorn), Root Rot, *Pythium*, Monroe
Sweet Corn, Northern Corn Leaf Blight, *Exserohilum turcicum*, Columbia
Potato, Cercospora Leaf Blotch, *Cercospora* sp., Columbia
Potato, Early Blight, *Alternaria solani*, Columbia
Potato, Late Blight, *Phytophthora infestans*, Portage
Tomato, Early Blight, *Alternaria solani*, Columbia
Tomato, Late Blight, *Phytophthora infestans*, Marinette, Waukesha
Tomato, *Septoria Leaf Spot*, *Septoria lycopersici*, Columbia, Dane
Tomato, Sour Rot, *Geotrichum* sp., Dane
Stem Canker Prevalent in Wisconsin Soybean Fields
Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

While traveling to soybean fields around Wisconsin this past week, we have noticed quite a bit of stem canker showing up. The UW Disease Diagnostic Clinic has also received several samples of soybean in which the disease has been confirmed.

Stem Canker Pathogens
There are actually two different types of stem canker caused by related, but different fungi. The fungus *Diaporthe phaseolorum* var. *caulivora* causes northern stem canker, while southern stem canker is caused by *Diaporthe phaseolorum* var. *meridionalis*. These two pathogens are part of the larger *Diaporthe-Phomopsis* complex, which consists of Phomopsis seed decay, pod and stem blight, and stem canker. In Wisconsin, northern stem canker is the most common stem canker disease, however, southern stem canker has been found.

What Conditions Favor Northern Stem Canker?
Cool, wet conditions in the spring and early summer favor infection by the northern stem canker fungus. The symptoms of the disease become apparent later in the season. Considering the cool and rainy weather that has been prevalent over much of the state this season, it isn’t surprising that northern stem canker is prevalent.

What Does Northern Stem Canker Look Like?
Initially symptoms of northern stem canker appear as small reddish-brown lesions near nodes. As lesions expand, they can become more brown or gray, but the red border will remain. Eventually lesions of northern stem canker will get large enough to girdle the stems (Fig. 1) and may be confused with Phytophthora root and stem rot. The best way to tell these two diseases apart is to look for the location of the lesion. Generally with northern stem canker, lesions begin at nodes away from the soil line on the main stem and move upward. Phytophthora stem lesions will progress upward from the soil line. Northern stem canker can also occur in patches and damage plants in wide swaths (Fig 2). Northern stem canker can also be confused with white mold when diagnosing above the canopy. Because the lesions can girdle stems, leaf flagging and death can resemble that of white mold damage. Therefore, careful scouting and inspection of the lower canopy and stems in necessary to tell the difference between white mold and northern stem canker.

Management of Northern Stem Canker
Spores of the stem canker pathogen originate mostly from soybean debris from the previous crop. Therefore, severity of northern stem canker can be higher in fields with minimal tillage. Burying debris can help reduce the severity of the disease. Stem canker can also be more prevalent in fields with high fertility and high organic matter. Stem canker-resistant varieties are also available. Choose varieties with the highest resistance rating possible within the appropriate maturity group for your area. Soybeans rotated with alfalfa may also have a higher incidence of the disease, because alfalfa is an alternate host of *Diaporthe*. Fungicide application is not recommended for this disease.

Soybean Vein Necrosis Virus
Kiersten Wise, Daren Mueller, Iowa State, and Damon Smith, Wisconsin

Soybean Vein Necrosis Virus (SVNV) causes a virus disease in soybean that has been observed across the North Central U.S. in the last few years. The following video describes how to accurately diagnosis SVNV and distinguish this disease from other common soybean diseases.

Symptoms caused by this virus include light green patches or mottled green and brown speckled areas associated with veins. As symptoms progress, affected leaf tissue may die, and leaves will appear scorched.
SVNV is a virus that is vectored by tiny, winged insects called thrips. Thrips do not commonly cause economic damage to soybeans in the Midwest. Although farmers may be tempted to apply an insecticide to reduce thrips populations “just in case,” at this point in time we do not recommend insecticide applications in response to detection of SVNV since we don’t know what, if any, effect disease may have on yield. For now, we will continue to keep an eye on this disease, and assess its potential impact so that we can make more informed future management recommendations.

Check out some videos on SVNV at the links below or click on the images:
http://www.youtube.com/watch?v=uMtyO8DliEI
https://www.youtube.com/watch?v=_2diQwO0Was

Do Not Plant Saved Wheat Feed This Fall!
Shawn Conley, Soybean and Wheat Extension Specialist

The race to turn the 2014 wheat crop into 2014/15 seed is on and early lab samples confirm that the percent germination from on farm sampled wheat is low. The Wisconsin Crop Improvement Association has received over 100 samples to date and over 30% have exhibited visual signs of Fusarium Head Scab (FHB) or scab. The % germ from the infected samples range from 53 to 98% (variety dependent) with an average % germ of 79%. First class certified wheat requires a minimum % germ of 85%. Furthermore invest in a wheat fungicide seed treatment this fall. Seed applied fungicides can increase % germination. On a small sample size (N = 4) the average percent germination from the addition of a seed applied fungicide increased average germination from 76 to 93%. Lastly all signs point to a late wheat establishment season. With that in mind remember to plant certified or private new seed, use a fungicide seed treatment and starting increasing your seeding rate after October 1. For more information on wheat establishment please see: Top 7 Recommendations for Winter Wheat Establishment in 2014.

CCA Internship Report
Haley Melampy, Arlington Ag Research Station

Haley Melampy assisting with GPS marking and staking of a proposed waterway.

The Wisconsin Certified Crop Advisers Board of Directors sponsored a Crop Scout internship this summer. This internship, in its second year, was received by Haley Melampy from Ann Arbor, Michigan. Haley is a college student studying Environmental Studies and Forest and Wildlife Ecology at the University of Wisconsin-Madison.

Haley received crop scout training from several CCA members including Mike Bertram and UW Weed Science graduate student Dan Smith at the UW Arlington Agriculture Research Station and Carl Nachreiner of the Landmark Services Cooperative. Training focused on crop pest scouting, crop development staging, weed identification and other
components such as agriculture safety and equipment operation. Haley also worked with the Great Lakes Bioenergy Research Center assisting in biofuel research at Arlington Ag Research Station as well as work in the WI Integrated Crop Rotation Systems Trial. Other duties encompassed in the Certified Crop Adviser internship include chemical application for weed control, “Weed Garden” maintenance, forage moisture sampling and soil sampling.

Haley also had the chance to compete on the UW Weeds Team in the North-Central Weeds Science Society’s Weed Contest held in Johnston, Iowa by DuPont Pioneer and DuPont Crop Protection this July.

A very special thanks to the Wisconsin Certified Crop Advisers Board of Directors for sponsoring this internship. Future plans will continue to be discussed as the CCA Program supports the educational development and profession experience of new crop consultants entering the industry.

Follow us on

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Vegetable Crop Update 9/5/14
The 21st issue of the Vegetable Crop Update is now available. This issue contains late blight updates, P-Days and DSVs for early/late blight disease forecasting, Cucurbit downy mildew updates, and Cucurbit powdery mildew – fungicide trial status updates (Cashton and Hancock). Click here to view this issue.

Odds My Soybean Crop Will Mature Before a Killing Frost Hits
Shawn Conley, Soybean and Wheat Extension Specialist

The Wisconsin soybean crop is slowly starting to mature, however many growers and crop consultants are still concerned about the risk of frost damage to late planted fields. In soybean an extended period (several hours) of temperatures 28 degrees F or lower is required to completely kill a soybean plant, though temperatures 32 degrees or less can still damage top growth. Those growers considering the state of their soybean crop and wondering the odds of making it to maturity before significant yield loss occurs must first correctly identify the soybean growth stage.

Once the crop growth stage has been determined we can estimate the number of days it will take for your field to reach R7 or physiological maturity. Across our Arlington and Hancock field sites in 2014 it has taken 5-8 days to go from R3 to R4, 7-8 days to go from R4 to R5, 10-14 days from R5 to R6 and 15-20 days from R6 to R7. As a point of reference our June 20th planted soybean at both locations just hit R6 this week. Next using the three figures below that show the 10th percentile, median, and 90th percentile date when you can expect a freeze event you can estimate the risk of a frost based on your crop growth stage.

For example: If you lived in SW Marathon county there is a 10% chance that a freeze event would have occurred prior to September 11-20, a 50/50 chance that a freeze event would occur prior to September 21-30, and a 90% chance a freeze event would have occurred prior to October 1-10. So if your soybean crop just entered the R5 crop growth stage today 9/8/14 there is a greater than a 50/50 chance that crop won't make grain based on historical weather data.

Lastly if you are concerned about a freeze event please refer to Table 1 below that provides yield loss estimates of freeze damage by crop growth stage. This may help you decide whether you should risk taking the late planted soybean field as a grain crop or would that field be more valuable as a forage or green manure?

<table>
<thead>
<tr>
<th>Table 1. Soybean Response to Freeze Damage</th>
</tr>
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<tbody>
<tr>
<td>Growth Stage</td>
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<tr>
<td>------------------</td>
</tr>
<tr>
<td>R4 - Full pod</td>
</tr>
<tr>
<td>R5 - Beginning pod</td>
</tr>
<tr>
<td>R6 - Full seed</td>
</tr>
<tr>
<td>R7 - Beginning maturity</td>
</tr>
<tr>
<td>R8 - Full maturity</td>
</tr>
</tbody>
</table>

Source: Saliba et al, Kansas State University, 1982
1. Long-Term Conventional and No-tillage Systems Compared

Soil pit discussion of two tillage systems (conventional vs. no-tillage) that have been managed for over 25 years in a corn-soybean rotation. Differences in soil profile, root growth, and general soil properties are discussed.

2. Soil Organic Matter Accumulation and Oxidation

Demonstration and discussion of soil organic matter accumulation of a silt loam soil managed with two long-term (>25 years) tillage systems. The tillage systems consist of fall chiseling with spring soil finisher (conventional) and no-tillage. These two tillage systems are also compared to an intensive tillage management, which consists of 5 or more rototilling operations each year.

3. Soil Aggregation and Water Infiltration

Soil slake test and infiltration demonstration of a silt loam soil managed with conventional (fall chisel and spring finisher) versus no-tillage and an intensive tillage system (rototilling 5+ times a year). The soil slake test is used to show the stability of soil aggregates, which are very important for soil water relations.
**Video: Brown stem rot of soybean**

Dr. Damon Smith, University of Wisconsin, talks about brown stem rot (BSR) of soybean. BSR can be a significant problem in years where the spring is wet and cool resulting in infection by the fungus *Phialophora gregata* soon after emergence. However, BSR is often not noticed until the reproductive growth stages when foliar symptoms typically develop. The discussion here includes tips on spotting BSR, determining the difference between BSR and sudden death syndrome and how to manage the disease.

For more information about BSR visit the Soybean Disease webpage at http://fyi.uwex.edu/fieldcroppathology/soybean_pests_diseases and scroll down to the “Brown Stem Rot” section.

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**Disease Considerations for Soybean and Corn Harvest**

Damon L. Smith – Extension Field Crops Pathologist, University of Wisconsin

As the fall is approaching and crop harvest plans are being made, it is important to continue to assess disease issues in corn and soybean. These assessments aren’t being made in order to make plans for in-field management, but to potentially improve the quality of grain that is harvested.

**Some Diseases to Consider in Corn at Harvest**

Figure 1. Gibberella stalk rot on corn. Severe stalk rot on the left and less severe stalk rot on the right.

Now is the best time to begin scouting corn for stalk rot issues and also fungal ear rot potential. Diseases such as Anthracnose stalk rot and Gibberella stalk rot are becoming apparent in corn. Inspect the stalks integrity on the outside. Be sure to squeeze the outside of the stalk to gauge the potential severity of the rot on the inside of the stalk. Cut a few stalks from diverse areas of the field to see how rotted stalks might be. In figure 1, the stalk on the left has a severe case of Gibberella stalk rot, while the stalk on the right is far less rotted. The more severely rotted stalks are, the more likely they will lodge. Therefore timely harvest is important. Growers should target harvest on fields with severe stalk rot before fields that have less stalk rot, in order to minimize harvest losses due to lodging.

Figure 2. Diplodia ear rot.
Ear rots can also be an issue at harvest time. Fusarium ear rot, Gibberella ear rot, and Diplodia ear rot (Fig. 2) are just a few that can damage corn in Wisconsin. Ear rots are becoming evident in some corn I have scouted in the last week or so. It will be critical to check fields in the next several weeks in order to make decisions on what fields to harvest first. Harvest priority should be placed on fields with a high level of ear rot. As corn stands late into the fall, certain ear rot fungi can continue to grow, damage ears, and cause increases in mycotoxins in grain. The quicker these fields dry and can be harvested, the more likely the losses due to ear rot and mycotoxin accumulation can be minimized.

**Soybean Disease Considerations at Harvest**

![Figure 3. Sclerotia of the white mold fungus inside a soybean stem.](image)

In Wisconsin, the main disease to consider when making harvest plans in soybean is white mold. White mold is present in some soybean fields in the state and has caused considerable damage in a few of those fields. Remember that the white mold fungus not only causes stem blight and damage, but also causes the formation of sclerotia (fungal survival structures that look like rat droppings) on and in soybean stems (Fig. 3). These sclerotia serve as the primary source of fungal inoculum for the next soybean crop. They also get caught in combines during harvest. These sclerotia can then be spread in combines to other fields that might not be infested with the white mold fungus. Therefore, it is important to harvest non-infested soybean fields first, followed by white mold-infested fields, to be sure the combine does not deposit any residual sclerotia in the non-infested fields. If this is not an option and you must harvest white mold infested fields before non-infested fields, be sure to clean the combine between fields.

For more information about white mold management in soybean you can [click here and scroll down to “white mold”](#) or [watch a video by clicking here](#).
Vegetable Crop Update 9/12/14
The 22nd issue of the Vegetable Crop Update is now available. This issue contains late blight updates and late season/storage management, P-Days and DSVs for early/late blight disease forecasting, and cucurbit downy mildew updates. Click here to view this issue.

Harvest Considerations for Variable Soybean Maturity
Shawn Conley, Soybean and Wheat Extension Specialist
Variable soil types, knolls, flooding and drought have left many growers with extreme in-field variability of soybean maturity. There are areas in fields where the soybean seed is 13% or less moisture adjacent to areas with green seed. The prevailing question is “When should the grower harvest?” Obviously there is no simple answer, as each field is different. However here are a set of guidelines to consider:

1. The easiest answer is harvest the field at two different times. Take what is dry today and come back in two weeks and harvest the rest. The challenge with this approach is that today’s equipment is large and not easily moved from field to field. Furthermore many growers rent or own land over large areas where this is impractical and the whole field must be taken at once. So……

2. The next simple answer is wait until the whole field is ready to go. As noted in our article Drought Induced Shatter, we are seeing areas across the Midwest where shattering is occurring. The general rule of thumb is 4 seeds per square foot = one bushel yield loss. At local cash prices dipping below $10.00 per bushel this is hard to see happen and not harvest. Furthermore, waiting will also lead to moisture loss in the field. As we learned the past few years, you do not get compensated for harvesting below 13% moisture. So……

3. If growers are concerned with shatter and/or other harvest losses the next logical approach is harvest ASAP. This opens a whole new can of worms. Harvesting ASAP will lead to a mixture of dry, wet, and immature (green) soybean seed. Be aware that if you harvest this mixture regardless of the ratio, your combine moisture sensor may not detect the correct moisture, be prepared for that initial shock when the elevator tests the grain. Next be prepared for the dockage. Most combines will leave more beans in the pod when they are wet or immature. These beans may end up on the ground or in the grain tank as unthreshed soybeans. Harvesting seed with this variability will be very similar to handling frosted soybean seed so discounts may occur due to moisture shrink, damage (green beans are considered damage), foreign material (this is usually higher when harvesting wet beans), test weight, and heating. If you choose on farm storage to address some of the dockage concerns please refer to Soybean Drying and Storage for questions.

4. The last consideration I would bring forward is that the mature areas are likely going to be the low yielding pockets due to drought whereas the yet to mature areas will likely be the higher yielding areas within the field. So, in short, which yield environment would you rather focus your time and efforts to protect?

Image 1. Variable Maturity (M. Rankin)
The question ultimately comes down to the bottom line and where you make the most $$. If shatter is not occurring and you have good equipment that does not incur significant harvest loss, will harvesting grain that is over-dry make you more money than harvesting seed that may incur significant dockage? My guess is yes but you tell me!

Follow us on
Fall is Still a Good Time to Sample for SCN and Other Plant Parasitic Nematodes

Shawn Conley, Soybean and Wheat Extension Specialist

The WI Soybean Marketing Board (WSMB) sponsors free nematode testing to help producers stay ahead of the most important nematode pest of soybean, the soybean cyst nematode (SCN). Eggs of SCN persist in the soil between soybean crops so a sample can be submitted any time that is convenient. The soil test report indicates the number of eggs in the sample and is useful for selecting the right variety for the next soybean crop. Retests of fields planted with SCN-resistant varieties over multiple years shows how the nematode population is responding to variety resistance and provides an early warning should the nematode population adapt to host genetics.

In the spring of 2012, the WSMB expanded the nematode testing program to include other pest nematodes in addition to SCN. These nematodes are less damaging to soybean than SCN but can cause enough yield loss to warrant treatment. As is the case for SCN, there are no rescue treatments for nematodes so the primary purpose of this year’s soil test is to plan for next year’s crop. Soil samples collected in corn for nematode analysis have predictive value for explaining yield if they are collected before the corn V6 growth stage. Sampling early in the season will provide information about the risk potential for the current corn crop AND the next soybean crop.

The assays used to recover nematode pests other than SCN in soil require that the nematodes are alive. So, it is important to keep the samples moist and at least room temperature cool. Collecting a sample that includes multiple cores ensures that there will be plenty of root pieces to assay. It is not necessary to include live plants in the sample. The soil test report will indicate which pest nematodes are present and at what quantities and their damage potential to soybean and corn based on the numbers recovered.

Free soil sample test kits are available now and can be requested from Jillene Fisch at (freescntest@mailplus.wisc.edu) or at 608-262-1390.

For more information on SCN testing and management practices to help reduce the losses from this pest, please contact: Shawn Conley: spconley@wisc.edu; 608-262-7975 or visit www.coolbean.info.

Remember the first step in fixing a nematode problem is to know if you have one! The WSMB sponsored nematode testing program provides you that opportunity.

Cover Crops Field Day Scheduled for October 8th

Heidi Johnson, UW-Extension Dane County crops/soils agent, 608-224-3705 Johnson.Heidi@countyofdane.com
Cover crops can be used effectively to reduce soil erosion, reduce the need for herbicides and other pesticides, protect water quality by limiting nitrogen (N) leaching, and increase soil organic matter. Farmers, ag professionals and ag educators are invited to attend a Cover Crop Field Day at Arlington Agricultural Research Station on Oct. 8, 2014 to learn more about cover crop research conducted by University of Wisconsin-Extension and UW-Madison throughout Wisconsin.

The event will include morning presentations, lunch with a farmer panel, and an afternoon tour of on-farm cover crop research trials.

Topics and presenters for the morning presentations include:

— Cover crops use and adoption in Wisconsin; Virginia Moore, UW Agroecology and Agriculture and Applied Economics

— Soil health, erosion, and tillage considerations with cover crops; Matt Ruark and Francisco Arriaga, UW-Madison/Extension soil scientists

— Using cover crops in corn and soybeans: Aerial seeding and other possibilities; Jim Stute, Michael Fields Agricultural Institute

The afternoon field tour will cover four topics:

Cover crops after Corn silage:

• Winter cereal rye: Cover crop or early season forage, Kevin Shelley, UW Nutrient and Pest Management program

• Termination of cereal rye following corn silage, Dan Smith and Vince Davis, UW-Madison Agronomy and Weed Science Extension

• Alternatives to rye: Yahara Pride Farms demonstration plot results, Heidi Johnson, UW-Extension Dane County

Cover crops after Small Grain and Vegetable Crops:

• Summer-seeded legumes: Berseem clover and crimson clover following winter wheat, Mike Ballweg, UW-Extension Sheboygan County and Richard Proost, UW Nutrient and Pest Management program

• Berseem clover, oats, and red clover following winter wheat, Gregg Sanford, UW Agronomy and Great Lakes Bioenergy Research Center

• Tillage radish following winter wheat: Results from on-farm trials, Matt Ruark, UW-Madison/Extension soil scientist

Integrated Pest Management considerations:

• Herbicide carryover and rotational restrictions: Impact on cover crop establishment and use as supplemental forage, Liz Bosak, Dan Smith, and Vince Davis, UW-Madison Agronomy and Weed Science Extension

• Insect pest considerations when using covers, Bryan Jensen, UW Integrated Pest Management program

Rolling/Crimping:

• Using rolled cover crops in organic and conventional soybean production, Erin Silva, UW-Madison/Extension plant pathology

Registration is $10 in advance and $15 for day-of registration and includes all printed materials, refreshments and lunch. To register in advance, go to http://uwcovercropfieldday2014.eventbrite.com or call the UW-Extension Dane County office at 608-224-3700.

For more information and updates, go to http://fyi.uwex.edu/covercrop.

The Arlington Agricultural Research Station is located on Hwy. 51, about 5 miles south of Arlington and 15 miles north of Madison. GPS coordinates are 43.300467, -89.345534.

This event is sponsored by University of Wisconsin-Extension and North Central Sustainable Agriculture Research and Education.

**Vegetable Crop Update 9/26/14**

The 23rd issue of the Vegetable Crop Update is now available. This issue contains late blight updates, final posting of P-Days and DSVs for disease forecasting, and cucurbit downy mildew updates. Click here to view this update.

**44th Annual North Central Extension-Industry Soil Fertility Conference**

Save the Date: November 19-20, 2014

Holiday Inn Airport, Des Moines, IA

We would like to invite you to attend the 2014 North Central Extension-Industry Soil Fertility Conference being held Nov. 19-20 at the Holiday Inn Airport in Des Moines, Iowa. Oral and poster presentations will highlight on-going soil fertility research at Universities in the North Central region (IL, IN, IA, KS, KY, MI, MN, MO, NE, ND, OH, ON, PA, SD, and WI)

The program starts at 1:00 p.m. Wed., Nov. 19th, and ends at noon Thurs. Plenty of time is allocated within the meeting to visit one-on-one with authors, presenters, and other attendees.

Registration fee is $125. CCA credits will be available.

Please contact Phyllis Pates at ppates@ipni.net; (605) 692-6280 for more information.
### Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 September 13, 2014 through September 19, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIELD CROPS,</strong></td>
</tr>
<tr>
<td>Corn, Common Rust, Puccinia sorghi, Pierce</td>
</tr>
<tr>
<td>Corn, Gibberella Stalk Rot, Fusarium graminearum, Rock</td>
</tr>
<tr>
<td>Corn, Goss’ Wilt, Clavibacter michiganensis subsp. nebraskensis, Lincoln, Trempealeau</td>
</tr>
<tr>
<td>Corn, Gray Leaf Spot, Cercospora sp., Lafayette, Pierce</td>
</tr>
<tr>
<td>Corn, Northern Corn Leaf Blight, Exserohilum turcicum, Lafayette, Pierce</td>
</tr>
<tr>
<td>Soybean, Brown Spot, Septoria glycines, Eau Claire, Sheboygan</td>
</tr>
<tr>
<td>Soybean, Brown Stem Rot, Phialophora gregata, Eau Claire</td>
</tr>
<tr>
<td>Soybean, Pod and Stem Blight, Phomopsis sp., Eau Claire, Sauk</td>
</tr>
<tr>
<td>Soybean, Soybean Cyst, Heterodera glycines, Eau Claire</td>
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<tr>
<td><strong>FORAGE CROPS,</strong></td>
</tr>
<tr>
<td>Alfalfa, Aphanomyces Root Rot, Aphanomyces euteiches, Marathon</td>
</tr>
<tr>
<td>Alfalfa, Fusarium Root Rot, Fusarium sp., Marathon</td>
</tr>
<tr>
<td>Alfalfa, Phytophthora Root Rot, Phytophthora sp., Marathon</td>
</tr>
<tr>
<td>Alfalfa, Rhizoctonia Root Rot, Rhizoctonia solani, Marathon</td>
</tr>
<tr>
<td><strong>FRUIT CROPS,</strong></td>
</tr>
<tr>
<td>Apple, Sphaeropsis Canker, Sphaeropsis sp., Marathon</td>
</tr>
<tr>
<td>Apple, Cedar-Apple Rust, Gymnosporangium sp., Sauk</td>
</tr>
<tr>
<td>Apple, Scab, Venturia inaequalis, Sauk</td>
</tr>
<tr>
<td>Cranberry, Blueberry Shock, Blueberry shock virus, Wood</td>
</tr>
<tr>
<td>Cranberry, Tobacco Streak, Tobacco streak virus, Wood</td>
</tr>
<tr>
<td>Grape, Anthracnose, Sphaecoma ampelinum, Dodge</td>
</tr>
<tr>
<td>Grape, Black Rot, Phyloistictia ampelicida, Dodge</td>
</tr>
<tr>
<td><strong>VEGETABLES,</strong></td>
</tr>
<tr>
<td>Carrot, Cercospora Leaf Blight, Cercospora sp., Dane</td>
</tr>
<tr>
<td>Cucumber, Downy Mildew, Pseudoperonospora cubensis, Calumet</td>
</tr>
<tr>
<td>Muskmelon, Anthracnose, Colletotrichum sp., Dane</td>
</tr>
<tr>
<td>Pepper, Bacterial Canker, Clavibacter michiganensis subsp. michiganensis, Portage</td>
</tr>
</tbody>
</table>

The following diseases/disorders have been identified at the PDDC from September 20, 2014 through September 26, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIELD CROPS,</strong></td>
</tr>
<tr>
<td>Soybean, Cercospora Leaf Blight, Cercospora kikuchii, Sheboygan</td>
</tr>
<tr>
<td>Soybean, Root Rot, Rhizoctonia solani, Pythium sp., Fusarium sp., Sheboygan</td>
</tr>
<tr>
<td>Soybean, Sudden Death Syndrome, Fusarium virguliforme, Dodge</td>
</tr>
<tr>
<td><strong>FRUIT CROPS,</strong></td>
</tr>
<tr>
<td>Currant, Gloeosporidiella Leaf Spot, Gloeosporidiella sp., Milwaukee</td>
</tr>
<tr>
<td>Pear, Scab, Venturia pirina, Portage</td>
</tr>
<tr>
<td>Strawberry, Root/Crown Rot, Rhizoctonia solani, Dunn</td>
</tr>
<tr>
<td><strong>SPECIALITY CROPS,</strong></td>
</tr>
<tr>
<td>Hops, Downy Mildew, Pseudoperonospora humuli, Dodge</td>
</tr>
<tr>
<td><strong>VEGETABLES,</strong></td>
</tr>
<tr>
<td>Cabbage, Black Rot, Xanthomonas campestris, Brown</td>
</tr>
<tr>
<td>Cucumber, Cercospora Leaf Spot, Cercospora sp., Milwaukee</td>
</tr>
<tr>
<td>Cucumber, Downy Mildew, Pseudoperonospora cubensis, Milwaukee</td>
</tr>
<tr>
<td>Kale, Black Rot, Xanthomonas campestris, Brown</td>
</tr>
<tr>
<td>Pumpkin, Angular Leaf Spot, Pseudomonas syringae pv. lachrymans, Wood</td>
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<tr>
<td>Pumpkin, Powdery Mildew, Oidium sp., Wood</td>
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<tr>
<td><strong>SOIL,</strong></td>
</tr>
<tr>
<td>Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Eau Claire, Ozaukee, Sheboygan, Trempealeau, Washington</td>
</tr>
</tbody>
</table>

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 September 27, 2014 through October 3, 2014.
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 October 4, 2014 through October 10, 2014.

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

**FRUIT CROPS,**
- Apple, Sphaeropsis Canker, Sphaeropsis sp., Kewaunee

**VEGETABLES,**
- Tomato, Late Blight, Phytophthora infestans, Waukesha

**SOIL,**
- Alfalfa Soil, Aphanomyces Seedling Blight, Aphanomyces euteiches race 1 and race 2, Carver (MN)
- Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Buffalo, Rock, Sheboygan, Winnebago

**FIELD CROPS,**
- Soybean, Cercospora Blight, Cercospora kikuchii, Shawano

**FRUIT CROPS,**
- Apple, Apple Scab, Venturia inaequalis, Washburn
- Apple, Frog-Eye Leaf Spot, Botryosphaeria obtusa, Washburn
- Raspberry, Anthracnose, Sphaeloma necator, Grant
- Raspberry, Root/Crown Rot, Pythium sp., Grant
- Strawberry, Leaf Spot, Ramularia brunnea, Portage
- Strawberry, Phomopsis Leaf Blight, Phomopsis obscurans, Portage
- Strawberry, Root/Crown Rot, Rhizoctonia solani, Portage

**VEGETABLES,**
- Cabbage, Black Rot, Xanthomonas campestris, Brown
- Kale, Black Rot, Xanthomonas campestris, Brown
- Potato, Leak, Pythium sp., Waushara

**SPECIALTY CROPS,**
- Ginseng, Mystery Seedling Disease, Cylindrocarpon sp., Fusarium sp., Pythium sp., Septonema sp., Marathon

**SOIL,**
- Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Columbia, Dunn

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

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**WANTED: FARMER INNOVATOR/INVENTORS**

Matt Glewen, General Manager, Wisconsin Farm Technology Days

The 2015 Wisconsin Farm Technology Days to be held at the Statz Bros. Farm in Dane County will feature an “Innovation Square” which will be located in the center of “Tent City”. Farmer innovators are invited to submit their inventions/innovations for consideration as part of “Innovation Square”.

Innovations may range from modifications to an existing piece of machinery to a completely new invention. Anything that would make a specific operation easier, more efficient, or more effective would likely qualify. A panel of judges from University Agricultural Engineering Departments around the country will evaluate the entries on predetermined criteria (see evaluation criteria at [www.wifarmtechnologydays.com](http://www.wifarmtechnologydays.com) under “Exhibitors”). A total of 4-5 farmer innovations will be chosen for exhibit in “Innovation Square” each year along with a similar number from agribusiness firms and universities.

There will be no cost to those chosen to be part of “Innovation Square”. Exhibit space will be flexible, based on the amount of room needed to adequately display/demonstrate each invention. Exhibits will need to be accompanied by a farm representative during a significant portion of each day of the three-day show.

Application forms for “Innovation Square” may be found at [www.wifarmtechnologydays.com](http://www.wifarmtechnologydays.com) under “Exhibitors”. The application deadline is January 15, 2015.

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**2014 UW Extension Pest Management Update Meeting Series**

Mark Renz, Extension Weed Specialist

Mark your calendars as the UW Extension’s Pest Management Update meetings are just around the corner (November 10-20). While the program will still provide detailed updates to pest management in Wisconsin field crops, we have adapted the schedule to allow for more interaction between presenters and added the participation of Bryan Jensen and Dan Heider with the University of Wisconsin Integrated Pest and Crop Management Program.

This year we will focus the entire morning (10-noon) on integrated pest management updates by crop. This session will be streamlined to focus on new pesticide registrations, pest updates, and highlight important issues from 2014 by crop. After lunch, topics will be more focused on specific updates such as herbicide resistance, sprayer technology, and the pest management mobile website. We will end the meeting with diagnostic training events developed to improve problem solving skills for pest related issues common to Wisconsin Field Crops. The full schedule with dates, meeting locations, topics and registration contact information are highlighted below. Please register with the host agent at least 1 week prior to the meeting at the location you wish to attend.
Note that the location sequence changes a bit from year to year based on logistics. Be sure to look at the 2014 schedule included with this article when selecting your preferred date and location. Please attend the meeting location at which you registered. Each meeting in the series is a separate county-based event and host agents cannot interchange registrant fees or meal counts.

Below are important changes to note:

- **Janesville:** switched the meeting place (Holiday Inn Express I-90/US 14) and date (11/13)
- **Green Bay:** Moved location to Kimberly (Liberty Hall). Contact Kevin Jarek for registration.

Four hours of CCA CEU pest management credits are requested and available at each location.

The speakers will be extension specialists Mark Renz, weed scientist, perennial cropping systems; Vince Davis, weed scientist, annual cropping systems; Dan Heider, IPM outreach specialist, Bryan Jensen, entomologist, and Damon Smith, field crop plant pathologist.

**2014 Pest Management Update Topics:**

Integrated Pest Management Updates in corn, soybeans, alfalfa, and small grains: Update on new products and/or use of existing products as well as brief highlights of the 2014 pest situations in each crop.

Herbicide resistance update: Vince Davis will provide an update on the status of herbicide resistant weed populations in Wisconsin and discuss how to detect and manage resistant populations.

Sprayer technology: Dan Heider will discuss advances in sprayer technology and review how these can be utilized to maximize application efficacy while minimizing drift.

Diagnostics: Damon Smith and Vince Davis will provide several diagnostic trainings that will allow participants to interact and hone their pest management skills. Scenarios will be based on common scenarios faced by producers in 2014.

Check out the full meeting schedule at the end of this newsletter.
# 2014 Wisconsin Pest Management Update Meetings

The schedule for the Wisconsin Pest Management Update meeting series is listed below. Presentations will include pest management information for Wisconsin field and forage crops. Speakers will include Mark Renz and Vince Davis, weed scientists, Damon Smith, plant pathologist, Dan Heider IPM specialist and Bryan Jensen, entomologist.

All meetings will start with check-in registration and coffee at 9:30 a.m. Presentations start promptly at 10 a.m. and will conclude by 3:00 p.m. Four hours of Certified Crop Advisor CEU credits in pest management are requested for each session. The $40 registration fee per participant includes a noon meal and information packet.

Please make your reservation with host agent one week prior to the scheduled meeting date.

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION</th>
<th>HOST AGENT</th>
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<tbody>
<tr>
<td>Monday</td>
<td><strong>Marshfield</strong></td>
<td><strong>Richard Halopka</strong></td>
</tr>
<tr>
<td>November 10</td>
<td>Marshfield Agricultural Research Station</td>
<td>Clark County Extension</td>
</tr>
<tr>
<td></td>
<td>2611 Yellowstone Drive</td>
<td>Courthouse Room 104</td>
</tr>
<tr>
<td></td>
<td>Marshfield, WI 54449</td>
<td>517 Court Street</td>
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<tr>
<td></td>
<td></td>
<td>Neillsville, WI 54456</td>
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<tr>
<td></td>
<td></td>
<td>(715) 743-5121</td>
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<tr>
<td>Tuesday</td>
<td><strong>Chippewa Falls</strong></td>
<td><strong>Jerry Clark</strong></td>
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<tr>
<td>November 11</td>
<td>Lake Hallie Eagles Club</td>
<td>Chippewa County Extension</td>
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<tr>
<td></td>
<td>2588 Hallie Road</td>
<td>711 N. Bridge Street</td>
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<tr>
<td></td>
<td>Chippewa Falls, WI 54729</td>
<td>Chippewa Falls, WI 54729</td>
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<tr>
<td></td>
<td></td>
<td>(715) 726-7950</td>
</tr>
<tr>
<td>Wednesday</td>
<td><strong>Sparta</strong></td>
<td><strong>Bill Halfman</strong></td>
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<tr>
<td>November 12</td>
<td>Jake's Northwoods</td>
<td>Monroe County Extension</td>
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<td></td>
<td>1132 Angelo Road</td>
<td>14345 County Hwy B</td>
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<td></td>
<td>Sparta, WI 54656</td>
<td>Sparta, WI 54656</td>
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<tr>
<td></td>
<td></td>
<td>(608) 269-8722</td>
</tr>
<tr>
<td>Thursday</td>
<td><strong>Janesville</strong></td>
<td><strong>Nick Baker</strong></td>
</tr>
<tr>
<td>November 13</td>
<td>Holiday Inn Express Janesville</td>
<td>Rock County Extension</td>
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<tr>
<td></td>
<td>3100 Wellington Place</td>
<td>51 S. Main Street</td>
</tr>
<tr>
<td></td>
<td>Janesville, Wisconsin 53546</td>
<td>Janesville, WI 53545</td>
</tr>
<tr>
<td></td>
<td>(I-90 and US Highway 14, West on 14)</td>
<td>(608)-757-5698</td>
</tr>
<tr>
<td>Monday</td>
<td><strong>Fond du Lac</strong></td>
<td><strong>Mike Rankin</strong></td>
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<tr>
<td>November 17</td>
<td>University of Wisconsin – Fond du Lac</td>
<td>Fond du Lac County Extension</td>
</tr>
<tr>
<td></td>
<td>Rm 113 University Center</td>
<td>227 Admin/Extension Bldg.</td>
</tr>
<tr>
<td></td>
<td>400 University Drive</td>
<td>400 University Dr.</td>
</tr>
<tr>
<td></td>
<td>Fond du Lac, WI 54935</td>
<td>Fond du Lac, WI 54935</td>
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<tr>
<td></td>
<td></td>
<td>(920) 929-3170</td>
</tr>
<tr>
<td>Tuesday</td>
<td><strong>Kimberly</strong></td>
<td><strong>Contact: Kevin Jarek</strong></td>
</tr>
<tr>
<td>November 18</td>
<td>Liberty Hall</td>
<td>Outagamie Co. UW Extension</td>
</tr>
<tr>
<td></td>
<td>800 Eisenhower Drive</td>
<td>3365 W. Brewster St.</td>
</tr>
<tr>
<td></td>
<td>Kimberly, Wisconsin 54136</td>
<td>Appleton, WI 54914</td>
</tr>
<tr>
<td></td>
<td>(Hwy. 441, College Avenue Exit, East 1 block)</td>
<td>Phone: 920-832-5119</td>
</tr>
<tr>
<td>Wednesday</td>
<td><strong>Belmont</strong></td>
<td><strong>Ted Bay</strong></td>
</tr>
<tr>
<td>November 19</td>
<td>Belmont Inn &amp; Suites (formerly Baymont Inn)</td>
<td>Grant County Extension</td>
</tr>
<tr>
<td></td>
<td>103 West Mound View Avenue</td>
<td>P.O. Box 31</td>
</tr>
<tr>
<td></td>
<td>Belmont, WI 53510</td>
<td>Lancaster, WI 53813</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(608) 723-2125</td>
</tr>
<tr>
<td>Thursday</td>
<td><strong>Arlington</strong></td>
<td><strong>George Koepp</strong></td>
</tr>
<tr>
<td>November 20</td>
<td>Arlington Agricultural Research Station</td>
<td>Columbia County Extension</td>
</tr>
<tr>
<td></td>
<td>Public Events Building</td>
<td>120 W. Conant St., Ste. 201</td>
</tr>
<tr>
<td></td>
<td>Arlington, WI 53911</td>
<td>Portage, WI 53901</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(608) 742-9682</td>
</tr>
</tbody>
</table>
CCA Exam Training Webinars Start December 1st, Signup Online
Bryan Jensen, IPM Program

Receive CCA exam training from UW-Madison and UWEX specialists starting Dec 1.

The University of Wisconsin Cooperative Extension Service and the UW Integrated Pest Management Program will offer a series of online webinar training sessions designed to complement and assist with your preparation for the state Certified Crop Advisors (CCA) exam. This webinar series features UW Extension specialists as instructors and will broadcast live via internet connection. Participants will be able to view the instructor’s PowerPoint presentation on their computer screen and ask questions through chat messaging. Webinars will be broadcast each Monday, Wednesday and Friday from Dec. 1 to December 19, 2014. All webinars will start at 9:00 am and conclude by either 11:00 or 11:30. Please see the webinar schedule for a list of dates, speakers and topics.

The vast majority of workplace computers (newer computer and a fast internet connection) are capable of handling webinar technology. A URL will be provided in advance to test hardware, sound and video capabilities. A list of electronic crop management resources will also be supplied to participants to help with self-study. Registration for the webinar series and electronic references is $75/person. Credit card payments can be made online at https://www.patstore.wisc.edu/ipm/register.asp

For questions, call or email Bryan Jensen at 608-263-4073 or email at bmjense1@wisc.edu For more information on the CCA program, international and state performance objectives and exam registration please go to the CCA website at https://www.certifiedcropadviser.org/

Android app, High moisture shell corn price calculator
Waupeca, Wis. – It’s that time of the year when Wisconsin dairy and beef producers and Wisconsin corn growers explore their options of buying or selling high moisture shell corn (HMSC). This is especially true this year in the northern two-thirds of the state with so much wet corn still in the field.
To help farmers better evaluate their options, the University of Wisconsin-Extension released a Smartphone app this fall to provide a simple way to help estimate the market value of HMSC based on three main variables – dry corn moisture, current corn moisture and price per bushel.

The HMSCS app is free and available for Android smartphones and tablets on the Google Play store by searching for “HMSC”.

Farmers can use this app to help determine an equivalent value for wet shell corn when compared with a dry shell corn price – a link to current local elevator dry corn bid prices is built into the app. The equivalent wet price is then calculated and displayed in both price per ton and price per bushel. Additional costs for drying and/or shelling can be evaluated under the expense tab. The app also features the ability to email the results directly to others.

“Although a desktop Excel spreadsheet for pricing HMSC is available on the Wisconsin Center for Dairy Profitability website, it doesn’t have the ability to bring up current market information or automatically share the results”, said Greg Blonde, UW-Extension Waupaca County agriculture agent. “When you’re out in the field or on the go, the HMSCS app is a great resource tool to have on your Smartphone or tablet computer.”

Blonde also noted the app may be useful to grain elevator managers, as well as Ag lenders and farm managers for valuing their grain or feed inventories.

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### Soil, Water, and Nutrient Management Meetings to be held in December

by Carrie Laboski, Professor of Soil Science

The annual Soil, Water, and Nutrient Management Meetings will be held December 2 through 11 at eight locations throughout the state. Current soil science research will be highlighted along with other topics of interest to agronomists, ag retailers, conservation professionals, and farmers.

Francisco Arriaga, Asst. Professor of Soil Science, will discuss using soil health concepts for management decisions along with understanding corn residue decomposition. Carrie Laboski, Professor of Soil Science, will provide an update on N sensors research for corn and wheat along with how to improve alfalfa productivity with S and K. Precision ag technologies for soil conservation and variable rate practices will be presented by Brian Luck, Asst. Professor of Biological Systems Engineering. Matt Ruark, Asst. Professor of Soil Science, will provide an update on cover crops research and understanding biological measures of soil health. Wisconsin Department of Agriculture, Trade, and Consumer Protection Nutrient Management Staff will give an agency update and Teresa Nelson, WI Department of Natural Resources, will discuss prioritizing water quality improvement efforts on agricultural lands using the Erosion Vulnerability Assessment for Ag Lands (EVAAL) tool.

Dates and locations for the program are given below.

- **12/02/14** – Madison – Dane Co. Extension office – Host: Jennifer Blazek, dane.uwex.edu
- **12/03/14** – Sparta – Jake’s Northwoods – Host: Bill Halfman, 608-269-8722
- **12/04/14** – Eau Claire – Clarion Hotel Conf. Center (NEW location) – Host: Mark Hagedorn, 715-839-4712
- **12/05/14** – Marshfield – Marshfield Ag Research Station – Host: Don Genrich/Lynn Dolata, 608-339-4237
- **12/08/14** – Juneau – Dodge Co. Administration Building – Host: Sheri Lotzer, 920-386-3791
- **12/09/14** – Kiel – Millhome Supper Club – Host: Mike Ballweg, 920-459-5904
- **12/10/14** – Cecil – The Main Event (NEW location) – Host: Jamie Patton, 715-526-6136
- **12/11/14** – Dodgeville – Iowa Co. Health & Human Services Bldg, Host: Gene Schriefer, 608-930-9850

Each meeting will begin at 10 am and end at 3 pm. The $40 registration fee includes lunch from noon to 1 pm and informational materials. A total of 4 CEUs for Certified Crop Advisors will be provided (2 CEUs in Soil & Water Management and 2 CEUs in Nutrient Management). Reservations should be made with the meeting host at least 1 week prior to the meeting you wish to attend.

The detailed program flyer can be downloaded as a PDF here:


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### Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic

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 October 11, 2014 through October 17, 2014.

**FIELD CROPS,**
Corn, Gray Leaf Spot
Northern Corn Leaf Blight, Cercospora sp.
Exserohilum turcicum, Fond du Lac
Fond du Lac

**FRUIT CROPS,**
Raspberry, Root/Crown Rot, Rhizoctonia solani, Waukesha
SOIL,
Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Columbia, Dodge, Winnebago

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 October 18, 2014 through October 24, 2014.

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

**FRUIT CROPS,**
Blueberry, Cytospora Canker, Cytospora sp., Bayfield

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 October 25, 2014 through October 31, 2014.

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

**SOIL,**
Soybean Soil, Soybean Cyst Nematode, Heterodera glycines, Brown, Outagamie, Pepin

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 October 25, 2014 through October 31, 2014.

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

**FRUIT CROPS,**
Cranberry, Bitter Rot, Colletotrichum acutatum, Colletotrichum gloeosporioides, Monroe
Cranberry, Ripe Rot, Coleophoma empetri, Monroe
Cranberry, Viscid Rot, Phomopsis vaccinii, Monroe
For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

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**Vegetable Crop Update 10/24/14**

The 24th issue of the Vegetable Crop Update is now available. Click [here](#) to view this update.

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**Deciding when to harvest corn in 2014**

Scott Sanford, Sr. Outreach Specialist-Rural Energy Program, UW-Madison

Madison, Wis. – Recent reports from around the state indicate that the corn will have higher moisture contents at harvest than typical years. Reports from the week of Oct. 6-10 indicated that corn was ranging from 23% to 32% with most in

the 28-32% range, according to Scott Sanford, University of Wisconsin-Extension/Madison agricultural engineer.

He added, “Some corn has been hit with early frost which could affect test weighs depending on maturity.”

Delaying harvest to allow for field drying can be used to reduce drying costs but field losses will start increasing the longer the corn is allowed to stand. The amount of field drying can be estimated using growing degree days (GDD) or reference evapotranspiration (RET) values – amount of water a growing plant will transpire.

It generally takes 30 GDD for each percentage point of grain moisture reduction from 30% down to 25% and 45 GDD per percentage point of grain moisture reduction from 25% down to 20%. Based on a typical year, we can expect 4% drydown in northern Wisconsin to 6% in southern Wisconsin by Nov. 1, 0 to 1% during November and none in December.

The percentage of drydown based on RET is about 4% for each inch of reference evapotranspiration. The potential field drying is about 1/2% per day in September, early to mid-October it drops to 1/4% per day, mid to late October it drops to 1/8% per day and by early November the field drydown rate is only about 0.1% per day. After mid-November very little field drying occurs.

Sanford said, “Growers will have to balance time needed to complete harvest, crop condition (lodging) and increases in field losses during combining with savings in drying costs from delaying harvest.”

The general recommendation is to start combining corn for dry grain at 25-26% moisture. As the corn gets dryer, combine shatter losses caused by the header increase. The longer the corn is allowed to stand in the field, the higher the losses. A two year study of field losses of corn left standing after October reported 3-5% loss in November, 22% in December and if the corn is allowed to stand in the field all winter, a loss of up to 40%.

If corn is being fed to cattle, it could be harvested and stored as high moisture corn to feed out over the winter in silos or poly bags to avoid drying. Corn for dry market should not be stored in poly bags unless temperatures are below freezing and storage should be considered very short term as heating and ensiling can occur if temperatures in the bag go above freezing.

It takes about 0.02 gallons of propane to remove one point of moisture from a bushel of corn, according to Sanford.

“To estimate drying costs for a high temperature dryer, multiply the propane price by 0.02 and then multiply by the number of percentage points of moisture to be removed,” he said. “For example, if propane is $2.00 per gallon and corn is to be dried from 28 to 15% (13 points) – $2.00 x 0.02 x 13 = $0.52 drying cost per bushel.”

He provided these tips to reduce drying costs:

- Screen corn before the dryer to remove broken kernels and bees wings so you are only drying salable product
- Use the highest plenum temperature possible without scorching the corn – higher drying temperatures are
more energy efficient – less energy required to remove a pound of water.

- Clean screens and air intakes daily so they are free of debris (bees wings, cracked kernels, leaves) to maximize air flow
- Check gas pressure regulators and burners to ensure efficient and complete combustion before the drying season starts
- Use dryers with heat recovery or in-bin cooling to reduce the amount of drying needed
- Prevent condensation under the roof of bins so moisture doesn’t drip back onto the grain. Make sure eaves are open. Adding a ventilation fan to increase air flow under the bin roof may aid in reducing the formation of condensation.

Determining the right drying temperature depends on what the grain will be used for. If corn is being used for feeding or ethanol, the kernel temperature should not get above 140-150°F.

The maximum plenum temperature will depend on the grain moisture and type of drying system being used:

- high-temperature in-bin and batch dryers a maximum plenum temperature of 140 to 150°F is recommended,
- cross-flow dryers are typically 180 to 220°F but if they have multiple stages, the first stage could be higher for higher moisture grains.
- mixed flow dryers can be operated at higher temperatures because the grain is only exposed to intermittent full plenum heat.

For growers with low temperature dryers, this may be a year when the corn will be too wet to use this type of dryer in many areas, Sanford noted. Corn above 22% may heat or mold before it dries if the bin is loaded in a single fill. Options are to layer corn in small layers to increase the air flow per bushel or install a high temperature heater and dry the corn down to 20-22% with heat (140 to 150°F) and then switch to air-only drying to remove the remaining moisture. This is called combination drying and is one of the most energy efficient and cost effective drying methods.

**2014 Wisconsin Soybean Variety Test Results**

Shawn Conley, Soybean and Wheat Extension Specialist

The 2014 Wisconsin Soybean Variety Test Results are now available. Click on the link below to view the results.

[http://www.coolbean.info/pdf/soybean_research/variety_trial_results/2014_Soybean_Trials_FINAL.pdf](http://www.coolbean.info/pdf/soybean_research/variety_trial_results/2014_Soybean_Trials_FINAL.pdf)
2014 AREA SOYBEAN CONFERENCES

FEATUREING
“PLC or ARC? Farm Bill Program Sign-up and Decision Aids”
County Agent Update
Soybean Diseases of 2014
Irrigation and Soil and Water Management
What’s New in Seed, Crop Protection, and Inoculants
Wisconsin Soybean Association News
Marketing Hints for 2015
Managing Inputs for 2015
... and more!

PLUS, mark your calendar now for:
2015 WISCONSIN CORN SOY EXPO
January 29-30, 2015
Wisconsin Dells, Kalahari Resort
2014 AREA
SOYBEAN CONFERENCES

Registration — Visit with Exhibitors, Coffee, milk, rolls in Exhibit Area 9:00 AM

Welcome — Shawn Conley UWEX Soybean Specialist 9:25 AM

“PLC or ARC? Farm Bill Program Sign-up and Decision Aids” — Dr. Paul Mitchell, UWEX Ag Economist 9:30 AM

County Agent Update — Nick Baker, Mike Rankin, Jerry Clark 10:00 AM

Soybean Diseases of 2014: — What we learned for 2015, Dr. Damon Smith, UWEX Plant Pathologist 10:30 AM

Irrigation and Soil and Water Management — John Panuska, UWEX 11:10 AM

What’s New in Seed, Crop Protection, and Inoculants — various industry reps 11:50 AM

Lunch — Exhibits open and speakers available for questions 12:00 PM

Wisconsin Soybean Association News — Bob Karls, WSA/WSMB Executive Director 12:50 PM

Marketing Hints for 2015 — Brian Doherty, John Heinberg (Eau Claire) – Stewart Peterson Group, Inc. (FDL) 1:00 PM

Managing Inputs for 2015 — Dr. Shawn Conley UWEX Soybean Specialist 1:45 PM

Conference Adjourns 2:30 PM

CCA credits in crop management (2.0 hour), soil and water (0.5 hr) and pest management (0.5 hr) have been requested.

REGISTRATION FORM

Conference fee is $30.00 per person or $15.00 for Wisconsin Soybean Association Members. This includes coffee and rolls, lunch, and a copy of all information.

Pre-registration is advised to assure seating at the noon luncheon. Attendance is limited to the first 100 registrants at each location.

Name(s)__________________________________________________________
Address__________________________________________________________________________
City, State, Zip__________________________________________________________
Phone__________________________________________________________________________

Member of Wisconsin Soybean Association
☐ YES ☐ NO

Amount enclosed
☐ number of WSA members x $15.00 = ______________________
☐ number of non-members x $30.00 = ______________________
☐ number of WSA memberships = ______________________
☐ 1-year membership x $100.00 = ______________________
☐ 3-year membership x $175.00 = ______________________
Total enclosed = $ ______________________

Make check payable to: Wisconsin Soybean Association.
Indicate the conference location you will attend and return the form by November 25 to the Extension office hosting that conference.

☐ Tuesday, December 2
Janesville
Janesville Holiday Inn
3100 Wellington Pl
Janesville, WI
(608) 756-3100

☐ Wednesday, December 3
Eau Claire
Sleep Inn Suites and Conference Center
5872 33rd Ave
Eau Claire, WI
(715) 874-2900

☐ Thursday, December 4
Ripon
Royal Ridges
1 Westgate Dr
Ripon, WI
(920) 748-5500

MEETING LOCATIONS

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CCA credits in crop management (2.0 hour), soil and water (0.5 hr) and pest management (0.5 hr) have been requested.
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For more information on this course please contact Bryan Jensen at:
Dept. of Entomology
1630 Linden Dr.
Madison, WI 53706
(608) 263-4073
bmjense1@facstaff.wisc.edu

CCA Luncheon

Bryan Jensen, UW IPM Program

All CCAs, CPAs and Professional Soil Scientists are invited to attend a buffet-style luncheon on Tuesday, January 13 in the Lake Rooms (Monona/Wingra/Waubesa) at the Alliant Energy Center. This lunch is free of charge and will start at 11:00 am and conclude by 12:30 pm to allow attendance at the Wisconsin Crop Management Conference.

The formal program will be kicked off at 11:30 by CCA Board Chair, Todd Prill. Luther Smith, Director of ASA’s Certification Programs, is scheduled to talk about the CCA Code of Ethics at 11:40 follow by Mark Weihing, CCA Board Member. Mark will address agricultural and nutrient stewardship policy issues discussed at the 2014 CCA North American Board Meeting.

Pre-registration is not required. Hope to see you there!

Drastic outdoor cooling may create some grain storage and drying problems

Kenneth Hellevang, Ph.D., PE, Extension Engineer, Professor, North Dakota State University Extension Service

The drastic outdoor cooling that has occurred may create some grain storage and drying problems. Following are some questions that I have received and my responses. The questions are italicized and my answers follow the questions.

“With the sudden change in air temps. What is the best management strategy for running aeration fans on bins to cool grain without freezing the bin?”

The kernels will not freeze together if the corn moisture content is below 24%. There is extensive experience with cooling corn to well below freezing and the corn still being able to flow normally. The acceptable moisture content
decreases with more foreign material in the corn. I recommend that corn moisture be less than 24% to hold it until outdoor temperatures are above freezing and at or below 21% to hold corn until spring.

Some people are recommending that wet corn be not be cooled below freezing because ice crystals will form in the void spaces between the corn with the moisture coming from the corn. I am not aware of this being a problem again based on extensive experience.

Frosting will occur when moist air comes in contact with a surface at a temperature below freezing. It typically occurs when air from warm corn comes in contact with a cold bin roof and roof vent during aeration. It can occur with corn at temperatures below freezing when warmer air comes through the cold corn. This could occur if the corn at the top of the bin was cold and warm air from corn below is moved through the cold corn as the bin is cooled using aeration. Normally this will occur only in a shallow layer of corn at the top of the bin and only for a period of time that until that corn has been warmed by the warm aeration air coming from the warm corn. The amount of frost accumulation expected in the corn increases as the corn gets colder and layer of corn gets thicker. Since corn is a good insulator, the cold layer is normally expected to be fairly thin and the warm aeration air removes the frost.

If the corn is warmer than the bin steel, condensation in the form of frost will occur on the bin roof and bin vents. The rapid drop in outdoor temperature makes this very likely. Cooling the corn in small steps reduces this potential. The general goal is to cool the corn to just below freezing, so operate the fans only when outdoor air temperature is above 20 degrees. Corn at 22 percent moisture has an estimated allowable storage life of about 60 days at 40 degrees and 30 days at 50 degrees. Cool corn at recommended moisture contents can wait for cooling until appropriate temperatures exist. Ideally the aeration air temperature would be 10 to 15 degrees cooler than the corn. If it is extremely cold, it is best to not run the fan and wait for an appropriate air temperature.

“How should I manage the following three scenarios:

1) Grain harvested at 15% moisture with air temps at 60 to 70 degrees F, filled bin day before cold air moved in, when is the best time to run fan and how long can I wait to start cooling bin?”

The allowable storage time of 15% corn at 70 degrees is about 125 days, so there is time to select the appropriate temperature to aerate the grain. As described earlier, there will be extensive frosting on the bin roof if the aeration fan is operated when outside temperature is below freezing and there will be extensive condensation if there is a large temperature difference between the corn and outside temperature with the outside temperature above freezing. As much as possible, select a time to aerate the corn when outside temperature is 40 to 50 degrees to cool the corn. This may be accomplished by waiting for warmer weather and running the fan during the daytime. If warmer weather is not expected, then run the fan when outside air temperature in near or just above freezing. Leave the fill and access doors open to minimize the potential for bin vents freezing over and the fan pressure damaging the bin roof. Be aware that frost or condensation will likely occur and may be extensive. Monitor the bin and corn closely and manage moisture accumulation.

“2) Two grain bins, 10,000 bu and 15,000 bu, both filled 1/2 to 2/3 full with corn harvested with warm temps. Ran fans continuously while harvesting. Turned fans off when temps dropped below freezing. Have finished filling both bins with corn harvested during cold snap. I have two temp zones. What is the best time for running fans to balance temp without creating condensation problems? Corn moisture is 16.5% or less.”

The corn in the bottom is warm and at the top is cold. This has been described earlier as a situation that can cause condensation and frosting within the cold corn. The condensation will continue until the warm grain on the bottom has been cooled. In the laboratory the amount of condensation and frost build-up was minimal when warm (70 degree) humid air was used to aerate grain at a temperature of 10 degrees. No visible frost was observed and the wheat moisture content increase was only about 0.5%. This experiment is being repeated with corn. I have heard of frost accumulating in the corn near the top of the bin when running the fan when it is moving very cold air through the corn. Condensation and/or frosting are expected in the corn if cooling warm corn with air that is colder than 32 degrees. It is not clear if this will cause problems. It is preferred to cool the corn in steps with air above freezing for the first cycle, if possible, and to monitor the condition of the corn.

“3) Began filling last bin with cold corn harvested during this cold spell. Do I need to run the fan much if at all since this corn is going into bin when harvested at air temps below freezing?”
If the corn is cold, then it should not need to be aerated. Monitor the corn temperature to assure the grain stays cool in storage, but unless the corn temperature increases aeration is not required.

“I have a question from a farmer who filled his bin half full of corn at 24% moisture about 2 weeks ago. It is only a natural air dryer, so this is too wet for the bin. He was running the fans, but shut them down in this cold weather. He is looking for some advice. He has had this bin for 35 years, but the wet and very cold tems add a new challenge.”

Natural air and low temperature drying are not effective at temperatures below freezing, so this type of drying cannot be used until outside air temperatures average about 40 degrees – maybe a daily high of about 50 and low of about 30 degrees. The maximum recommended corn moisture content for natural air drying is 21% if the airflow rate is 1.0 cubic foot per minute per bushel. Increasing the airflow rate to 1.25 cfm/bu permits drying 22% moisture corn when air temperatures average between 40 to 50 degrees. An airflow rate of 2.0 cfm/bu is required to dry 24% moisture corn which is typically achieved by filling the bin to only one-half full. The allowable storage time for 24% moisture corn is only 40 days at 40 degrees and is 15 days at 50 degrees. I discourage trying to dry corn using natural air and low temperature drying at moisture contents exceeding 21. Corn at 24% moisture generally should be removed and dried in a high temperature dryer before temperatures average above freezing.

“He still has 50 acres to combine, and wants some advice. His thoughts

1. Empty the bin and dry the corn, before he puts more corn in.
2. Cool and “freeze” this corn
3. Combine rest of corn – add to bin, dry it before adding, don’t add because corn below it not in right condition for storage.”

He can hold 24% moisture corn as long as he keeps the temperature near or below freezing. A concern is that 24% moisture corn is at the threshold of the kernels freezing together. It would be safest to remove the 24% moisture corn and dry it. If the remaining corn to be harvested is above 23% moisture it should be dried before placing it into a bin. If it is below 23% moisture it can be stored while it can be kept near freezing temperature, but will need to be dried in a high temperature dryer before late winter. I would not recommend placing additional corn on top of 24% moisture corn due to the unloading and storability concerns.

There is additional information in a presentation on my website: http://www.ag.ndsu.edu/graindrying/presentations-2

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Finalists for the 2014 WI Soybean Yield Contest are Announced

Shawn Conley, Soybean and Wheat Extension Specialist

The 2014 growing season proved to be yet another challenging year for many WI soybean growers. Given these widespread challenges, we again experienced great interest in the 2014 WSA/WSMB Soybean Yield Contest. The top two entries in each division (in no particular order) were:

**Division 4:**
- Tim McComish, Shullsburg (planted Channel 2402R2 Brand)
- Kevin Bahr, Darlington (planted Channel 2402R2 Brand)

**Division 3:**
- Travis Van De Hey, Kaukauna (planted DuPont Pioneer P22T69R)
- Ron Ellis, Walworth (planted Jung 1250RR2)
- *WI Bean Team (Adam Gaspar, David Marburger, Ethan Smidt), Madison (planted DuPont Pioneer P28T33R)

*The WI Bean Team is ineligible for official prizes as they are grad students of Dr. Conley; however their efforts are still unofficially recognized.

**Division 2:**
- Steven Stetzer, Melrose (planted NK Brand 17G8)
- Steven Kloos, Stratford (planted DuPont Pioneer 91Y90)

**Division 1:**
- Paul Graf, Sturgeon Bay (planted DuPont Pioneer 90Y90)
- Jerry Koser, Almena (planted DuPont Pioneer 91M10)

The final ranking and awards will be presented at the 2015 Corn Soy Expo to be held at the Kalahari Convention Center, Wisconsin Dells on Thursday January 29th during the WSA/WSMB annual meeting.

The contest is sponsored by the WI Soybean Program and organized to encourage the development of new and innovative management practices and to show the importance of using sound cultural practices in WI soybean production.

For more information please contact Shawn Conley, WI State Soybean Specialist at 608-262-7975 or spconley@wisc.edu

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**Should We Be Using Soybean Maturity Group as a Tool for Variety Selection?**

Shawn Conley, Soybean and Wheat Extension Specialist

Over the last decade I have noticed a subtle shift across much of the northern soybean growing region towards planting later maturity group soybeans. This shift, either conscious or unconscious, may be attributed to earlier planting dates, relatively favorable fall harvest windows, and the drive for maximum yield as influenced by high commodity prices. As with all trends sooner or later, we have a correction year: 2014 was that year for many farmers. As farmers, consultants, and
the battered and bruised seed suppliers sort through the plethora of product offerings for 2015, a common question arises: "In 2015, how much weight should we really give to maturity group in these seed decisions?". For those of you with short attention spans like me, the short answer for soybean is not much....for the rest of you please read on to understand my reasoning.

In 2011, the WI Soybean Research Program published an article in the journal Crop Management entitled: "Optimal Soybean Maturity Groups for Seed Yield and Quality in WI" (Furseth et al, 2011). In this data set we looked at 893 varieties across 6 growing seasons (2004-2009) and three production regions in WI. Within each region we identified the optimal maturity group range for maximum yield. Those were 2.6-2.9, 2.1-2.4, and 2.0-2.2 for our southern, central and north central regions respectively. After I make this provocative statement this is usually where the audience either falls asleep, starts texting their neighbor about the lame and inept speaker (me), or uses the restroom and fails to hear as the great Paul Harvey would say ......the rest of the story.

Within each figure below you will also notice a maroon line directly below the black yield regression slope. This maroon line indicates the range of maturity groups that lie within 10% of maximum yield. These figures suggest that regardless of growing region in WI growers can select a variety that is almost one full maturity group earlier than the optimal maturity group range for maximum yield and still be within 10% of maximum yield.

These data further support Joe Lauer's assertion that "Every hybrid (or in our case cultivar or variety) must stand on its own" (Happy Thanksgiving JGL, you were positively quoted in a soybean article). In our recently released 2014 WI Soybean Variety Test Results book the maturity group range that included a starred variety (starred varieties do not differ from the highest yield variety in that test) was 1.9-2.8, 1.1-2.4, and 0.9-2.0 in our southern, central and north central regions respectively. This amplifies my assertion that the "relative" maturity group rating is trumped by individual cultivar genetic yield potential.

Lastly, since I brought it up lets also discuss our "relative" soybean maturity group rating system. If anyone has ever observed a multi-company variety trial in the fall, they may have notice many differences in maturity amongst varieties that have the same MG rating. For example in our 2014 Southern Region Glyphosate Tolerant Soybean Test we noted a 7 day maturity date range among all the 2.4 maturity group varieties listed. This may not seem important at the end of September, but in years when we plant late (Table 1), have a cool growing season and apply a fungicide those few days may matter.

As seed decisions are made for 2015, it is fine to keep the relative maturity rating on your check list, just don't have it near the top!

Table 1. Calendar date for reaching R5 (beginning seed fill) and R7 (beginning maturity) growth stage (G.S.) by planting
date and maturity group (M.G.) for the 2014 growing season at Hancock WI.

<table>
<thead>
<tr>
<th>Planting Date</th>
<th>M.G.</th>
<th>Timing of G.S. Initiation</th>
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</thead>
<tbody>
<tr>
<td>5-May</td>
<td>1.9</td>
<td>29-Jul 3-Sep</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>3-Aug 13-Sep</td>
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<tr>
<td></td>
<td>2.1</td>
<td>29-Jul 3-Sep</td>
</tr>
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<td></td>
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<td>2.4</td>
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<td>31-Jul 13-Sep</td>
</tr>
<tr>
<td>22-May</td>
<td>1.9</td>
<td>12-Aug 12-Sep</td>
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<td>1.9</td>
<td>23-Aug 27-Sep</td>
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<td>2.5</td>
<td>23-Aug 2-Oct</td>
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</tbody>
</table>

Literature cited:

2014 Wisconsin Corn Hybrid Performance Trials
Joe Lauer, Kent Kohn, and Thierno Diallo

Every year, the University of Wisconsin-Extension and the University of Wisconsin-Madison College of Agricultural and Life Sciences conduct a corn evaluation program in cooperation with the Wisconsin Crop Improvement Association. The purpose of this program is to provide unbiased performance comparisons of hybrid seed corn for both grain and silage available in Wisconsin.

In 2014, grain and silage performance trials were planted at 14 locations in four production zones: the southern, south central, north central, and northern zones. Both seed companies and university researchers submitted hybrids. Companies with hybrids included in the 2014 trials are listed in Table 1. Specific hybrids and where they were tested are shown in Table 2. A summary of the transgenic traits tested in 2014 is shown in Table 3. In the back of the report, hybrids previously tested over the past three years are listed in Table 24. At most locations, trials were divided into early and late maturity trials based on the hybrid relative maturities provided by the companies. The specific relative maturities separating early and late trials are listed in the tables.

GROWING CONDITIONS FOR 2014

Seasonal precipitation and temperature at the trial sites are shown in Table 5. The 2014 planting season, like the 2013 season, was one of the longest ever recorded in Wisconsin. Frequent rains caused delays, with many growers in north eastern Wisconsin not planting until mid-June. Delayed planting at Coleman, Marshfield, Seymour, and Valders combined with a cool growing season delayed harvest producing grain that was higher in moisture and lower for test weight than average. Over the entire growing season, growing degree-day accumulation was below the 30-year normal in both northern and southern Wisconsin. During May and June precipitation was significantly above average throughout Wisconsin. Cold weather and snow occurred during early November affecting grain dry down at Coleman, Marshfield, and Seymour. Little insect or disease pressure was observed in the trials. Grain and silage yields were above normal compared to the 10-year average at early planted sites.

CULTURAL PRACTICES

The seedbed at each location was prepared by either conventional or conservation tillage methods. Seed treatments of hybrids entered into the trials are described in Table 4. Fertilizer was applied as recommended by soil tests. Herbicides were applied for weed control and supplemented with cultivation when necessary. Corn rootworm insecticide was applied when the previous crop was corn. Information for each location is summarized in Table 6.

PLANTING

A precision vacuum corn planter was used at all locations, except Spooner. Two-row plots, twenty-five foot long, were planted at all locations. Plot were not hand-thinned. Each hybrid was grown in at least three separate plots (replicates) at each location to account for field variability.

HARVESTING

Grain: Two-row plots were harvested with a self-propelled corn combine. Lodged plants and/or broken stalks were counted, plot grain weights and moisture contents were measured and yields were calculated and adjusted to 15.5% moisture. Test weight was measured on each plot.

Silage: Whole-plant (silage) plots were harvested using a tractor driven, three-point mounted one-row chopper. One row was analyzed for whole plant yield and quality. Plot weight and moisture content were measured, and yields were adjusted to tons dry matter / acre. A sub-sample was collected and analyzed using near infra-red spectroscopy.
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- Introduction
- Companies entering hybrids
- Hybrid index
- Transgenic technologies
- Seed treatments
- Temperature and Precipitation
- Trial management
- Hybrid history

## Grain

### Southern Zone
- Arlington, Janesville, Lancaster
  - Early Maturity Trial: 105 day or earlier
  - Late Maturity Trial: later than 105 day
  - Table 7
  - Table 8

### South Central Zone
- Fond du Lac, Galesville, Hancock (irrigated)
  - Early Maturity Trial: 100 day or earlier
  - Late Maturity Trial: later than 100 day
  - Table 9
  - Table 10

### North Central Zone
- Chippewa Falls, Marshfield, Seymour, Valders
  - Early Maturity Trial: 90 day or earlier
  - Late Maturity Trial: later than 90 day
  - Table 11
  - Table 12

### Northern Zone
- Marshfield, Spooner (three sites), Coleman
  - Table 13

## Silage

### Southern Zone
- Arlington and Lancaster
  - Early Maturity Trial: 110 day or earlier
  - Late Maturity Trial: later than 110 day
  - Table 14
  - Table 15

### South Central Zone
- Arlington and Galesville
  - Early Maturity Trial: 106 day or earlier
  - Late Maturity Trial: later than 104 day
  - Table 16
  - Table 17

### North Central Zone
- Chippewa Falls, Marshfield, Valders
  - Early Maturity Trial: 99 day or earlier
  - Late Maturity Trial: later than 99 day
  - Table 18
  - Table 19

### Northern Zone
- Marshfield, Spooner (two sites), Coleman
  - Table 20
  - Figure 5

## Organic

### South Central Zone
- Fond du Lac, Galesville, Hancock
  - Table 21

### North Central Zone
- Chippewa Falls, Marshfield, Seymour, Valders
  - Table 22

## Specialty - Dryland

### Central Zone - Dryland
- Hancock Deficit Irrigation,
  - Hancock Full Irrigation
  - Table 23
**Technology references**

References to transgenic traits in this publication are for your convenience and are not an endorsement or criticism of one trait over other similar traits. Every attempt was made to ensure the accuracy of traits in the hybrids tested. You are responsible for using traits according to the current label directions of seed companies. Follow directions exactly to protect the environment and people from misuse. Failure to do so violates the law.

**PRESENTATION OF DATA**

Yield results for individual location trials and for multi-location averages are listed in Tables 7 through 22. Within each trial, hybrids are ranked by moisture, averaged over all trials conducted in that zone during 2014. Yield data for both 2013 and 2014 are provided if the hybrid was entered previously in the 2013 trials. Starting in 2009, a nearest neighbor analysis of variance for all trials as described by Yang et al. (2004, Crop Science 44:49-55) and Smith and Casler (2004, Crop Science 44:56-62) is calculated. A hybrid index (Table 2) lists relative maturity ratings, specialty traits, seed treatments and production zones tested for each hybrid.

**RELATIVE MATURITY**

Seed companies use different methods and standards to classify or rate the maturity of corn hybrids. To provide corn producers a "standard" maturity comparison for the hybrids evaluated, the average grain or silage moisture of all hybrids rated by the company relative maturity rating system are shown in each table as shaded rows. In these Wisconsin results tables, hybrids with lower moisture than a particular relative maturity average are likely to be earlier than that relative maturity, while those with higher grain moisture are most likely later in relative maturity. Company relative maturity ratings are rounded to 5-day increments.

The Wisconsin Relative Maturity rating system for grain (GRM) and silage (SRM) compares harvest moisture of a grain or silage hybrid to the average moisture of company ratings using linear regression. Each hybrid is rated within the trial and averaged over all trials in a zone. Maturity ratings (company, GRM, and SRM) can be found in Table 2.

**GRAIN PERFORMANCE INDEX**

Three factors—yield, moisture, and standability—are of primary importance in evaluating and selecting corn hybrids. A performance index (P.I.), which combines these factors in one number, was calculated for multi¬location averages for grain trials. This performance index evaluates yield, moisture, and lodged stalks at a 50 (yield): 35 (moisture): 15 (lodged stalks) ratio.

The performance index was computed by converting the yield, moisture (dry matter), and upright stalk values of each hybrid to a percentage of the test average. Then the performance index for each hybrid that appears in the tables was calculated as follows:

\[
\text{Performance Index (P.I.)} = \left[ \frac{(\text{Yield} \times 0.50) + (\text{Dry matter} \times 0.35) + (\text{Upright stalks} \times 0.15)}{100} \right]
\]

**SILAGE PERFORMANCE INDEX**

Corn silage quality was analyzed using near-infrared spectroscopy equations derived from previous work. Plot samples were dried, ground, and analyzed for crude protein (CP), acid detergent fiber (ADF), neutral detergent fiber (NDF), in vitro cell wall digestibility (NDFD), in vitro digestibility (IVD), and starch. Spectral groups and outliers were checked using wet chemistry analysis.

The MILK2006 silage performance indices, milk per ton and milk per acre, were calculated using an adaptation by Randy Shaver (UW-Madison Department of Dairy Science) of the MILK91 model (Undersander, Howard and Shaver; Journal Production Agriculture 6:231-235). In MILK2006, the energy content of corn silage was estimated using a modification of a published summative energy equation (Weiss and co-workers, 1992; Animal Feed Science Technology 39:95-110). In the modified summative equation, CP, fat, NDF, starch, and sugar plus organic acid fractions were included along with their corresponding total-tract digestibility coefficients for estimating the energy content of corn silage. Whole-plant dry matter content was normalized to 35% for all hybrids. The sample lab measure of NDFD was used for the NDF digestibility coefficient. Digestibility coefficients used for the CP, fat, and sugar plus organic acid fractions were constants. Dry matter intake was estimated using NDF and NDFD content assuming a 1350 lb. cow consuming a 30% NDF diet. Using National Research Council (NRC, 2001) energy requirements, the intake of energy from corn silage was converted to expected milk per ton. Milk per acre was calculated using milk per ton and dry matter yield per acre estimates (Schwab, Shaver, Lauer, and Coors, 2003; Animal Feed and Science Technology 109:1-18).

**LEAST SIGNIFICANT DIFFERENCE**

Variations in yield and other characteristics occur because of variations in soil and growing conditions that lower the precision of the results. Statistical analysis makes it possible to determine, with known probabilities of error, whether a difference is real or whether it might have occurred by chance. Use the appropriate LSD (least significant difference) value at the bottom of the tables to determine true differences.

Least significant differences (LSD's) at the 10% level of probability are shown. Where the difference between two selected hybrids within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure in nine out of ten chances that there is a real difference between the two hybrid averages. If the difference is less than the LSD value, the difference may still be real, but the experiment has produced no evidence of real differences. Hybrids that were not significantly lower in performance than the highest hybrid in a particular test are indicated with an asterisk (*).

**HOW TO USE THESE RESULTS TO SELECT TOP-PERFORMING HYBRIDS**

The results can be used to provide producers with an independent, objective evaluation of performance of unfamiliar hybrids, promoted by seed company sales representatives, compared to competitive hybrids.
Below are suggested steps to follow for selecting top-performing hybrids for next year using these trial results:

1. **Use multi-location average data in shaded areas.** Consider single location results with extreme caution.

2. Begin with trials in the zone(s) nearest you.

3. Compare hybrids with similar maturities within a trial. You will need to divide most trials into at least two and sometimes three groups with similar average harvest moisture—within about 2% range in moisture.

4. Make a list of 5 to 10 hybrids with highest 2014 Performance Index within each maturity group within a trial.

5. **Evaluate consistency of performance** of the hybrids on your list over years and other zones.
   - Scan 2013 results. **Be wary** of any hybrids on your list that had a 2013 Performance Index of 100 or lower. Choose two or three of the remaining hybrids that have relatively high Performance Indexes for both 2013 and 2014.
   - Check to see if the hybrids you have chosen were **entered in other zones**. (For example, some hybrids entered in the Southern Zone Trials, Tables 6 and 7, are also entered in the South Central Zone Trials, Tables 8 and 9).
   - **Be wary** of any hybrids with a Performance Index of 100 or lower for 2013 or 2014 in any other zones.

6. Repeat this procedure with about three maturity groups to select top-performing hybrids with a range in maturity, to spread weather risks and harvest time.

7. **Observe relative performance** of the hybrids you have chosen based on these trial results in several **other reliable, unbiased trials** and **be wary** of any with inconsistent performance.

8. Consider including the hybrids you have chosen in your own test plot, primarily to evaluate the way hybrids stand after maturity, dry-down rate, grain quality, or ease of combine-shelling or picking.

9. Remember that you don't know what weather conditions (rainfall, temperature) will be like next year. Therefore, the most reliable way to choose hybrids with greatest chance to perform best next year on your farm is to consider performance in 2013 and 2014 over a wide range of locations and climatic conditions.

You are taking a tremendous gamble if you make hybrid selection decisions based on 2014 yield comparisons in only one or two local test plots.

**OBTAINING DATA ELECTRONICALLY**

This report is available in Microsoft Excel and Acrobat PDF formats at the Wisconsin Corn Agronomy website: http://corn.agronomy.wisc.edu.

The most current version of Wisconsin Corn Hybrid Performance Trials (A3653) is also available to download as a PDF or purchase as a printed booklet at the UW Extension Learning Store: http://learningstore.uwex.edu.

For more information on the Wisconsin Crop Improvement Association, visit: http://wcia.wisc.edu.

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**Photo credit:** Sevie Kenyon, UW-Extension outreach specialist.

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**WISCONSIN HYBRID CORN PERFORMANCE TRIALS-2014 (A3653)  R-11-2014-1-3**

To view the PDF version of this article click on the link below: http://corn.agronomy.wisc.edu/HT/2014/2014Text.aspx

**Plant Disease Diagnostic Clinic (PDDC) Update**

Brian Hudelson, Sean Toporek and Joyce Wu, Plant Disease Diagnostics Clinic

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 November 8, 2014 through November 14, 2014.
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 November 15, 2014 through November 21, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEGETABLES, Basil, Downy Mildew, Peronospora belbahrii, Columbia</td>
</tr>
</tbody>
</table>

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 November 29, 2014 through December 5, 2014.

<table>
<thead>
<tr>
<th>Plant/Sample Type, Disease/Disorder, Pathogen, County</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRUIT CROPS, Apple, Phomopsis Canker, Phomopsis sp., Chippewa</td>
</tr>
</tbody>
</table>

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

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**Wisconsin Pest Bulletin 11/13/14**

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. 18 of the Wisconsin Pest Bulletin is now available at:

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