Wisconsin Crop Manager

Volume 18 Number 26 --- University of Wisconsin Crop Manager --- September 15, 2011

Crops

Top 7 Recommendations for Winter Wheat Establishment in 2011..... 103

Vegetable Crop Updates..... 106

YouTube Video: Soybean Drought Stress in Late Season 106

Handling immature corn after an early frost 106

Weeds

It's time to scout for weeds that escaped in-season control 106

Top 7 Recommendations for Winter Wheat Establishment in 2011

Shawn Conley, State Soybean and Small Grains Specialist, Paul Esker, Extension Field Crops Plant Pathologist, John Gaska, Outreach Specialist

Top 7 Winter wheat establishment recommendations:

1. Variety selection: please see the 2011 WI Winter Wheat Performance Test
2. Plant new seed (don't 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 targeted fall stand for wheat planted from September 15th to October 1st is between 30 and 35 plants per square foot (1,300,000 and 1,500,000 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

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.

Crop 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 2011 WI Winter Wheat Performance Test.

Plant New Seed in 2011

- **To maximize wheat yields in 2012, 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%).**

One reason to avoid planting bin-run seed in 2011 is Fusarium Head Blight (FHB), also known as scab. Scab

incidence and severity was not as severe in the 10/11 crop as it was in the 08/09 crop, however the presence of scab at low levels, was noted at all of our variety trial locations in 2011. Also, the incidence and severity of FHB was very high in several other soft red winter wheat production states; areas where seed may be packed and shipped. Additionally, there were reports of black point disease in wheat during the 10/11 crop. This disease is caused by multiple fungi and can lead to reduced germination and/or an increased incidence of seedling blight.

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)

The other reason to plant new seed in 2011 is related to the low test weights growers experienced in NE WI this year, which can negatively impact germination, tillering, and overwintering.

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 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%, it is important to increase 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 2010* (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 soil heaving. 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 35 plants per square foot. To achieve this goal, the seeding rate for soft red winter wheat is between 1,300,000 and 1,500,000 viable seeds per acre (Table 1). Depending upon varietal seed size, this equates to a range of between 74 and 119 pounds of seed per acre (Table 2). 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 2012 crop

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 2011 winter wheat claim is October 31st.

The 2012 wheat price discovery on CBOT (using September '11 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, 2011 - September 14, 2011
- The Harvest price tracks from August 1, 2012 – August 31, 2012
- There is a 200% maximum difference between the Base and Harvest Prices with no downside limit.

Table 2. 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 3) (Lauer and Gaska, 2003-2006, unpublished). Yield of second year wheat (2003 column) was similar to wheat yields following corn for grain or silage. Third (2004), fourth (2005), and fifth (2006) year continuous wheat yields were dramatically lower than the other rotational systems. Our data suggests that growers should plant wheat after soybean first, then corn silage, corn for grain, and lastly wheat.

Table 3. Winter wheat grain yield following winter wheat, soybean, corn for grain, and corn silage.

Rotation	2003	2004	2005	2006	Average
	Winter wheat grain yield bu a^{-1}				
Continuous **Wheat**	56.3[1]	47.0	41.8	45.0	47.5
Corn-Soybean-**Wheat**	66.3	51.0	71.8	74.0	65.8
Soybean-Corn (grain)-**Wheat**	55.7	42.0[2]	51.1	66.0	53.7
Soybean-Corn (silage)-**Wheat**	57.7	51.0	62.0	69.9	60.2

[1] *2003 marked the second year of the continuous wheat rotation treatment*
[2] *Poor stand establishment in the 2004 Soybean-Corn (grain)-Wheat rotation affected wheat yield.*

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 notill 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 any living volunteer wheat prior to planting to prevent a "green bridge" for the aphids that vector this virus.

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	

Vegetable Crop Update 22 is Now Available

The twenty-second vegetable crop update is now available.

To view this update go to the Veg Crop Update page or follow this link
http://ipcm.wisc.edu/WCMNews/VegCropUpdate/tabid/115/Default.aspx

This issue includes information regarding:

Potato disease updates from Potato Seed Cert Program
Late blight & early blight updates
Cucurbit downy mildew updates and review

YouTube Video: Soybean Drought Stress in Late Season

Common issues growers may have concerning soybean yield when affected by drought during late season growth are discuss by Wisconsin State Soybean and Wheat Extension Specialist Dr. Shawn Conley. In an R6 field, Shawn gives tips on what to look for and harvest options when lack of precipitation is severe.

Check out the video here:
http://www.youtube.com/watch?v=AXgyVwBDb3E

Handling immature corn after an early frost

Joe Lauer, Corn Agronomist

For many corn growers, the 2011 growing season came to an end last night over much of northern Wisconsin. Corn in many areas had not reached physiological maturity and was killed prematurely. Corn is killed when temperatures are near 32 F for a few hours, and when temperatures are near 28 F for a few minutes. A damaging frost can occur when temperatures are slightly above 32 F and conditions are optimum for rapid heat loss from the leaves to the atmosphere, i.e. clear skies, low humidity, no wind. At temperatures between 32 to 40 F, damage may be quite variable and strongly influenced by small variations in slope or terrain that affect air drainage and thermal radiation, creating small frost pockets. Field edges, low lying areas, and the top leaves on the plant are at greatest risk. Greener corn has more frost resistance than yellowing corn.

Symptoms of frost damage will start to show up about 1 to 2 days after a frost. Frost symptoms are water soaked leaves that eventually turn brown. Because it is difficult to distinguish living from dead tissue immediately after a frost event, the assessment should be delayed 5 to 7 days.

For fields that only had light frost damage, it is too early to harvest. Growing conditions may improve during September allowing the crop to mature and produce reasonable grain and silage yields.

For fields that were harder hit by frost, farmers will need to manage frost damaged corn silage and grain. For some useful guidelines
see http://corn.agronomy.wisc.edu/Management/L041.aspx.

It's time to scout for weeds that escaped in-season control

Vince M. Davis, Extension Weed Scientist

A critical part to every weed management program is having accurate management and scouting records to document which weed species are a key problem, and where they will be located in most abundance. Late-season scouting is a critical component of those records. There are several reasons why scouting between now and crop harvest is a critical timing.

- The season has progressed enough (weeds are mature enough) that you will be able to estimate how prolific weed escapes will be at producing seeds which will contribute to the weed seedbank---which is the storage of future weed challenges.
- Larger and more competitive weeds that were not controlled are likely visible above the soybean canopy. While there is still a need to walk in the fields to correctly identify the weeds and determine their ability to set seed, this will help to make more accurate scouting maps for an entire field. In corn, you will have to walk inside the rows, so making accurate maps will be more challenging, but you can find the areas that will need more attention at harvest.
- Have more time to accurately identify what weeds were not completely controlled. Why do this now instead of the combine seat? Because this requires close inspection to correctly identify the weeds. It is unlikely you will not want to stop the combine later to identify weed escapes. If you make accurate notes of where weed species are in fields now, I suggest you keep those notes in the combine and refine them while harvesting---especially in corn fields.
- Identify causes of low yield or drought stressed areas by finding patches of low growing, competitive, weeds below the soybean canopy. A good example of this is where heavy dandelion infestations are found in no-till corn or soybean. Finding these patches may help explain those confusing yield monitor maps.
- Monitor for herbicide resistance. If you sprayed a field with the same mode of action, say glyphosate, more than once but there is still one weed species that was not controlled, you may want to take samples when the seeds are mature to have it tested for herbicide resistance. Species of concern in Wisconsin include (but not limited to) giant and common ragweed, horseweed, and pigweed species. If you consistently have these weed escapes and are confident they should have received a lethal dose of herbicide earlier in the season, you might want to contact your Extension educator, or myself, to question whether you should be concerned about herbicide resistance.

In short, scouting for weed escapes at the end of the season will help evaluate the weed control methods you had in place this year, monitor to changes in weed problems from adaptation to herbicide programs or herbicide resistance, and it

will help refine the needs for future weed control recommendations. To see more late-season scouting information for above and below canopy weed concerns, watch a couple of my recent Youtube videos.

Soybean weed scouting: Control of volunteer corn
http://www.youtube.com/watch?v=80XoghJGEhg

Soybean weed scouting: Late season, part 1
http://www.youtube.com/watch?v=eD2QBM3xxH8

Soybean weed scouting: Late season, part 2
http://www.youtube.com/watch?v=CkDqduaUjyY

■ ■ ■ ■ ■ ■ ■