2018 Corn Silage Fungicide Trial Results: A Story of Vomitoxin

Damon L. Smith, Ph.D., Associate Professor and Extension Specialist, Department of Plant Pathology, University of Wisconsin-Madison; Brian Mueller, M.S., Assistant Researcher, Department of Plant Pathology, University of Wisconsin-Madison; John Goeser, Ph.D., Adjunct Assistant Professor, Department of Dairy Science, University of Wisconsin-Madison and Animal Nutrition and R&I, Rock River Labs

The 2018 corn growing season can be summed up by saying it has been challenging. In Wisconsin, corn diseases have kept producers and agronomists moving to try to manage multiple issues for much of the summer. Early in the season gray leaf spot (GLS) moved in quick, followed by onset of a new disease called tar spot (TS), then northern corn leaf blight (NCLB) reared its head in August. This was then followed by high levels of ear rot in some fields.

This is the first season that I have had to rate four diseases in one research trial. While GLS, NCLB, and TS create their own unique management challenges they can also stress the corn plant which results in secondary issues such as loss in stalk integrity or a plant that is left susceptible to other pathogens. I have written a previous article describing some of these issues, and how to deal with them.

To manage some of these foliar issues, increasing interest has been placed on using fungicides, especially in grain corn. Over the last several seasons, interest is growing from dairy producers who are also treating corn silage hybrids with fungicide. Why all the interest in treating silage corn with fungicides? Some of the intent is to improve feed digestibility. Dr. Felipe Cardoso’s animal science laboratory at the University of Illinois has published several peer-reviewed papers describing the physiological changes in the corn plant treated with fungicides, that result in improved feed digestibility. In those studies, yield was often not directly impacted by the fungicide application, but fibrous changes in the corn plant improved feed conversion to milk production in cows fed silage corn treated with fungicide (Haerr et al., J. Dairy Sci., 2015; Kalebich et al., J. Animal Feed Sci., 2017).

Our laboratory at the University of Wisconsin-Madison is also interested in the effects that fungicides might have on mycotoxin accumulation in silage corn hybrids. We are especially interested in the accumulation of deoxynivalenol (DON or vomitoxin). In corn, DON is primarily produced by a fungus called Fusarium graminearum. Fusarium graminearum can cause Gibberella ear rot (Fig. 1) and also Gibberella stalk and crown rot of corn (Fig. 2).
Mycotoxins are secondary metabolites produced by fungi, that can be toxic to plants and/or animals (including humans). These are termed secondary metabolites as they are not produced by primary metabolism in fungi. We understand some things about secondary metabolism in fungi, but there is much left to learn. Stressors on fungi can be responsible for inducing secondary metabolism, but other environmental and substrate cues might also be important. The inconsistency in induction of secondary metabolism in fungi, might be one reason that we see no linear relationship between ear rot in corn and vomitoxin accumulation. It is not uncommon to find low levels of ear rot, yet find high levels of vomitoxin in finished corn grain.

Animal nutritionists have observed many impacts of mycotoxins on animals, including dairy cattle. These can range from simple reductions in milk production all the way up to feed refusal, hemorrhaging, and death. For this reason, nutritionists have devised guidelines for dietary limits of some mycotoxins to reduce harm to the animal. Dr. John Goeser has assembled the “Mycotoxin Guidelines and Dietary Limits” fact sheet to help producers better understand the potentially harmful toxin levels in the total diet (DM). You will see in that chart that for DON, the suggested limit is just 0.5 to 1.0 ppm for dairy cattle. The fact sheet also provides a helpful formula to understand the contribution of toxin in a particular component of feed, relative to the total diet.

So how do fungicides affect DON in corn plants at harvest? Let’s look at some data from Wisconsin in 2017 and 2018.

This article continues on Damon Smith’s blog with several more research graphs and charts.

To read the rest of this article, click here.

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**Soil, Water and Nutrient Management Meetings**

Francisco Arriaga, Professor UW Soil Science, Soil Science Specialist, UW-Madison

Madison, Wis. – The University of Wisconsin-Extension in conjunction with UW-Madison Department of Soil Science will conduct eight Soil, Water and Nutrient Management Meetings Nov. 27 – Dec. 6, 2018 around the state to provide research updates in the field of soil management, fertility, and nutrient management.

Presentations include: – Cover crops and nutrient management – Can we use soil health tests for fertilizer recommendations? – Evaluating fall manure BMPs – Sampling soils and plants in Wisconsin – Are FGD and SDA calcium sulfite worth using? – Soil compaction issues after a wet fall – recap – Wisconsin nutrient management update

Speakers include UW-Extension Soil Specialists Carrie Laboski, Matt Ruark and Francisco Arriaga; Andrew Stammer, Director of the Soil & Forage Analysis Laboratory; and Sue Porter, Wisconsin Department of Agriculture, Trade and Consumer Protection.

Meetings will held from 10:00am to 3:00pm with a lunch break between 12:00pm and 1:00pm. Registration is $45 per person. Lunch and a packet with relevant resources are included with registration. It is requested to contact the host of the location you are interested in attending to pre-register at least 1-week prior to the event to save a seat, meal, and materials packet. Continued Education Units (CEUs) for Certified Crop Advisers will be provided (2.0 NM and 2.0 SW).

The schedule for the meetings is:

- **Tuesday, November 27:** DeForest at Comfort Inn, 5025 County Hwy V. Contact: Heidi Johnson, UW-Extension Dane County at 608-224-3716. Please register online at fyi.uwex.edu/danecountyag/upcoming-ag-programs/
- **Wednesday, November 28:** Eau Claire at Clarion Hotel, 2703 Craig Road. Contact: Mark Hagedorn, UW-Extension Eau Claire County, 227 First St., Altoona, WI 54720; 715-839-4712.
- **Thursday, November 29:** Sparta at Jake’s Northwoods, 1132 Angelo Rd., Hwy 21. Contact: Bill Halfman, UW-Extension Monroe County, 14345 Co. Hwy B, Rm. 1, Sparta, WI 54656; 608-269-8722.
• Friday, November 30: Marshfield at Marshfield Ag Research Station Auditorium, 2611 Yellowstone Dr. Contact: Evan Henthorne, UW-Extension Adams County, 569 N. Cedar St. Ste. 3, Adams, WI 53910; 608-339-4237.

• Monday, December 3: Juneau at Dodge County Admin Bldg., 127 Oak St. Contact: Laure Dei, UW-Extension Dodge County, Admin Bldg. 127 Oak St., Juneau, WI 53039; 920-386-3790.

• Tuesday, December 4: Kiel at Millhome Super Club, 3 miles East on Hwy. 57/31. Contact: Mike Ballweg, UW-Extension Sheboygan County, 5 University Dr., Sheboygan, WI 53081; 920-459-5904.

• Wednesday, December 5: Cecil at The Main Event, 206 North Lemke St. Contact: Kimberly Kassube, UW-Extension Shawano County, Courthouse, Rm. 101, 311 N. Main St., Shawano, WI 54166; 715-526-6136.

• Thursday, December 6: Dodgeville at Iowa County Health and Human Services Bldg., 303 W. Chapel St. Contact: Gene Schriefer, UW-Extension Iowa County, 303 W. Chapel St., Ste. 1200, Dodgeville, WI 53533; 608-930-9850.

*For more information, see the flyer attached at the end of this pdf.

Can Conservation Pay? Iowa County Uplands Watershed Group Farm Tour

Daniel H. Smith, Nutrient and Pest Management Program, University of Wisconsin-Madison

An upcoming field day on October 24th in northern Iowa County will provide insight into the economics of conservation. The field day will showcase speakers on the economics of no-till and nutrient management planning. Additionally, speakers will discuss cover crops following silage corn and manure in cover crop systems.

The field day will include a tour of the farm’s cover crop fields. The field day will begin around 9:45 a.m. and conclude by 12:00 p.m. A complimentary lunch will be served with guest speaker Lance Nacio, a Gulf of Mexico fisherman. The field day is free, however, registration is required.

Please see the attached flyer for more information.

2019 Agronomy Update Meetings

This is the first announcement for the 2019 Agronomy Update meeting series. The Department of Agronomy and UWEX will offer Crop Production and Management meetings at eight locations during 2019. Joe Lauer and Shawn Conley will present the latest information on hybrid/variety performance, an analysis and discussion of last year’s growing season, and updated recommendations for field crop production.

We invite you to be a part of these meetings. The meeting dates and locations for the 2019 Agronomy Update meetings are:

- Janesville Monday, Jan. 7 at 12:00
- Madison Tuesday, Jan. 8 at 7:30 am
- Fond du Lac Tuesday, Jan. 8 at 12:00
- Kimberly Wednesday, Jan. 9 at 7:30 am
- Wausau Wednesday, Jan. 9 at 12:00
- Eau Claire Thursday, Jan. 10 at 7:30 am
- Sparta Thursday, Jan. 10 at 12:00
- Belmont Friday, Jan. 11 at 12:00

Please join us at a meeting in your area. Help us spread the word by informing seed dealers and the ag industry from your county or area, and encourage them to attend.

If you have any questions, or if I can be of any assistance, please contact Joe Lauer:

Office: (608) 263-743
Cell: (608) 575-0731
Fax: (608) 262-5217
Lab: (608) 262-1840
Farm: (608) 846-3761 x120
Email: jglauer@wisc.edu
Website: http://corn.agronomy.wisc.edu

For more information, see the flyer attached at the end of this pdf.
Herbicide Site of Action Key for Crop Injury Symptoms

by Rodrigo Werle (UW-Madison Extension Cropping Systems Weed Scientist) and Maxwel Oliveira (UW-Madison Weed Science Postdoctoral Research Associate)

With the widespread occurrence of herbicide-resistant weeds, corn and soybean farmers are having to diversify their herbicide programs to obtain adequate levels of weed control. The increased herbicide diversification increases the likelihood of crop injury due to carryover, misapplication, tank contamination, and/or drift.

To help you determine which herbicide(s) may be responsible for suspected injury on crops, this key uses the herbicide’s site of action (SoA) and respective Weed Science Society of America group number; herbicides within the same SoA can cause similar symptoms. After reaching a specific SoA, you can check if any of the herbicides from that group are the source of crop response. Herbicide control (selectivity) is specified for broadleaf and/or grass weed species and remember to also observe weeds for injury symptoms.

To download the “Herbicide Site of Action Key for Crop Injury Symptoms” click HERE

UW/UWEX Plant Disease Diagnostic Clinic (PDDC) Update October 12

Brian Hudelson, Sue Lueloff, John Lake and Ann Joy

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 6, 2018 through October 12, 2018.

The 10/12/18 PDDC Wisconsin Disease Almanac (i.e., weekly disease summary) is now available at:

OTHER PROGRAMS OF INTEREST

2019 Wisconsin Agribusiness Classic

January 15-17, 2019
Alliant Energy Center, Madison
For more details, see
http://agclassic.org
**Schedule and Contacts (continued)**

**Friday, Nov. 30** – Marshfield at Marshfield Ag Research Station Auditorium, 2611 Yellowstone Dr. **CONTACT HOSTS:** Evan Henthorne, Adams Co. UWEX, 569 N. Cedar St. Ste 3, Adams, WI 53910; 608-339-4237

**Monday, Dec. 3** – Juneau at Dodge Co. Admin Bldg., 127 Oak St. **CONTACT HOST:** Laure Dei, Dodge Co. UWEX, Admin Bldg. 127 Oak St., Juneau, WI 53039; 920-386-3790

**Tuesday, Dec. 4** – Kiel at Millhome Super Club, 3 miles East on Hwy. 57/31. **CONTACT HOST:** Mike Ballweg, Sheboygan Co. UWEX, 5 University Dr., Sheboygan, WI 53081; 920-459-5904

**Wednesday, Dec. 5** – Cecil at The Main Event, 206 North Lemke St. **CONTACT HOST:** Kimberly Kassube, Shawano Co UWEX, Courthouse, Rm. 101, 311 N. Main St., Shawano, WI 54166; 715-526-6136

**Thursday, Dec. 6** – Dodgeville at Iowa Co. Health & Human Services Bldg., 303 W. Chapel St. **CONTACT HOST:** Gene Schriefer, Iowa Co. UWEX, 303 W. Chapel St., Ste. 1200, Dodgeville, WI 53533; 608-930-9850

**For program content questions, contact**

- Francisco Arriaga
- Email: farriaga@wisc.edu
- Phone: 608-263-3913
Field Day and Seafood Lunch: Can Conservation Pay?
Wednesday, October 24, 2018
WI Conservation Farming With Gulf Seafood!

Join Iowa County’s Uplands Watershed Group at Dolan Farms, followed by brats and seafood

5443 County Rd ZZ, Dodgeville, WI 53533

9:45 – Refreshments
10:00 – Speakers on Economics of No-Till, Nutrient Management Plans
10:40 - Tour Ryan Dolan’s cover crops
11:20 – Speakers – Cover crops following corn silage - manure in cover crop systems
12:00 – Lunch (Hear from Gulf fishermen)

Come discuss the economics of conservation. (Bring your own examples and experiences to share.) Then enjoy brats, plus seafood caught by fishermen in the Gulf – whose challenges with nutrient build-up and biological die-off in the Gulf Dead Zone we aid with our conservation practices.

For more information, contact: Margaret Krome, Michael Fields Agricultural Institute 608-238-1440 or Gene Schriever, Iowa County Extension 608-930-9850
2019 Wisconsin Agronomy Update Meetings

The Department of Agronomy will offer Crop Production and Management Meetings at eight locations during 2019. Joe Lauer and Shawn Conley will present the latest information on hybrid/variety performance, an analysis and discussion of last year's growing season, and updated recommendations for field crop production. The registration fee includes a meal and information materials. Certified Crop Advisor CEU credits have been requested (3.0 CEU hours-Crop Management). Below is a list of meeting sites, dates and times. A $45.00 registration fee (which includes the meal) will be charged for the meeting. A “walk-in” fee will be charged to those who have not preregistered. Extra information packets are available for $21.00 each. Make your reservations with the host agent one week prior to the scheduled meeting date.

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<tr>
<th>Location, date and time</th>
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<th>Host Agent</th>
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| **Janesville**  
Monday, Jan. 7 at 12:00 | Holiday Inn Express  
3100 Wellington Dr. | Nick Baker  
Rock Co. Extension Office  
51 S. Main St.  
Janesville, WI 53545-3978  
(608) 757-5696 nick.baker@ces.uwex.edu | |
| **Madison**  
Tuesday, Jan. 8 at 7:30 am | Comfort Inn  
5025 County Hwy. V,  
De Forest, WI  
(Hwy V exit off of 90/94) | Heidi Johnson  
Dane Co. Extension Office  
5201 Fen Oak Drive, Rm. 138  
Madison, WI 53718  
http://fyi.uwex.edu/danecountyag  
(608) 224-3716 Heidi.johnson@ces.uwex.edu | |
| **Fond du Lac**  
Tuesday, Jan. 8 at 12:00 | UW Fond du Lac  
Rm. 114 University Center  
400 University Drive | Tina Kohlman  
Fond du Lac Co. Extension Office  
400 University Drive  
Fond du Lac, WI 54935-2998  
(920) 929-3171 tina.kohlman@ces.uwex.edu | |
| **Kimberly**  
Wednesday, Jan. 9 at 7:30 am | Liberty Hall  
800 Eisenhower Drive  
(Hwy. 441, College Avenue  
Exit, East 1 block) | Kevin Jarek  
Outagamie County  
3365 W Brewster St.  
Appleton, WI 54914  
(920) 832-5121 kevin.jarek@ces.uwex.edu | |
| **Wausau**  
Wednesday, Jan. 9 at 12:00 | Marathon County UWEX Office, Room 5  
212 River Drive | Heather Schlesser  
Marathon County UW-Extension Office  
212 River Drive  
Wausau, WI 54403  
(715) 261-1230 heather.schlesser@ces.uwex.edu | |
| **Eau Claire**  
Thursday, Jan. 10 at 7:30 am | Clarion Hotel Campus Area/Green Mill Restaurant and Bar  
(Campus area)  
2703 Craig Road | Mark Hagedorn  
Eau Claire Co. Extension Office  
227 1st Street West  
Altoona, WI 54720-1601  
(715) 839-4712 mark.hagedorn@ces.uwex.edu | |
| **Sparta**  
Thursday, Jan. 10 at 12:00 | Jakes Northwoods  
Hwy 21 (NE side of town)  
1132 Angelo Rd. | Bill Halfman  
Monroe County - UW Extension  
14345 County Highway B, Room 1  
Sparta, WI 54656-0309  
(608) 269-8722 bill.halfman@ces.uwex.edu | |
| **Belmont**  
Friday, Jan. 11 at 12:00 | Belmont Inn & Suites Convention Center  
103 W Mound View Ave.  
(North of Hwy 151 at Belmont) | Gene Schriefer  
Lafayette County – UW Extension Agriculture Center  
627 Washington Street  
Darlington, WI 53530-1396  
(608) 776-4820 gene.schriefer@ces.uwex.edu | |