Wisconsin Crop Manager

Volume 22 Number 25 - - - University of Wisconsin Crop Manager - - - August 27, 2015

Contents

Results of the 2015 Wisconsin Winter Wheat Foliar Fungicide Trial 123

Start Managing for Fusarium Head Blight Now Before You Plant the 2015/16 Crop 124

Top 8 Recommendations for Winter Wheat Establishment in 2015 125

Interseeding cover crops into V5 corn 129

Vegetable Crop Update August 16, 2015 130

Vegetable Crop Update August 21, 2015 130

UW Madison/ Extension Plant Disease Diagnostic Clinic (PDDC) Update 131

UW Madison/ Extension Plant Disease Diagnostic Clinic (PDDC) Update 132

Wisconsin Pest Bulletin 8-20-15 132

Results of the 2015 Wisconsin Winter Wheat Foliar Fungicide Trial

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

As we head into the 2015/16 Wisconsin winter wheat field season, I have received a lot of questions on Fusarium head blight (scab) management due to the heavy pressure from that disease in the 2014 and 2015 wheat crops. Along with those questions, always come inquiries about fungicide programs, specifically fungicide timing and fungicide products effective for controlling the disease. We have already addressed timing of application in this article: Start Managing for Fusarium Head Blight Now Before You Plant the 2015/16 Crop. But what about efficacy of products and fungicide programs? Previous results from 2013 and 2014 Wisconsin Winter Wheat Fungicide evaluations can be found by CLICKING HERE. In addition, you will find the 2015 fungicide evaluation results below.

Fusarium head blight (scab) on a wheat head.

The 2015 trial was established at the Arlington Agricultural Research Station located in Arlington, WI. The soft red winter wheat cultivar 'Kaskaskia' was chosen for this study. Wheat was planted on 24 Sep 2014. Treatments consisted of a non-treated control and 9 fungicide treatments. All fungicide treatments contained the non-ionic surfactant Induce 90% SL at 0.125% v/v. Fungicides were applied using a CO2 pressurized backpack sprayer calibrated to deliver 20 GPA. Fungicides were used to target general wheat disease in the area. Fungicides were applied either just before jointing (Feekes 5), at emerging flag leaf (Feekes 8), at anthesis (Feekes 10.5.1), or using two sprays with the first occurring just prior to jointing (8 May) or at emerging flag leaf (21 May) and the second spray being applied at anthesis (3 Jun). Natural sources of pathogen inoculum were relied upon for disease and

	FHB Disease Incidence (%)	Yield (bu/a)	Test Weight (lbs/bu)
Non-treated Control	20.0 a	90.6 d	57.6
Quilt Xcel @ 10.5 fl oz/a (Feekes 8)	13.8 b	95.8 ad	56.8
Stratego YLD @ 5.0 fl oz/a (Feekes 8)	12.5 b	99.2 ab	56.9
Prosaro SC @ 6.5 fl oz/a (Feekes 8)	11.3 bc	98.1 ac	57.6
Trivapro @ 14.6 fl oz/a (Feekes 8)	11.3 bc	93.0 bcd	58.1
Stratego YLD @ 2.0 fl oz/a (Feekes 5) + Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	6.3 cd	102.5 a	57.8
Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	6.3 cd	98.4 ab	58.6
Priaxor @ 2.0 fl oz/a (Feekes 5) + Caramba @ 13.5 fl oz/a (Feekes 10.5.1)	4.7 d	91.4 cd	57.7
Stratego YLD @ 5.0 fl oz/a (Feekes 8) + Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	3.3 d	98 ac	58.5
Quilt Xcel @ 10.5 fl oz/a (Feekes 8) + Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	3.0 d	92.7 bcd	57.1
Pr>F	<0.01	0.09	ns
LSD	5.58	6.79	ns

plots were also inoculated with Fusarium graminearum (the head blight pathogen). Fusarium head blight was the primary disease in the trial and was evaluated by estimating average incidence in each plot. Level of deoxynivalenol (DON) will also be evaluated but results are not yet in.

Weather in spring 2015 was cool and rainy before transitioning to warmer and wet near wheat head emergence. Leaf disease incidence and severity was low in this trial. No powdery mildew was observed. Visible levels of Fusarium head blight were moderate in the non-treated control (see table below). All plots that received fungicide had significantly less Fusarium head blight than the non-treated control. Plots that received Prosaro or Caramba fungicide at the Feekes 10.5.1 application timing typically had lower levels of disease. Plots where fungicide was applied at Feekes 8 only typically had higher levels of Fusarium head blight compared to plots that received an application at Feekes 10.5.1. Plots with the lowest levels of Fusarium head blight receive either Quilt Xcel @ 10.5 fl oz/a or Stratego YLD @ 5.0 fl oz/a at Feekes 8 followed by Prosaro @ 6.5 fl oz/a at Feekes 10.5.1. Although, yield was highest in plots that received Stratego YLD @2.0 fl oz/a at Feekes 5 followed by Prosaro @ 6.5 fl oz/a applied at Feekes 10.5.1. Application of fungicide at the Feekes 10.5.1 timing reduced visible disease and often improved yield at this research location in 2015. Phytotoxicity was not observed for any treatment.

Start Managing for Fusarium Head Blight Now Before You Plant the 2015/16 Crop

Shawn Conley, State Soybean and Small Grains Specialist

Damon Smith, State Field Crops Pathology Specialist

The 2014 and 2015 WI winter wheat crops both endured significant Fusarium head blight (FHB or scab) incidence as well as mycotoxin (vomitoxin) dockage and outright rejections. Here are a few considerations for managing FHB before the 2015/16 crop even goes into the ground.

1. Crop rotation matters. Data from our long-term rotation studies indicate that ***wheat following soybean*** provides the greatest yields. The next best options are wheat following corn silage (6.5% less) then corn for grain (21% less). Wheat following alfalfa or another leguminous crop are also good options, though the N credits following alfalfa may best be served going to corn. Furthermore, background fungal pressure (residue on and in soil) from the FHB fungus will be greater following corn then soybean or another legume, however know that spores that infect your wheat crop can arrive from outside the field. Please click to see more information on the Top 8 Recommendations for Winter Wheat Establishment in2015.

2. Variety selection matters. Data from our 2015 WI Winter Wheat Performance Test shows variable yield and disease performance among the varieties listed. Select those varieties that have both good to excellent FHB resistance and high yield. When evaluating FHB resistance, low numbers for both FHB incidence and severity can be helpful, but the major focus should be placed on FHB incidence (measure of the number of FHB-symptomatic plants in a stand).

3. Application timing matters. One of the biggest challenges year in and year out is improper fungicide application timing. Our data suggests that on susceptible (Hopewell) or moderately susceptible varieties (Kaskaskia) equal efficacy of the fungicide Prosaro at a rate of 6.5 fl oz/acre can be achieved when applied between Feekes 10.5.1 (anthesis) and 5 days after anthesis. Given the variability of head emergence and anthesis across a landscape it may prove best to wait a few days until the whole field is flowering than to apply too soon. If the extruded anthers have turned from yellow to white across the whole field then you are likely too late. Remember it roughly takes a wheat head 7 days to completely self-pollinate.

Fusarium head blight incidence ratings for four soft red winter wheat varieties treated with Prosaro SC fungicide at 6.5 fl oz/a at anthesis (Feekes 10.5.1), five days after anthesis, or not treated in Wisconsin in 2015.

	Hopewell (Susceptible)	Kaskaskia (Moderately Susceptible)	Pro 200 (Moderately Resistant)	Sunburst (Moderately Resistant)
Prosaro SC @ 6.5 fl oz/a (Feekes 10.5.1)	9.5b	2b	0.5	4
Prosaro SC @ 6.5 fl oz/a (5 days after Feekes 10.5.1)	7.5b	5.25b	2.75	2.75
Non-treated control	31.25a	17.5a	3	1.5
Pr>F	0.01	0.01	ns	ns
LSD	6.44	6.44	ns	ns

4. Choose the right fungicide class. Make sure you use the appropriate fungicide product and class to manage FHB. The label for products containing strobilurin active ingredients (FRAC group 11) ends prior to flowering. Late application can actually lead to increased mycotoxin levels. Triazole containing products (FRAC group 3) are recommended for FHB control. For a list of products and efficacy ratings, visit the Field Crops Fungicide Information Page.

5. Harvest timing and flash drying. The word on the street is that in 2016 elevators will push growers to harvest early (18% moisture or higher) and subsequently dry grain to mitigate mycotoxin levels. While drying grain to 13% or less moisture is a good storage practice, know this process may kill the pathogen but any mycotoxin levels already in the grain will not dissipate. Vomitoxin is a very stable molecule and IS NOT degraded by heat, freezing, or drying.

Top 8 Recommendations for Winter Wheat Establishment in 2015

Shawn Conley, State Soybean and Small Grains Specialist

John Gaska, Outreach Specialist

David Marburger, Graduate Student

Damon Smith, State Field Crops Pathology Specialist

Top 8 winter wheat establishment recommendations:

1. Variety selection: please see the 2015 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, especially for seed damaged by Fusarium head blight (FHB)
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.
8. Plant between September 20 and October 5

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 and diseases 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.

In 2015 FHB was a significant issue in Wisconsin. The 2015 WI Winter Wheat Performance Test report lists two FHB ratings for each variety. One is FHB incidence (the number of plants that had symptoms of FHB) and FHB severity (how much average head area was symptomatic for FHB). While both ratings can be useful for choosing an FHB-resistant variety, focus should be placed on choosing varieties that have a low FHB incidence rating. This will help to reduce the overall number of plants that are infected with FHB. When considering varieties to plant, choose a variety with the best balance between yield, test weight, and FHB incidence rating.

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 for results of the 2015 WI Winter Wheat Performance Test.

Plant New Seed in 2015

To maximize wheat yields in 2016, 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 2015. 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.

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 2015*** (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. If seed with scab must be used for planting, a seed treatment fungicide is a must to improve germination and protect stand. Note that planting scabby seed won't increase the risk of FHB next spring. Also remember that seed treatment fungicides applied this fall will not protect against potential FHB infection next summer. You may still need to apply a foliar fungicide during anthesis to control FHB.

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

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).

Planting Date

Winter wheat in WI should be seeded between September 20th and October 5th. Planting wheat too early can lead to more incidence of barley yellow dwarf virus (BYDV) due to feeding and disease transmission by aphids. Aphids such as the bird cherry oat aphid can vector BYDV to wheat in the fall. Their ability to feed on wheat and transmit the disease is limited when temperatures are cooler. Waiting to plant wheat until later September shortens the potential aphid feeding time. Planting too early can also lead to excessive fall growth and potential smothering of the crop. There are also increased risks of planting too late. If air and soil temperatures get too cold, wheat will not germinate and emerge well in the fall.

Winter wheat and crop insurance (Information courtesy of Michele Austin, Director -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.

Wisconsin Winter Wheat Seeding Rate Recommendations

Seeds/acre Million	Seeds/sq ft	Row Width (in)			
		6	7	7.5	
		Seeds per foot row			
0.4	9.2	5	5	6	
0.5	11.5	6	7	7	
0.6	13.8	7	8	9	
0.7	16.1	8	9	10	
0.8	18.4	9	11	11	
0.9	20.7	10	12	13	Seeding Rate for Sept 1 to Sept 15
1.0	23.0	11	13	14	
1.1	25.3	13	15	16	
1.2	27.5	14	16	17	
1.3	29.8	15	17	19	
1.4	32.1	16	19	20	Seeding Rate for Sept 15 to Oct. 1
1.5	34.4	17	20	22	
1.6	36.7	18	21	23	
1.7	39.0	20	23	24	
1.8	41.3	21	24	26	
1.9	43.6	22	25	27	Seeding Rate for Oct. 1 to Oct 10
2.0	45.9	23	27	29	
2.1	48.2	24	28	30	
2.2	50.5	25	29	32	
2.3	52.8	26	31	33	
2.4	55.1	28	32	34	

NOT RECOMMENDED

Table 1. Wisconsin seeding rate recommendations based on planting date. (Click table to see in greater detial.)

Special notes regarding the 2016 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 and Yield Exclusions options are 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 2015 winter wheat claim is October 31st.
- The 2016 wheat price discovery on CBOT (using September '15 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, 2015 – September 14, 2015
  - The Harvest Price tracks from August 1, 2016 – August 31, 2016
  - There is a 200% maximum difference between the Base and Harvest Prices with no downside limit.

Table 2. Seeding rate impact on wheat yield. 2013-14 growing seasons.

Seeding rate (million seeds a^{-1})	Grain yield (bu a^{-1})
1.25	88.8
1.50	88.5
1.75	90.8
2.00	90.5
2.25	91.4
2.50	90.8
	LSD (0.10) 1.8

*Data pooled over environment (Janesville, Lancaster, Arlington, and Chilton, 2013; Arlington, Fond du Lac, and Chilton, 2014). *No variety by seeding rate interaction (Public Sunburst, Pro Seed Genetics Pro260, DuPont Pioneer P25R40)

Table 3. Seed size and seeding rate conversion table.

Seeds/lb	Seeds per acre (x 1 million)						
	1.0	1.2	1.4	1.6	1.8	2.0	2.2
	Pounds of seed/acre						
10000	100	120	140	160	180	200	220
11000	91	109	127	145	164	182	200
12000	83	100	117	133	150	167	183
13000	77	92	108	123	138	154	169
14000	71	86	100	114	129	143	157
15000	67	80	93	107	120	133	147
16000	63	75	88	100	113	125	138
17000	59	71	82	94	106	118	129

**This table is based on 100% germination. Adjust your seeding rate by the % germ printed on your bag tag.*

Table 4. Winter wheat grain yield following winter wheat, soybean, corn for grain, and corn silage.

Rotation	2010	2011	2012	Average
Continuous Wheat	-[1]	-[1]	38.5	38.5
Corn-Soybean-Wheat	66.9	89.9	94.4	83.7
Soybean-Corn(grain)-Wheat	57.8	59.0	81.6	66.1
Soybean-Corn(silage)-Wheat	72.9	80.5	81.5	78.3

[1]Not able to collect data due to extremely low yields

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) (Marburger, D., S.P. Conley, P.D. Esker, J.G. Lauer, and J.M. Ané. 2015. Yield Response to Crop/Genotype Rotations and Fungicide Use to Manage Fusarium-Related Diseases. Crop Sci. 55:1-10. doi: 10.2135/cropsci2014.03.0201). Our data suggests that growers should plant wheat after soybean first, then corn silage, corn for grain, and lastly wheat.

If growers choose to plant second year wheat, several management factors should be considered to reduce

Table 1. Cover crop seeding rate and seed depth placement.

Cover Crop	Seeding Rate (lb/ac)	Depth (in)
Winter Rye	120	1
Red Clover	12	0.25
Radish	12	0.25
Oat/Pea Mix	90 / 10	1

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.

Interseeding cover crops into V5 corn

Daniel H. Smith and Mark Renz, Department of Agronomy

Matt Ruark and Francisco Arriaga, Department of Soil Science

Wisconsin growers are increasingly interested in utilizing cover crops. While cover crop establishment is relatively easy following corn silage, small grains, and processing vegetables, establishing cover crops successfully following corn or soybean has been more difficult. Aerial seeding or over-the canopy seeding late in the growing season can be done with moderate success. An alternative approach is to interseed cover crops into a standing corn crop early in the growing season. This management practice requires special or at least modified equipment, but can improve cover crop establishment by drilling seed rather than broadcast. Ideally, the cover crop will establish prior to canopy closure, but then survive to the end of the growing season without creating too much competition for resources (nutrients and water) for the corn crop. Little experimentation has occurred in Wisconsin to evaluate cover crop growth when interseeded into standing corn and the impact of interseeding cover crops on corn grain yield.

Wisconsin research trial

A research study was conducted during the 2014 growing season at the Arlington Agricultural Research Station. The field was planted with soybean in 2013 and chisel plowed post-harvest. Corn was planted in early June. Five cover crops treatments were planted into corn: (1) radish, (2) red clover, (3) winter rye, (4) oat/pea mixture (70% oats, 30% pea), and (5) no cover crop. Table 1 shows seeding depth and rates. Cover crops were drill seeded when corn was at the V5 growth stage (July 14) using a modified no-till grain drill (Fig. 1). The drill had four row units removed, leaving 6 row units to allow the drill to go through the crop rows and plant three rows of cover crops between each corn row (Fig. 2). The no-till disks and supporting hardware were also removed to prevent damage to the corn.

Figure 1. Modified grain drill to allow seeding into corn.

Figure 2. Interseeding (drilling) of cover crops on July 14, 2014.

Figure 3. Cover crop stands immediately prior to harvest with average corn yield (bu/ac) and average cover crop dry biomass weight (ton/ac).

Preliminary results:

- All cover crops were successfully established. Within four weeks of seeding all cover crops had germinated, had consistent growth during the growing season, and had good vigor up until two weeks of grain harvest.
- The corn never showed any visible symptoms of stress and the cover crops did not significantly reduce corn yields.
- Radish had the most above ground biomass at harvest.
- Radish and oat/pea all winterkilled.
- Red clover did not survive the winter. The red clover looked very poor at the time of corn harvest; the late corn harvest stressed the red clover too much for it to survive the winter.
- All cover crops were completely buried by the corn residue after harvest, but winter rye still survived the winter.

Conclusions and Future Work

This research trial is being replicated in 2015 to evaluate the effect of interseeded cover crops on corn yield across multiple growing seasons. If no yield losses occur, future research will focus on evaluating the soil conservation, soil carbon building, and potential N credits obtained with interseeding these cover crops.

Vegetable Crop Update August 16, 2015

Amanda J. Gevens, Assistant Professor & Extension Vegetable Plant Pathologist

The 27th issue of the Vegetable Crop Update is now available which includes:

- early blight updates
- late blight DSV accumulations and updates (St. Croix Co. first report)
- downy mildew updates
- onion stemphylium
- spotted wing drosophila updates
- Langlade Co. Field Day agenda

Click here to view this update.

Vegetable Crop Update August 21, 2015

Amanda J. Gevens, Assistant Professor & Extension Vegetable Plant Pathologist

The 28th issue of the Vegetable Crop Update is now available which includes:

- early blight updates

- late blight DSV accumulations and updates (first reports in La Crosse, Marathon, and Walworth Counties)
- downy mildew updates (another report from Dane Co. on winter squash)

Click here to view this update.

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

Brian Hudelson, Sean Toporek, Catherine Wendt, Claire Wisniewski, 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 August 8, 2015 through August 14, 2015.

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

Field Crops

Corn, Anthracnose Stalk Rot, *Colletotrichum graminicola,* Grant

Corn, Eyespot, *Kabatiella zeae,* Dane

Corn, Northern Corn Leaf Blight, *Exserohilum turcicum*, Dane

Soybean, Downy Mildew, *Peronospora manshurica*, Sauk

Soybean, Root Rot, *Fusarium sp.*, Waupaca, Waukesha

Soybean, Sclerotinia Stem Rot, *Sclerotinia sclerotiorum*, Columbia

Soybean, Sudden Death Syndrome, *Fusarium virguliforme*, Dodge

Soybean, Target Spot, *Corynespora cassiicola*, Waukesha

Fruit Crops

Apple, Black Rot, *Sphaeropsis sp.*, Green

Apple, Fire Blight, *Erwinia amylovora*, Green

Apple, Root/Crown Rot, *Phytophthora sp., Pythium sp.,* Sawyer

Apricot, Scab, *Cladosporium sp.*, Waukesha

Blueberry, Gloeosporium Leaf Spot, *Gloeosporium sp.*, Eau Claire

Blueberry, Root/Crown Rot, *Phytophthora sp., Pythium sp.*, Eau Claire

Cherry, Cherry Leaf Spot, *Phloeosporella padi,* Rock

Cherry, Root/Crown Rot, *Phytophthora sp.,* Sawyer

Pear, Root/Crown Rot, *Phytophthora sp.,* Sawyer

Plum, Root/Crown Rot, *Phytophthora sp.*, Sawyer

Raspberry, Cane Blight, *Coniothyrium fuckellii,* Richland

Raspberry, Root/Crown Rot, *Rhizoctonia sp., Pythium sp., Fusarium sp.*, Ozaukee, Richland

Vegetables

Basil, Downy Mildew, *Peronospora belbahrii,* Dane

Broccoli, Crown Gall, *Agrobacterium tumefaciens*, Kenosha

Cucumber, Anthracnose, *Colletotrichum orbiculare*, Dane

Cucumber, Powdery Mildew, *Oidium sp.*, Dane

Garlic, Fusarium Stem Rot, *Fusarium oxysporum*, Walworth

Onion, Fusarium Basal Rot, *Fusarium oxysporum*, Marquette

Potato, Late Blight, *Phytophthora infestans*, Polk

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

Tomato, Late Blight, *Phytophthora infestans,* Polk, St. Croix

Tomato, Septoria Leaf Spot, *Septoria lycopersici*, Rock, Kenosha

Tomato, Tobacco Mosaic, *Tobacco Mosaic virus,* Walworth

Specialty Crops

Hop, Carlavirus, *Unidentified carlavirus,* Dane

Hop, Downy Mildew, *Pseudoperonospora humili*, Dane

Soil

Alfalfa Soil, Aphanomyces Seedling Blight, Aphanomyces euteiches race 2, Houston (MN)

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

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

Brian Hudelson, Sean Toporek, Catherine Wendt, Claire Wisniewski, 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 August 15, 2015 through August 21, 2015.

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

Field Crops

Corn, Anthracnose Stalk Rot, *Colletotrichum graminicola,* Columbia

Corn, Fusarium Stalk Rot, *Fusarium sp.*, Lafayette

Corn, Goss' Wilt, *Clavibacter michiganensis subsp. nebraskensis*, Columbia

Corn, Gray Leaf Spot, *Cercospora sp.*, Dane

Corn, Northern Corn Leaf Blight, *Exserohilum turcicum*, Dane

Soybean, Root Rot, *Pythium sp., Fusarium sp.*, Dane, Marquette, Monroe

Soybean, Stem Canker, *Phomopsis sp.*, Dodge

Fruit Crops

Apple, Bitter Pit/Cork Spot, None, Polk

Apple, Russeting, None, Polk

Grape, Downy Mildew, *Plasmopara viticol*a, Dane

Vegetables

Potato, Cercospora Leaf Blotch, *Cercospora sp.*, Dane

Potato, Early Blight, *Alternaria solani*, Dane

Potato, Late Blight, *Phytophthora infestans*, La Crosse, Portage

Sweet Corn, Antracnose Stalk Rot, *Colletotrichum graminicola*, Rock

Sweet Corn, Gibberella Stalk Rot, *Fusarium graminearum,* Rock

Tomato, Bacterial Speck, *Pseudomonas syringae pv. tomato,* Dunn

Tomato, Late Blight, *Phytophthora infestans*, La Crosse, Marathon, Portage, Walworth, Wood

Tomato, Septoria Leaf Spot, *Septoria lycopersici*, Florence, La Crosse

Soil

Alfalfa Soil, Aphanomyces Seedling Blight, *Aphanomyces euteiches race 2*, Wood

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

Wisconsin Pest Bulletin 8-20-15

Krista Hamilton, Entomologist, WI Dept of Agriculture, Trade and Consumer Protection

Issue No. 18 of the Wisconsin Pest Bulletin is now available at:

https://datcpservices.wisconsin.gov/pb/pdf/08-20-15.pdf

INSIDE THIS ISSUE

LOOKING AHEAD: European corn borer treatment window closing

FORAGES & GRAINS: Alfalfa caterpillar butterflies common across southern and central WI

CORN: Corn rootworm beetle populations comparable to last year

SOYBEAN: Soybean aphid densities remain below-threshold in surveyed fields

FRUITS: Spotted wing drosophila confirmed in 15 counties to date

VEGETABLES: Tomato late blight found in St. Croix County

NURSERY & FOREST: Reports from this week's nursery inspections

DEGREE DAYS: Growing degree day accumulations through August 19, 2015

Follow us on