Wisconsin Crop Manager

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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 follow 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.

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/pdf/08-14-14.pdf

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

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.

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.

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_AXy0Y, or click on the image below.

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 practicing no-till or various tillage systems. The publication A2100 can be downloaded for free at 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.

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:

http://www.coolbean.info/library/documents/Top7RecommendationsforWinterWheatEstablishmentin2014.pdf

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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 for results of the2014 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)

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 -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.

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.

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	
2.5	57.4	29	33	36	

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.*

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.

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

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.