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2011 Pest Management Field Day
July 6, Arlington Agricultural Research Station

Bryan Jensen, UW-Madison IPM program

This will be an excellent opportunity to hear results from ongoing research projects and to network with researchers, extension staff and especially, your colleagues.

Speakers and topics are:

- Controlling Glyphosate Resistant Volunteer Corn
  - Vince Davis, Agronomy

- Bt Corn Isn’t Just for Corn Borer Any More…..
  Understanding Refuge Requirements for Stacked Traits
  - Eileen Cullen, Entomology

- Soybean Aphid Plant Resistance Update
  - Dave Hogg, Entomology

- Driftwatch: A Voluntary Online Registry to Help Protect Sensitive Crops From Pesticide Drift.
  - Jed Colquhoun, Horticulture

- Soybean Seed Treatments: What is the probability that they pay for themselves?
  - Shawn Conley, Agronomy

- Update on Research for White Mold of Soybean
  - Angie Peltier, Plant Pathology

- Using Multiple MOA for Weed Management in Roundup Ready Alfalfa
  - Mark Renz, Agronomy

- Herbicides to Improve Prairie Wildflower Establishment
  - Mark Renz, Agronomy

- Effect of Aminocyclopyachlor on Pasture Grass Yield
  - Mark, Renz, Agronomy

Field tours will depart from the Public Events Facility at 8:30 am and return around noon. In case of rain, “field tours” will be conducted inside. A light lunch will be provided.

After lunch we will demonstrate new technology that will enable some of the information within A3646 (Pest Management in Wisconsin Field Crops) to be accessed remotely on smart phones and computers. At this focus group we will be asking for comments and feedback on what type of information from A3646 users would like access to and how they would envision using this technology in the future.

After lunch, Herbicide Demonstration plots will also be available for you to view in the usual location along Badger Lane. Weed Science faculty and staff will be available to assist with the informal tour and discussion.

The Public Events Facility is located on the Arlington Agricultural Research Station, N695 Hopkins Road. If traveling from the south, exit I 90/94 onto Hwy 51 North. Look for the Arlington Ag. Research Station sign north of Deforest. Turn left (west) onto Badger Lane. Travel 1 mile and turn left (south) onto Hopkins Rd. If traveling from the north, exit I 90/94 onto Hwy 60. Travel east through Arlington and turn south onto Hwy 51. For more detailed driving direction click on http://www.ars.wisc.edu/arlington/directions.html

Heaving in Alfalfa Fields

Dan Undersander, Forage Agronomy Extension Specialist, UW-Madison

Heaving is problem in some alfalfa stands each year in the Midwest. Heaving occurs on heavy soils that have high moisture contents. Repeated freezing and thawing causes soil expansion and contraction that pushes the tap-rooted plants (and fence posts) out of the soil. The need to push against something is why grasses with fibrous root systems are not
affected by heaving and older alfalfa stands (with larger taprooted plants) are more affected by heaving than younger stands.

Where heaving is observed, first dig a few plants to determine if the taproot is broken. Plants with broken taproots will likely green up and survive for a short time and then die when weather becomes warm and the soil dries. The length of time before plant death will depend on the length of taproot above the break and will range from greenup only (if tap root broken three to four inches below the soil surface) to sufficient growth for first crop (6 to 8 inches taproot) to growth until first dry spell (8 to 12 inches taproot).

**Fields with over 1.5 inches heaving** will likely have broken taproots and will also suffer significant damage from harvesting equipment. These fields should likely be terminated immediately.

**Fields with 1 inch or less heaving** are likely to have unbroken taproots and may be salvageable for at least the current year. These fields will likely have delayed greenup. The best recommendation is to do nothing to the stands now. Do not go over the field with a roller or cultipacker in early spring to push the crowns back into the soil. This will likely to do more damage than good. Plan on harvesting these fields later than normal (25% bloom) and to raise cutter bar at harvest sufficiently to clear crowns. Natural settling should occur during the year and, if plants are reseated, stands should survive until next year. Stands entering the winter with elevated crowns are likely to suffer above average winter injury and kill.

Heaving is always worse in soils with good moisture content. The most practical method of reducing heaving in future years is to leave some residue on the soil surface over winter. Residue reduces heaving by insulating the soil and reducing the number of times freezing and thawing occurs. Fields not harvested last fall will usually have less heaving that those with fall growth removed. Heaving in future years can also be minimized by having good internal and surface drainage. Tilling may reduce heaving problems depending on the depth of the tile. Planting a grass with the alfalfa has been shown to reduce, but not eliminate, heaving of the alfalfa in the stand. There no indication of genetic variation in alfalfa varieties for difference in heaving, even the ‘fibrous rooted’ types.

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**Corn Hybrid Relative Maturity Switch Dates for 2011**

Joe Lauer, Extension Corn Agronomist, UW-Madison

With the cool wet spring we have had so far in 2011, planting corn in northeast Wisconsin has been delayed. In general, if all corn in Wisconsin could be planted on one day, that optimum date would be May 1 in the south and May 7 in the north. Once corn planting is delayed beyond these optimum dates then grain yield decreases AND grain moisture increases in most years. By May 15 corn yield is decreasing 0.5 bu/A per day delay accelerating to 2.5 bu/A per day delay on June 1 (Figure 1).

For corn to develop and progress from planting to emergence normally takes about 125 Growing Degree units (GDUs). During the first week in May, southern Wisconsin normally accumulates about 10 GDUs per day, so emergence takes about 12.5 days. This year in an experiment conducted at the UW Agricultural Research Station - Arlington the earliest planting date treatment was April 13. This treatment experienced snow and minimum air temperatures in the low 20s F. As of May 12, none of the three hybrids planted in this experiment had begun to emerge yet. So there really has not been enough GDUs for much emergence to take place yet for much of the early planting season. The recent warm weather should help with plant emergence.

There is an yield and moisture trade-off between full- and shorter-season relative maturity (RM) hybrids. In southern Wisconsin the yield trade-off is 1.9 bushels per RM unit. For example, a 100 day RM would typically yield 19 bu/A more than a 90 day RM hybrid. The highest yielding hybrids are those that utilize entire growing season and are typically full-season for maturity. Eventually full-season hybrids run out of growing season and are impacted more for grain yield than shorter-season hybrids (Figure 2). Relative maturity must be balanced against harvest grain moisture and the ensuing drying costs required to dry grain down to 15.5% moisture. Full-season hybrids are often wetter than shorter-season hybrids at harvest.

This year, especially in northeast Wisconsin, many farmers are concerned about the need to switch hybrids from full- to shorter-season relative maturity. Switch date is influenced by corn price and fuel price for drying costs. As **corn price** increases, the switch date of hybrids from full- to shorter-season occurs later. As **drying cost** increases, the switch date of hybrids from full- to shorter-season relative maturity occurs earlier. Typically the switch date for corn ranges between May 20-25. When farmers switch to new hybrids they should shorten relative maturity of hybrids to be planted by 7-10 days.

The switch date decision is also influenced by the eventual use of the corn (Table 1). If the field to be planted is intended for corn silage or high moisture grain, then switch dates can be later because there is less concern about drying costs. The crop needs to achieve between 25% kernel milk for silage and black layer for high moisture corn grain yield to optimize yield.
Figure 1. The planting date producing maximum corn grain yield is May 1. Grain yield decreases 0.5 bu/A per day on May 15 and accelerates to 2.5 bu/A per day on June 1. Source: Lauer (Full-season hybrid at Arlington, WI).

RM) become more economical (yield and moisture) than full-season hybrids after about May 23. Source: Lauer (Arlington, WI, 2002-2010).
http://corn.agronomy.wisc.edu/Research/03DOP/Late2005.pdf
We are not to this point yet.

One last point is that late-planted corn often has increased pest pressure, especially from European corn borer (ECB). Planting a transgenic Bt-CB hybrid can help manage ECB if pressure is high.

See Corn Replanting or Late-Planting Decisions (UWEX Bulletin A3353) for guidelines on switch dates for corn hybrid maturity.

### Status of early planted soybean (Early relative to 2011 weather)

Shawn Conley, Soybean and Wheat Extension Specialist

Understandably most growers are still concerned about getting all of their corn planted and debating when they should switch their corn relative maturity (Corn Hybrid Relative Maturity Switch Dates for 2011). This coupled with cool soil temperatures has delayed the progress of our 2011 soybean plantings. Many resources suggest that soybean should not be planted until soil temperatures reach 50° F and to tell the truth we were nervous to start planting our soybean variety trials until those temperatures where achieved (Table 1).

With that said I, like many, saw the calendar date and have recently experienced several week delays in May due to wet weather so decided to start planting soybean on May 4th (*This is called the do as I say not as I do paradigm*). Given the soil temperature and lack of accumulated gdu’s (28 based on soil temp and base 50° F) I was surprised to see how far the soybean development has progressed to date. This furthers my thought that the base temp for soybean germination is less than 50° F. That is a topic for another day.

For more detailed information regarding soybean emergence please see Predicting When Soybeans Will Emerge.

### Table 1. Soil temperature monitored at 2 inch depth at the Arlington Agricultural Research Station in 2011.

![Soil temperature graph](image)

Table 1. Relative maturity of adapted corn hybrids for different planting dates and relative maturity zones in Wisconsin.

<table>
<thead>
<tr>
<th>Relative maturities for late planting on</th>
<th>Full-season relative maturity zone (planting before May 15)</th>
<th>May 20</th>
<th>June 1</th>
<th>June 10</th>
<th>June 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 and earlier</td>
<td>75-80</td>
<td>75-80 (silage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>85-90</td>
<td>80-85</td>
<td>75-80 (silage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>90-95</td>
<td>85-90</td>
<td>75-80 (silage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>95-100</td>
<td>90-95</td>
<td>80-85 (silage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100-105</td>
<td>95-100</td>
<td>85-90 (silage)</td>
<td>75-80 (silage)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>105-110</td>
<td>100-105</td>
<td>90-95 (silage)</td>
<td>80-85 (silage)</td>
<td>75-80 (silage)</td>
<td>-</td>
</tr>
<tr>
<td>110-115</td>
<td>105-110</td>
<td>95-100 (silage)</td>
<td>85-90 (silage)</td>
<td>75-80 (silage)</td>
<td>-</td>
</tr>
</tbody>
</table>

Another factor influencing switch date is, what shorter-season hybrids do you switch to? During the winter, a lot of research often goes into selecting good high performing full-season hybrids. But as the decision to switch to shorter-season hybrids draws near, do you have enough time to adequately research and find a good performing shorter-season hybrid? Is a good high-performing hybrid available from the seed company? Remember the basics (see http://corn.agronomy.wisc.edu/AA/A082.aspx) as you select new hybrids and don’t be pressured into switching into just any hybrid - make sure it is a good performer.

In addition, switch dates are influenced by geographical location. There is more flexibility for southern Wisconsin than northern Wisconsin. In southern Wisconsin, we have two or more possible switch dates for grain, May 20-25 and June 1-5 (Table 1). While in northern Wisconsin, we have only one switch date May 20-25. If corn planting is delayed until June 1 in northern Wisconsin and June 15 in southern Wisconsin, then growers should consider putting corn planters away and planting soybean. The low corn yields seen in June will not recover the input costs required to produce the crop. This decision is influenced by corn price, price of the alternative crop (usually soybean) and the proportion of farm acres of each crop left to be planted. If the production objective is dry grain and you have been delayed, then you may want to begin pricing fuel for fall drying.

Corn planters could be brought back out after July 1. By this time, if fields are not planted, the production objective becomes “emergency forage” for dry matter production. We have produced up to 6.8 T/A dry matter with July planting dates for corn.

http://corn.agronomy.wisc.edu/Research/03DOP/Late2005.pdf
Developmental images of soybean planted on May 4th at Arlington, WI in the long term-rotation study.

Wheat Scouting Update and Disease Thresholds
Paul Esker, Extension Field Crops Plant Pathologist

With some warmer weather last week, wheat growth stages moved along from what we had seen in previous weeks. A check of some of our research studies found that the wheat was at the Feekes 6 and 7 growth stages (first and second nodes). This is an important time to be out in the wheat and scouting to determine if the use of a foliar fungicide will be needed as we move into flag leaf emergence (Feekes 8). The flag leaf is the most important leaf, accounting for upwards of 50% or more of the final yield and a goal with the use of a foliar fungicide is to protect this leaf. While we have received a few questions about powdery mildew and also noted a little bit of Septoria leaf blotch in some of our trials, we have not had widespread reports of wheat diseases so far this growing season.

Looking ahead, there exist some thresholds as you scout at Feekes 7 and 8 to determine if a foliar fungicide may be warranted.

At Feekes 7, the thresholds are:
- Powdery mildew: check the uppermost leaf - the threshold is an average of five pustules per leaf.
- Wheat leaf rust: check any leaf - the threshold is an average of one pustule per leaf.
- Septoria leaf blotch: check the uppermost leaf - the threshold is 25% of the leaves having expanding blotches

At Feekes 8, the thresholds are:
- Powdery mildew: check from the flag-2 leaf (2nd leaf below the flag leaf) and upward - the threshold is an average of five pustules per leaf on the flag-2 leaf.
- Wheat leaf rust: check from the flag-3 (3rd leaf below the flag leaf) and upward - the threshold is an average of one pustule per leaf on the flag-3 leaf.
- Septoria leaf blotch: check from the flag-2 and upward - the threshold is 25% of the leaves having blotches

If you note disease in the lower canopy but not on any of the leaves discussed above, consider increasing the frequency of your scouting to determine if there is evidence of new pustules or blotches moving into the upper canopy.

For further information regarding factors to consider for determining the need for a foliar fungicide recommendation, please check here.

For information regarding the efficacy of several foliar fungicides against different wheat diseases, please check here.

Results across our different studies the past few years have indicated that the best response to a foliar fungicide application has occurred when powdery mildew was the target and the wheat variety was susceptible. When the wheat variety was resistant to powdery mildew, we have not seen a consistent response, if at all.

Soybean Aphid Scanty on Buckthorn in the Upper Midwest
Eileen Cullen, Extension Entomologist

Data from the North Central Regional Soybean Aphid Suction Trap Network sheds light each year on 1) abundance of soybean aphid migrating from soybean to its overwintering host, buckthorn, in the fall and 2) spring colonies from overwintered eggs on buckthorn in spring.
The suction trap network provides general indication of soybean aphid population development potential for the subsequent season based on fall trap captures. Although the pattern does not always hold for all sites in the region, low soybean aphid fall flight corresponds with low intensity of spring migrants from buckthorn to soybean the subsequent growing season.

Even in years of high fall flight trap captures, fall/spring weather and temperature, entomopathogenic fungi, and natural enemies (predators and parasitoids) can regulate soybean aphid populations on buckthorn in spring before soybean aphid moves to soybean. However, for the 2010-2011 cycle this does not appear to be the case. There simply were very few soybean aphids captured fall 2010 at our 7 Wisconsin suction trap sites, and throughout the North Central region.

**Regional Buckthorn Survey**

May 11-13, 2011, David Voegtlin, Illinois Natural History Survey, conducted his annual spring survey for soybean aphid on buckthorn in a few North Central states. After the very low numbers recorded in the regional suction trap network last fall, he was not expecting to find much, if anything in the way of soybean aphids on buckthorn.

General locations visited on his three-day trip included the Rome City area in Northeast Indiana, Toledo area, Irish Hills in Southeast Michigan, Kellogg Forest near Battle Creek, Michigan, Calumet area South of Chicago, Joliet and Quad Cities areas of Illinois. All of these sample sites have abundant common buckthorn (*Rhamnus cathartica*) and some have glossy buckthorn (*Frangula alnus*) as well.

A number of soybean aphid colonies were found at the Kellogg Forest and Quad Cities sites. After extensive searching in the Rome City area, only one colony was found. No soybean aphids were found at any of the other locations.

Given the cool spring weather, soybean aphid development has apparently been off to a slow start this spring. Colonies had only wingless adults and nymphs. No winged aphids were observed, neither were any natural enemies.

We think that in years with very low fall flight, the soybean aphids that do make it back to buckthorn are in such low numbers that predators do not find them easily. The opposite seems to happen in years of high fall flight. Predators, particularly *Harmonia axyridis* (multi-colored Asian lady beetle), flock to heavily infested trees in high numbers.

**Wisconsin Suction Trap Data**

Although Wisconsin was not included in David Voegtlin’s spring buckthorn survey, I expect our overwintering populations and current spring soybean aphid on buckthorn to be equally scanty.

Figure 1-6 shows fall flight trap captures for soybean aphid, as well as corn leaf aphid, bird cherry-oat aphid, greenbug and English grain aphid. I include the later four aphid species because they are important as barley yellow dwarf virus (BYDV) vectors to winter wheat in fall.
From these figures you can glean a quick picture of how low Wisconsin’s soybean aphid fall flights were. You can also see the late summer/early fall activity of corn leaf aphid and bird cherry-oat aphid, the two most important BYDV vectors to wheat in Wisconsin. (English grain aphid and greenbug are also present, but usually lower in abundance). This clearly illustrates why one of the best ways to reduce incidence of BYDV transmission in winter wheat during fall is to observe planting dates that correspond with reduced aphid vector activity (roughly mid-September).

As for soybean aphid during the 2011 growing season, we can expect low-level flights from buckthorn to soybean over the next few weeks. However, surviving colonies will start to build with warmer weather and will eventually move from buckthorn to soybean where colonies will further build and disperse. Soybean aphid scouting and economic threshold recommendations will be in full effect, as usual, throughout the coming season.

Vegetable Crop Update May 12 2011
A new issue of the Wisconsin Vegetable Crop Update is available to view or download.

Click here for Veg Crop Update Issue 2011-5