Wisconsin Crop Manager

Volume 20 Number 14 --- University of Wisconsin Crop Manager --- June 13, 2013

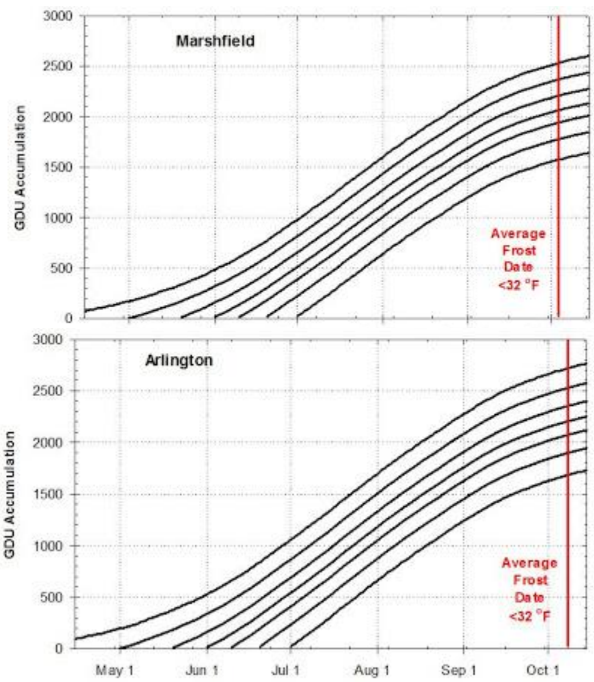
How Late Can I Plant Corn?

Joe Lauer, Corn Agronomist, University of Wisconsin-Madison

The last USDA-NASS report indicated that 74% of the Wisconsin corn acres have been planted, so we still have over 1 million acres to plant. As weather delays continue, I am getting more questions about, "How late can corn be planted?" The short answer is August 1. However, your production objectives need to change. Most producers will not likely get into the field until next week, so the only locations that can realistically produce grain yet are the southern tier of Wisconsin counties.

Options are rapidly running out. In order to determine what options are still available, you need to know how many Growing Degree Units (GDUs: base=50, max= 86)) can still accumulate during the growing season. By back calculating the number of GDUs remaining after a planting date until the average frost date (<32 F), a farmer can determine the best relative maturity for the remaining growing season.The total GDU accumulation between January 1 until the average fall frost date is 2700 GDUs at Arlington and 2500 at Marshfield (Figure 1). Another 200-300 GDUs are required to dry the crop while standing in the field after it matures. So far, we have accumulated 350 to 400 GDUs at these sites.

Figure 1. Average Growing Degree Unit (GDU) accumulation at Marshfield and Arlington, WI. Weather data obtained from Bill Bland (AWON and UW-Soils) and the Midwest Region Climatological Center. The curves represent 30-yr averages (1983-2012) and begin on January 1, May 1, May 20, June 1, June 10, June 20 and July 1. The average frost date during this 30-yr period was October 3 at Marshfield and October 6 at Arlington.



All hybrids require a similar amount of GDUs to complete grain-filling (~1000 to 1200 GDUs). The main difference between hybrids with different maturity ratings is the time required to achieve silking (Table 1). Long-season hybrids (110-115 d RM) in Wisconsin require about 1500-1700 GDUs, while shorter season hybrids (80-85 d RM) require about 800-900 GDUs. Plants respond to these GDU requirement differences by producing fewer leaves which can be further influenced by photoperiod (latitude).

Table 1. Corn Growing Degree Units (GDUs) required to achieve silking, 50% kernel milk, and maturity growth stages.

Relative maturity (days)	GDUs to Silking	GDUs to 50% Kernel Milk	GDUs to Maturity
110-115	1500-1700	2450-2650	2700-2900
105-110	1350-1500	2250-2450	2500-2700
100-105	1250-1350	2150-2250	2400-2500
95-100	1150-1250	2050-2150	2300-2400
90-95	1000-1150	1950-2050	2200-2300
85-90	900-1000	1800-1950	2000-2200
80-85	800-900	1500-1800	1700-2000

Grain and Silage

Table 2 presents suggested hybrid maturities for planting dates during the month of June and the remaining GDUs that can be accumulated by the average frost date. For example, on a June 10 planting date at Arlington there are 2060 GDUs remaining for the growing season (Figure 1). An 80-90 d RM hybrid requires about 1700-2200 GDUs to mature while a 95-100 d RM hybrid would be at 50% Kernel milk after the same number of GDUs (Table 1). Thus, proper maturity selection depends upon the production objective in June.

Table 2 Remaining GDUs and suggested corn hybrid maturity for planting dates at Arlington and Marshfield.

	Arlington			Marshfield		
Planting date	Remaining GDUs to Frost	Hybrid maturity for Grain	Hybrid maturity for Silage	Remaining GDUs to Frost	Hybrid maturity for Grain	Hybrid maturity for Silage
May 1	2510	105-110	105-110	2360	95-100	95-100
May 20	2340	95-100	105-110	2200	90-95	95-100
June 1	2190	90-95	100-105	2060	80-90	90-95
June 10	2060	80-90	95-100	1935	---	85-90
June 20	1880	---	90-95	1770	---	80-85
July 1	1670	---	80-90	1570	---	---

Table 2 also describes the last planting dates that can be done for corn to produce grain or silage. The last dates to produce corn grain are June 1 in the north and June 10 in the south. For silage it is June 20 in the north and July 1 in the south. These dates are similar to the last planting dates for soybean (see http://soybean.uwex.edu/documents/MGSwitch.pdf)

Biomass

We have a third option after these last dates for grain and silage. Corn is one of the best options for emergency forage situations where biomass production is the only option left (see http://corn.agronomy.wisc.edu/Management/pdfs/EmergencyForages/2008EmergencyForageCrops.pdf).

With corn silage we have two forage quality peaks: one at silking, the other near maturity (see Figure 1 at http://wisccorn.blogspot.com/2012/07/harvesting-barren-and-poorly-pollinated.html). In a normal silage situation we want to select a maturity that gets us to the second peak. In a biomass production situation, we want to hit the first peak. To do that at Marshfield on July 1 when we only have 1570 GDUs remaining in the growing season (Table 2), we would chose a hybrid that is 110-115 d RM so that it silks when a frost occurs.

So in a biomass production situation, long-season hybrids are the ones to choose so that silking occurs when a killing frost occurs. Frost kills the plant and drying will need to occur before it can be properly ensiled. The risk in this situation is that many acres could be ready at the same time and be difficult to harvest in a timely fashion.

After August 1, biomass production from corn and other crops like oat are similar. However, corn may still need to be chosen due to herbicide restrictions.

Crop Insurance

Overriding all of these decisions and options is crop insurance. If insured acres not planted by the final planting dates (May 31 for corn for grain), they are considered "late" and a grower has three options:

1. Plant late and have a reduced guarantee (a good deal if not too late).
2. Plant a different crop, i.e. switch to corn silage or soybeans, or some other forage crop (another good option).
3. To trigger Prevented Plant, the grower must satisfy the 20-20 rule: at least 20 acres or 20% of the insured acres must be affected.
4. Leave it fallow, collect a "prevented plant indemnity." If the reduced Prevented Plant payment is taken, then the future yield history uses 60% of the approved yield for the Prevented Plant acres, but if a full Prevented Plant is taken, there is no yield history generated for Prevented Plant acres (usually not a good option if a large acreage is involved).

Further Reading

http://www.aae.wisc.edu/pdmitchell/CropInsurance/PP_Options.pdf

http://www.aae.wisc.edu/pdmitchell/CropInsurance/LatePreventPlant2013.pdf

Can Corn Silage Energy Pools be Manipulated Using Brown Midrib Technology?

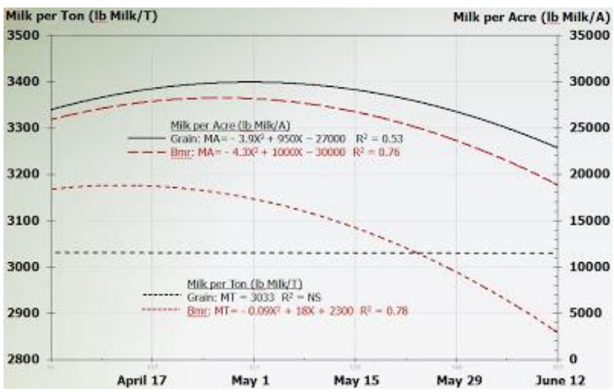
Joe Lauer, Corn Agronomist, University of Wisconsin-Madison

The energy in corn silage comes from two energy pools: NDFD and Starch. The NDFD energy pool is derived from stover which consists of the stalk, leaves, tassel, cob, ear shank and husk on the corn plant. The starch energy pool consists of the grain endosperm. These energy pools can be manipulated by hybrid selection and management. The management issue of the 2013 growing season has been planting date. Some farmers are wondering if planting a bmr hybrid late would help with the stover energy pool.

From 2009 to 2012 in our planting date studies we compared silage yield and quality of full-season grain and brown midrib hybrids at five planting dates in each year.

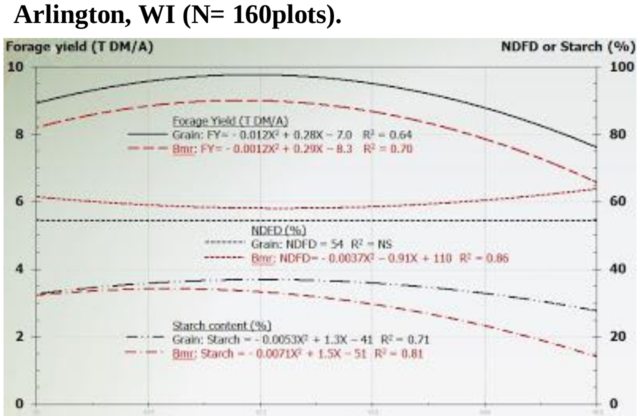
The forage yield of a full-season grain hybrid was always higher than the forage yield of a brown midrib hybrid (Figure 1). However, the NDFD content of a brown midrib hybrid was always higher than the NDFD content of a grain hybrid. Starch content of both types of hybrids was similar when planted early, however, the starch content of brown midrib hybrids was lower with later planting dates.

Figure 1. Corn forage yield, ivNDFD and starch content response of full-season grain and brown midrib hybrids (104-108 d RM) to planting date during 2009 to 2012 at Arlington, WI (N= 160 plots).



During these years Milk per Ton was not affected by planting date for full-season hybrids (Figure 2 in http://wisccorn.blogspot.com/2013/05/B037.html), Milk per Ton decreased with later planting date. For brown midrib hybrids, Milk per Ton was best when planted early, but decreased as planting was delayed. The full-season grain hybrid always produced more Milk per Acre than the full-season brown midrib hybrid even though the energy in the NDFD pool was always greater. The difference is made up by the energy in the starch pool of a grain hybrid.

Figure 2. Corn forage milk per ton and milk per acre response of full-season grain and brown midrib hybrids (104-108 d RM) to planting date during 2009 to 2012 at Arlington, WI (N= 160plots).



The details of these studies can be found at http://corn.agronomy.wisc.edu/Research/Default.aspx.

Vegetable Crop Update 6/8/13

The 7th issue of the Vegetable Crop Update is now available. This issue contains information on Disease Severity Values and P-Days for early blight management. Click here to view this update.

Prevented Planting Options for Insured Wisconsin Farmers

Paul D. Mitchell, Agricultural and Applied Economics, UW-Madison

Assumptions:

You bought corn and soybean crop insurance with a yield history of 160 bu/ac for the corn and 40 bu/ac for the soybeans. With 75% Revenue Protection on both crops, your yield guarantees are 120 bu/ac for the corn and 30 bu/ac for the soybeans. Revenue guarantees are 120 bu/ac x \$5.65/bu = \$678.00/ac and 30 bu/ac x \$12.87/bu = \$386.10/ac. The final planting dates in your county are May 31 for corn, June 5 corn silage, and June 10 for soybeans (June 15 in southern WI). By May 31, you planted 250 acres of corn and by June 10, you planted 150 acres of soybeans, leaving 100 acres unplanted. You trigger Prevented Plant since at least 20 acres or 20% of the insured acres are affected.

What are Your Options?

1) Plant corn, corn silage, or soybeans late with a reduced guarantee

   a. Corn: guarantee reduced 1% per day for each day after May 31.

   b. Corn silage: guarantee reduced 1% per day for each day after June 5.

   c. Soybeans: guarantee reduced 1% per day for each day after June 10 (June 15 in southern WI)

Example:

Suppose you planted all 100 remaining acres to soybeans on June 17 (7 days late). Your guarantee on these 100 soybean acres would be (100% –7%) = 93% x \$386.10/ac =\$359.07/ac x 100 acres = \$35,907. The guarantee on the 150 soybean acres planted on time is unchanged.

2) Take the full Prevented Plant (PP) indemnity equal to 60% of your guarantee.

   a. Corn: full PP indemnity = 60% x \$678.00/ac = \$406.80/ac x 100 acres = \$40,680.

   b. Soybean: full PP indemnity = 60% x \$386.10/ac = \$231.66/ac x 100 acres = \$23,166.On these acres, you can plant a forage/cover crop (including alfalfa), but you cannot harvest or graze the forage/cover crop until after November 1.

3) Take a reduced Prevented Plant (PP) indemnity equal to 35% of your full Prevented Plant indemnity.

a. Corn: partial PP indemnity = 35% x $406.80/ac = $142.38/ac x 100 acres = $14,238.

b. Soybean: partial PP indemnity = 35% x $231.66/ac = $81.08/ac x 100 acres = $8,108. On these acres, you can plant any forage/cover crop you want and harvest as you want.

4) Leave the acres uninsured–you pay no premiums for these 100 acres, will receive no indemnities, but face no restrictions on planting and harvesting/grazing the forage or cover crops.

Comments

1) Acreage Limits: When you choose Prevented Plant acres to claim for a crop, your planted acres plus Prevented Plant acres for this crop cannot exceed the maximum acres planted of that crop in any of the last 4 years. In this example, the farmer has already planted 250 corn acres. If the farmer had planted at least 350 corn acres in any of the last 4 years, he could claim up to 100 acres for corn Prevented Plant indemnities. If instead the maximum the farmer had planted was 300 corn acres and 200 soybean acres in any of the last 4 years, he could only claim 50 acres for corn Prevented Plant indemnities and would have to claim 50 acres as soybean Prevented Plant indemnities.

2) Alfalfa Establishment: Growers can establish alfalfa with or without a nurse crop on prevented plant acres (options 2 and 3). If alfalfa is planted by July 1, you can insure its 2014 production with a 2014 Forage Production policy if the stand is adequate on May 24, 2014. If alfalfa is planted August 1-24, 2013, you can insure against winter kill with a 2014 Forage Seeding policy written agreement.

3) Yield History Impacts: Late planted crops (option 1) use actual yields for future yield history calculations. Acres claimed for reduced Prevented Plant (option 3) use 60% of the yield history from planted acres for future yield history calculations. Acres claimed for full Prevented Plant (option 2) and uninsured acres (option 4) generate no yield history.

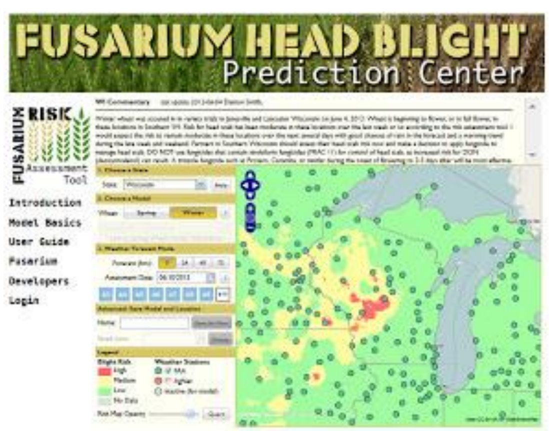
Chilton Wheat and FHB (Scab) Prediction Map

Shawn Conley, Soybean and Wheat Extension Specialist

Just a quick update on what is happening in the WI wheat world today. The Soybean and Small Grain Research Crew was at Chilton today after digging soybean roots at Arlington this morning. Yes soybean does comes first.... At Chilton, powdery mildew was evident in the lower crop canopy, but had yet to move up the stem.

Most varieties have wheat heads emerging from the sheath. A couple early wheat varieties had a few heads starting to flower. However the majority of flowering at our Chilton site should take place late this week into the weekend.

The southern 1/3 of the state has or is experiencing wheat flowering now (Damon Smith applied the FHB fungicides today at Arlington). Below please see a risk map regarding today's risk for FHB. West central WI is located in the medium to high risk zone so please scout accordingly. Remember risk is associated with weather conditions and crop growth stage. Fungicide options for FHB are found at Management of Small Grain Diseases Fungicide Efficacy for Control of Wheat Diseases.



For more information on FHB please visit http://fyi.uwex.edu/fieldcroppathology

Controlling weeds in establishing alfalfa can increase storage quality

Mark Renz, University of Wisconsin Extension Weed Scientist

Forage quality can be reduced by weeds in alfalfa. While this response can be seen at any time during the life of an alfalfa stand, effects are most evident in the first harvest of establishing alfalfa. This loss in forage quality from weeds, while common, can vary widely from field to field and year to year. This is due to weed species, weed density, and the timing of the harvest. Although few believe it, broadleaf weeds can have high forage quality if harvested before or during flowering. But as fields are harvested based on alfalfa development, broadleaf weeds are past flowering and have low forage quality. Annual grasses are also a threat to forage quality, but these weeds are typically not a major problem in the first harvest of spring planted alfalfa as they are still small and don't contribute much biomass.

Table 1: Relative Forage Quality averaged across sites.

treatment	Average RFQ
gly1	170 a
gly2	155 b
imaz1	156 b
imaz2	157 b
utc	143 c
Probability	P<0.05

Controlling weed species can prevent reductions in forage quality. Research conducted in 2012 across seven locations in Wisconsin demonstrates this concept. In this research glyphosate or imazamox was applied to Roundup Ready alfalfa when weeds were small (4" tall) or 1-2 weeks later (12" tall). When summarizing across locations forage quality was improved whenever an herbicide was applied (see table 1). While glyphosate applied to small weeds had the greatest forage quality (170 RFQ) differences existed between locations. Analysis of each location separately revealed that only four of the seven sites had improved forage quality from any of the treatments (p<0.10) (Table 2). This is likely due to the differences in weed species and density among sites. While glyphosate applied to the small weeds was highest or statistical similar to the highest RFQ at each location, imazapyr applied at the same timing only performed worse at one location (Spooner). While delayed timing of application did reduce RFQ at some locations, this was only at locations with heavy weed populations (Door, Clark, Spooner) (Table 2).

Table 2: Relative Forage Quality when sites were analyzed separately.

Treatment	Jackson	Brown	Clark	Door	FDL	Spooner	Dane
gly1	146 a	196	185 a	203 a	196	128 a	137
gly2	148 a	215	124 c	160 bc	180	136 a	122
imaz1	153 a	189	161 ab	183 ab	173	105 b	127
imaz2	157 a	184	150 bc	171 abc	201	107 b	127
Utc	124 b	167	153 abc	139 c	186	106 b	130
Probability	P<0.05	NS	P<0.05	P<0.09	NS	P<0.05	NS

So what do these results mean? They confirm that weeds CAN reduce forage quality, but not always. Reductions in RFQ were closely linked to weed biomass at five of the seven sites. So if you require high quality alfalfa in your establishing fields of alfalfa this spring, you should consider treating fields. Treatments increased RFQ anywhere from 0-46%. While we only studies two herbicides, results suggest that herbicides should be selected that are the most effective on the target species as RFQ was directly related to weed biomass. Please consult Pest Management in Wisconsin Field Crop (A3646) for more information.

For information on other aspects of this project please visit page 85 of the Wisconsin crop management conference 2013 proceedings: http://www.soils.wisc.edu/extension/wcmc/proc/2013_wcmc_proc.pdf

Wisconsin Pest Bulletin 6/13/13

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. 7 of the Wisconsin Pest Bulletin is now available at:

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

http://datcpservices.wisconsin.gov/pb/pdf/06-13-13.pdf

Early Season Soybean Diseases

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

As the soybean season is progressing slowly, questions have come in about seedling diseases and early season disease of soybean. With the cool wet weather, we have seen some fields with emergence issues this season. On May 16 I wrote a WCM article on planting into cool, wet soil and disease implications. The article can be found at this link http://ipcm.wisc.edu/blog/2013/05/soybean-planting-into-cool-wet-soil/. We have seen quite a bit of *Pythium* already this season. Remember, there really is nothing that can be done at the seedling stage to manage seedling blights. Most management strategies must be implemented before the seed is planted (e.g. seed treatment use, deploying Rps genes for *Phytophthora* resistance, tillage, etc.).

While symptoms are not readily seen yet this early in the season, the sudden death syndrome-fungus, *Fusarium virguliforme*, takes advantage of these wet spring conditions to infect plants during the seedling and early vegetative phases of soybean growth. A fact sheet has been developed to address sudden death syndrome of soybean in Wisconsin and can be downloaded as a PDF by clicking on this link: http://fyi.uwex.edu/fieldcroppathology/files/2013/04/Sudden-Death-Syndrome-of-Soybean.pdf. Again, remember any decision to manage sudden death syndrome has to be made pre-plant. There are no mid-season management strategies that can be implemented.

Wisconsin Winter Wheat Disease Update – June 12, 2013

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

This week I scouted winter wheat in variety trials in Janesville and Arlington Wisconsin on June 11, 2013. Wheat is in full flower or completed flowering in the Janesville location while wheat just began flowering this week at the Arlington location.

In Janesville, stripe rust has become abundant (Fig. 1). A week ago when I scouted this location I had to hunt quite hard to find stripe rust. This week, there are plots with stripe rust on 25%-50% of the leaves and severity in the 20%-50% range or higher (Fig. 2). In plots where stripe rust is high, flag leaves are being affected. This will result in yield reductions in some of these plots. It is too late to apply a fungicide at this stage in this location. However, as the wheat season progresses north of this location, growers and consultants should scout frequently and be aware of the danger for stripe rust. Temperatures in the long-term forecast show moderate temperatures and decent chances for moisture, which are conducive for stripe rust epidemics.

Figure 1. A stripe rust "hot spot" in a plot of winter wheat in Janesville, WI. Photo Credit: Damon Smith

Figure 2. Wheat leaves with mature strip rust pustules. Photo Credit: Damon Smith

Also at the Janesville location I found several wheat heads with symptoms and signs of Fusarium head blight or scab (Fig. 3). Wheat in this location is past the window of opportunity to apply a fungicide. However, wheat at the Arlington location, and north, is flowering now or beginning to flower and conditions in parts of the state heave been conducive for Fusarium head blight (FHB). As of this writing the Fusarium head blight risk assessment tool (http://www.wheatscab.psu.edu) is showing a moderate to high risk for FHB on flowering winter wheat in the east central portions of Wisconsin. If wheat is flowering, and in an area of risk, then a fungicide application might be considered. DO NOT use fungicides that contain strobilurin fungicides (FRAC 11) for control of head scab, as increased risk for DON (deoxynivalenol) can result. A triazole fungicide such as Prosaro, Caramba, Proline, or similar product applied during the onset of flowering to 3-5 days after will be most effective. To learn more about Fusarium head blight and how to manage the disease, visit http://fyi.uwex.edu/fieldcroppathology/.

Figure 3. Fusarium head blight on winter wheat in Janesville, WI. Photo Credit: Damon Smith

At the Arlington location, leaf blotch is the primary disease. Find a fact sheet about leaf blotch at http://fyi.uwex.edu/fieldcroppathology/files/2013/04/Leaf-Blotch-Diseases-of-Wheat-1.pdf. I suspect that leaf blotch spread in these plots will slow as frequent rainy conditions are not as prevalent and temperatures are warming. Higher temperatures are not as conducive for the pathogens that cause leaf blotch.

Shawn Conley and his field crew observed powdery mildew on winter wheat in a variety trial in Chilton, WI this week. This is the first find of powdery mildew in the state in 2013. I provided a detailed write-up about powdery mildew in the May 30 Crop Manager publication. This can be found at http://ipcm.wisc.edu/blog/2013/05/wisconsin-winter-wheat-disease-update-may-15-2013-2/. Powdery mildew has been basically non-existent in other locations around the state that have been scouted. As weather becomes more humid, I would expect the incidence and severity of powdery mildew to increase.

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Ann Joy, and Erin DeWinter, 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 1, 2013 through June 7, 2013.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
FRUIT CROPS			
Apple ('Gala')	Root/Crown Rot	*Phytophthora* sp.	Calumet
VEGETABLES			
Ground Cherry	Chemical Burn	None	Dane
	Sunburn	None	Dane

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

Follow us on