Wisconsin Crop Manager

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2012 Pest Management Field Day

Bryan Jensen, IPM Program

Please consider joining us for the Pest Management Field Day which will be held at the Arlington Agricultural Research Station on Wednesday, July 11. Our field day features several topics presented by UW staff and students. Topics and speakers include:

- Where Does Soybean Aphid Overwinter, David Hogg, Dept. of Entomology
- Soybean Pest Management Potpourri: Roots to Shoots, Shawn Conley, Dept. of Agronomy
- Transgenic Corn Hybrid Combinations: Updates and Risk Issues, Joe Lauer, Dept. of Agronomy
- Systems Approach to Reducing Herbicide Resistance Selection Pressure, Vince Davis, Dept. of Agronomy
- Connections Between Residual Herbicides and Sustainability; Yield, Climate and Resistance, Ryan DeWerff, Becky Redline and Ross Recker, Dept. of Agronomy
- Roundup Ready Alfalfa in No-Till Fields, Mark Renz, Dept. of Agronomy
- Weed-free Period for Switchgrass Establishment, Ariel Larson, Dept. of Agronomy
- Update on Glyphosate Resistant Giant Ragweed, Dave Stoltenberg, Dept. of Agronomy

The Field Tour will depart from the Public Events Facility promptly at 8:30 am and return around noon. In case of rain, "field tours" will be conducted inside the Public Events Facility. A light lunch and refreshments will be provided after the tour is completed.

After lunch, the Corn and Soybean Herbicide Demonstration plots will be available for viewing at the usual location along Badger Lane. Weed Science faculty and staff will be available to assist with this 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

Late-Season Weed Escapes in Wisconsin Corn and Soybean Fields

Vince M. Davis, Extension Weed Scientist and Ross Recker, Graduate Research Assistant

The potential increase of glyphosate-resistant weeds is a major threat to corn and soybean production across the Nation. Integrated Weed Management tactics, including diversified herbicide use, are important components of management to delay the onset of glyphosate resistance. Identifying geographies that may be most vulnerable to resistance development could help direct attention and pro-active resistance management tactics before wide-scale control

failures occur. To help with this, the University of Wisconsin-Madison Field Crops Weed Science Extension program is asking for your participation in a research study investigating the weed species diversity in Wisconsin Corn and Soybean fields due to reduced atrazine use and subsequent increased use of glyphosate.

The purpose of this research is to identify areas in the state where there may be a shift to weeds that are more difficult to control with glyphosate, or where weeds that are resistant to glyphosate may first appear. This survey asks questions about target weed species and limited management history information relating to crop production fields.

There are two levels of participation in this survey. The first level simply includes filling out an on-line survey with information from ONLY ONE CROP PRODUCTION FIELD per survey form. If you are willing to provide information about more than one field, please repeat the survey.

The second level of participation, if you would please participate further, is to allow weed science research staff from the University of Wisconsin-Madison to survey your crop fields for weed escapes in late-summer months. We expect the survey to take only 5 to 10 minutes of your time, and we don't anticipate any risks to you. For fields we scout for weed escapes in the late summer, we will provide a detailed weed scouting report to participants.

You may ask questions about the research at any time by contacting Vince M. Davis at vmdavis@wisc.edu (608) 262-1392 or Ross Recker at rrecker@wisc.edu. Your participation is completely voluntary. By completing and electronically submitting this survey, you consent for participating in the first stage of the survey.

If you would like to participate in the second stage, and allow UW weed science researcher to scout your production fields, please complete the last question of the survey by providing your contact information.

To complete the survey, please visit:
http://www.zoomerang.com/Survey/WEB22FSESTMEKJ

We THANK YOU in advance!

Dry Conditions Continue to Persist in Southern WI: Poor Early Weed Control is Evident

Vince M. Davis, Extension Weed Scientist

What happened to this poor soybean stand?

Soybean field damaged by dandelion competition in dry conditions

Poor stand establishment…Disease…Insects…? *Answer:* Dandelion competition in dry conditions!

A drive around much of Southern WI right now, particularly in the afternoon, would result in a very common scene in many crop fields…..that is, crop stress to various degrees from slight to severe. What is most evident (at least to me), is how much of the variability in the visual crop stress symptoms are related to poor early-season weed control. This is NOT the year to be losing moisture in the soil profile to weeds. In the above picture, a grower thought there was a problem with disease. A scouting trip in this no-till field very quickly revealed that patchy dandelion pressure was enough under these droughty conditions to cause plant stress to the point of plant death.

This year we are currently experiencing the same conditions in our research trials at Arlington Research Farm where severe weed pressures, especially dandelion, are enough to stress corn and soybean plants to the point of no return in several cases. I don't write many articles that don't emphasize the importance of scouting, and this one will too. I'd also like to point out that I've more than once heard growers complain they're not sure what to do with their yield monitor maps. Well, here's a suggestion for this year, make weed scouting maps including weed density estimates as detailed as possible at the POST herbicide application timing, and overlay them with yield monitor maps this fall. It might prove very interesting and insightful.

But, what to do now?

There is still the question that is the bigger one, and that is what to do now? We know the weeds are stressed with thick cuticles making POST herbicides not work well, but on the other hand, the crops (and weeds) are getting large. I feared, and warned, of these difficult conditions that may occur for controlling weeds at the POST timing in the WCM two weeks ago if dry conditions persisted: http://ipcm.wisc.edu/download/wcm-pdf/WCM19_13.pdf . Now, we are even further in difficult times. In many cases, corn has gotten beyond the height (30") and development (V8) restrictions on the glyphosate label, meaning it can no longer be applied. For broadleaf weeds, Status® (BASF Corporation) herbicide can still be used at 5 fl oz/acre on corn up to 36" in height, or V10. As a special precaution, make certain the label is followed regarding procedures to clean the sprayer following Status applications to avoid sprayer contamination and damage to soybean fields in subsequent applications.

In soybean, I would not delay POST applications of glyphosate because large weeds could be causing tremendous yield loss this year. If rain is likely within a day or two of your desired application timing, it might be worth waiting for a rain that will make weeds resume more normal growth. However, in many cases it may not be worth waiting. Just because a rain will make the weeds grow quickly again, the structure of the aged cuticles won't change that quickly and so only part of the problem that makes weeds difficult to control is solved with rain. Moreover, rapid weed growth may cause weeds to surpass recommended sizes on the label quickly, also working against you. If it's not worth waiting, which not to mention also depends on your pending work load, there are a few things that can be done to help improve control.

- Scout weed heights by species carefully, and use an appropriate rate of herbicide. In many cases, that is going to mean using the maximum amount of glyphosate that can be used in a single application on soybean: (1.5 lb ae per acre).
- Use a tank-mix herbicide partner if needed to improve certain species.
- Increase adjuvant concentration. Non-ionic surfactant (NIS) can be increased to 0.5% v/v, and that could improve performance of generic glyphosate formulations. For some other herbicides, rates of COC and UAN may need to increase, or even considerations of using MSO. However, for contact herbicides, increasing volume may be more effective than increasing adjuvant rates. Make sure you read the labels closely regarding these possible changes, and remember, as a general rule of thumb, if increasing adjuvant concentration increases weed control then it also increases the likelihood of negative crop response.
- Apply early in the morning. Weeds are likely to be less stressed at this time. They will have the most active growth in the morning and likely present the most surface leaf area to intercept herbicide droplets.

It's no consolation that our neighboring states are suffering, but parts of Illinois and Indiana are also experiencing similar problems with dry conditions. Here are suggestions from my colleagues in those states addressing similar issues this season:

Herbicide Applications in Dry Conditions by Legleiter and Johnson 6/20/12: http://www3.ag.purdue.edu/btny/weedscience/documents/Dry_Conditions.pdf

Considerations With Postemergence Herbicides Applied During Wet or Dry Conditions by Aaron Hager 6/22/2012: http://bulletin.ipm.illinois.edu/article.php?id=1666

Early Season Water Deficit Stress on Southern WI Soybeans

Shawn Conley

I went to bed last night hoping this article would not have to be written, but that whopping 0.05 hundredths (or less) of rain we received across much of Southern WI last night forced the issue. According to data from the 2012 Weather Summary for UW ARS – Arlington and Marshfield WI Locations (compiled by Dr. Joe Lauer) we are tracking over 4 inches behind the 30 year norm at Arlington (precipitation from April 1 to today). A similar trend was occurring at our Marshfield location until recent rainfalls brought us back to near 30 year norms. The implications of this water deficit on soybean are as follows.

In soybean there are two growth periods for which soil moisture is critical for optimum growth and development: at planting and during the reproductive stages from bloom through pod fill. The time period from stand establishment to bloom is not as critical. Drought stress during this time period will often shorten internodes; however yield loss rarely occurs. Luckily most of the WI soybean crop is in the vegetative growth phases though bloom is beginning. As stated above depleted soil moisture at planting can significantly impact the soybean crop. Therefore if this dry weather pattern continues growers should be very cautions about planting double cropping soybean into dry soil.

In Wisconsin the main reproductive growth in soybean occurs from early July to mid-September. Soybean in this stage use about 1/4 to 1/3 inches of water per day. Lack of sufficient water can cause flowers and young pods to abort reducing the number of seeds per plant (Image 1). Also, soybean plants reduce the size of their leaf pore openings to reduce the loss of water vapor. This also reduces the intake of carbon dioxide and the manufacturing of photosynthates which slows plant growth. When normal soil moisture returns, normal growth is resumed. This ability to reduce metabolic activity allows plants to tolerate dry spells without dying or harming their ability to resume growth when normal moisture returns.

Image 1. Pod abortion in soybean caused by drought stress.

If a drought does develop and severely affects podset and seed fill, and if livestock feed is needed, soybeans can be harvested as a forage for ensiling. Highest protein and yields are obtained from soybean harvested at the R6 to R7 growth stage. Harvesting soybeans for forage between the R1 and R5 stage will result in very high quality silage, but dry matter yields will be reduced significantly. Forage quality will be reduced from R5 soybean forward if a conditioning process is used during harvest. Conditioning will cause significant seed shattering.

References:

Managing Drought-Stressed Soybeans in the Southeast. North Carolina Cooperative Extension Service. 1999.

Virginia Soybean Update. Virginia Agricultural Experiment Station. Volume 2, No. 4, July 1999.

Managing Irrigation is Key when High Air Temps Expected

A.J. Bussan, UW Extension Vegetable Specialist, UW-Madison Horticulture

Later this week the weather is to turn incredibly hot. For many parts of the state from the Illinois border all the way to Hwy 29 we have seen little precipitation unlike our fellow residents from the far Northern reaches of the state. ET at Hancock and Arlington has averaged 0.2" per day over the past week.

Air temperatures > 90 F and sunny days will lead to ET typically 0.25 to 0.27" per day. These hot air temperatures will increase energy demand across the state and may limit the time that irrigation systems will be allowed to operate.

Try to irrigate to near field capacity for all crops to prepare for the oncoming warm temperatures, especially potatoes, snap beans within days of flowering or with pin beans, and peas where you are trying to finish the crop. Deep rooted crops such as corn, sweet corn, soybean, or alfalfa may have to rely on soil moisture reserves during the heat stress so irrigation water can be applied to shallow rooted crops with higher sensitivity to heat and drought stress depending on how you have split fields under your pivots. Also remember that irrigation efficiency can be improved when irrigating outside the heat of the day.

Fresh market farmers and gardeners in Southern and Central parts of the state need to irrigate fields and gardens as well. Multiple vegetables from lettuce to tomatoes will benefit a great deal from irrigation at the current time. Soil moisture has been depleted even on the best soils and the heat will cause substantial stress in the coming days. Prioritize irrigation on higher value vegetable crops. Sweet corn will benefit from irrigation, but not as much as other crops. Winter squash and pumpkin do not need irrigation as much as other vegetable either and can be watered when the conditions are less stressful or soil moisture status is in good shape for other crops. Make sure to monitor how much irrigation water has been applied so you do not apply to much water. Also remember, the best time of day to sprinkler irrigate is in the morning so the canopy is wet at the same time as dew would normally occur. This way the sun can dry the canopy and prevent a number of foliar diseases.

Make sure to keep yourself and your staff hydrated as well and stay safe.

Economics of Managing Nitrogen for Sweet Corn

Matt Ruark (Dept. of Soil Science), Paul Mitchell (Dept. of Agricultural and Applied Economics)

Nitrogen (N) management for processing sweet corn in Wisconsin has proven to be a complex issue. Sweet corn has a relatively large N demand and, to ensure complete kernel development, requires maintaining plant available N in the soil profile throughout the growing season, which can be a challenge on sandy soils. Current N guidelines for sweet corn in the University of Wisconsin Extension Publication A2809 (Nutrient Application Guidelines for Field, Vegetable and Fruit Crops in Wisconsin) suggest 150 lb/ac of N for soils with less than 2% soil organic matter and 130 lb/ac of N for soils with 2 to 10% soil organic matter, based on a yield range of 2 to 10 ton/ac. The guidelines also suggest split-applications or sidedress applications of N on coarse-textured (sandy) soils. Most, if not all, sweet corn production in the Central Sands is on coarse-textured soil with less than 2% soil organic matter and grown with split-applications of N. To evaluate the current A2809 guidelines for N application, on-farm N rate trials were conducted in 2009, 2010, and 2011, on four fields per year, for a total of twelve site-years. All fields were located in Adams County, WI. All plots had 60 lb/ac of N applied before V4 and 45 lb/ac of N applied as fertigation at tassel (VT stage). Six different N rates were then added as sidedress at V6-V8: 0, 25, 50, 75, 100, and 125 lb/ac of N, resulting in total N applications of 105, 130, 155, 180, 205, and 230 lb/ac of N.

When analyzed by each site-year, application of N over 155 lb/ac resulted in statistically significant yield increases only 17% of the time – in only 2 of 12 site-years. However, plot-to-plot variation was quite large, resulting in the lack of ability to determine yield differences of 1 ton/ac. Based on these results, the N application guideline for sweet corn of 150 lb/ac is adequate from the standpoint that yield losses may occur at rates less than this amount (Fig. 1).

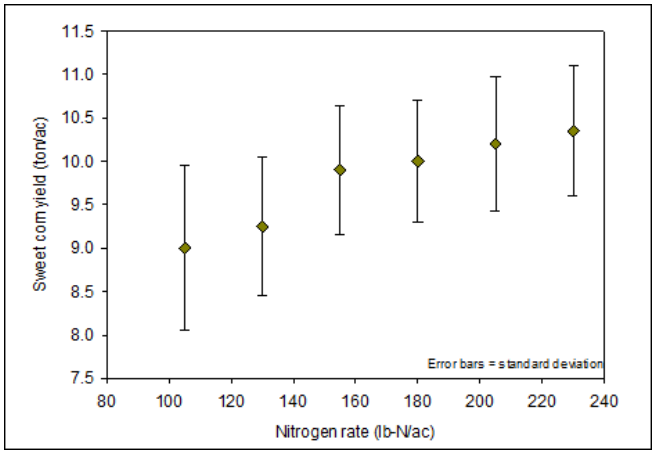

Figure 1. Average sweet corn yield across six nitrogen rates (yields averaged across sites and years).

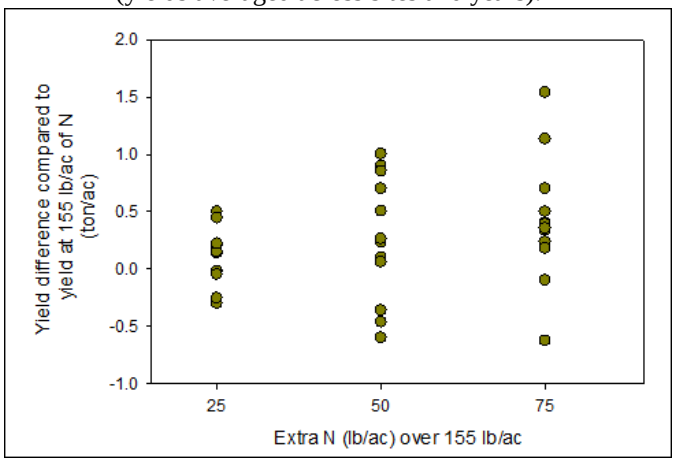

Figure 2. Yield gain or loss with 25, 50, or 75 lb/ac of extra N compared to yield at 155 lb/ac of N (average yields at each of 12 site years, 2009-2011).

With this data set, we can analyze all the data together to evaluate the economic benefit of N applications to sweet corn. Since the minimum amount of N that would be applied is 155 lb/ac, we focus our analysis on determining if there is an economic advantage to applying N above this rate. Relative to the yield at 155 lb/ac of N, the average yield gain for an extra 25 lb/ac of N was 0.13 ton/ac, 0.27 ton/ac for an extra 50 lb/ac of N, and 0.42 ton/ac for an extra 75 lb/ac of N. The variability of this extra yield also increased with the additional N (Fig. 2). In short, it appears that on average, small yield gains can be achieved with additional N above 155 lb/ac. However, the question remains as to whether there is an economic benefit to applying this additional N. In other words, is the value of the potential yield gain worth the risk of applying extra N (the cost of applying more N fertilizer)?

For this analysis, we used a current estimate of N fertilizer cost of $0.50/lb-N and the state average price of Wisconsin sweet corn in 2010 ($74/ton) and 2011 ($110/ton) as reported by the USDA National Agricultural Statistics Service. Based on this N fertilizer price and the yield data reported in Fig. 2, we calculated the average economic return at both sweet corn prices. These calculations were made separately for each site-year, and then averaged across site-years. At a sweet corn price of $110/ton, the average economic gain was $1/ac for 25 lb/ac of extra N, $4/ac for 50 lb/ac of extra N, and $9/ac for 75 lb/ac of extra N. However, with a sweet corn price of $74/ton, the average economic loss was $3/ac for 25 lb/ac of extra N, $5/ac for 50 lb/ac of extra N, and $6/ac for 75 lb/ac of extra N. However, Fig. 3 shows the tremendous amount of variability that exists around these average gains and losses. For example, with a sweet corn price of $110/ton, though the average gain for an extra 75 lb/ac of N was $9/ac, the observed range was from a gain of about $140/ac to a loss of over $100/ac.

Considering all site-years' worth of data, large economic gains or losses can occur with applying extra N to sweet corn, but *on average* there is likely little economic gain. This is especially true when the cost of N is high and the price of sweet corn is lower than average. It is important to consider these economic issues and use price calculations to confirm an economic need for applying more than 155 lb/ac of N.

Finally, several caveats apply to this analysis. For the yield data collected here, the N was split applied, with plots receiving N early (pre-V4) and late (VT). It is possible that the split application method led to optimum N use efficiency and played a role in seeing little benefit above 155 lb/ac of N. Large rainfall events can leach large quantities of N from the root zone on sandy soils. The split applications used here reduced the risk of large amounts of N in the soil at any given time to potentially be leached. If N were applied with fewer applications, the yield benefit from extra N may be greater, but only because the extra N would compensate for the amount of N that is leached. It is also important to note that based on current data we have collected, it is not clear if we can predict which fields would be the most responsive to extra amounts of N fertilizer.

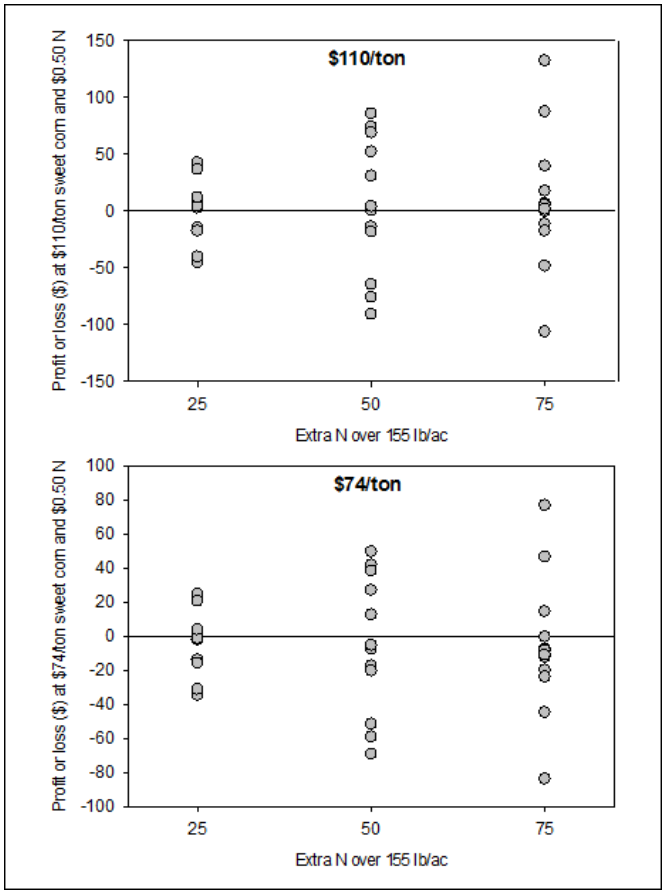

Figure 3. Average economic gain or loss with extra N, with a N price of $0.50/lb of N and sweet corn prices of $110/ton or $74/ton. Each data point within each N rate is one site-year. Reference lines are at $0, indicating no net gain or loss.

Vegetable Crop Update 6/26/12

The 14th issue of the Vegetable Crop Update is now available. This issue contains information on irrigation management as well as updates on the potato crop. Click here to view this update.

Video Showing Potato Leafhopper Scouting in Alfalfa

Bryan Jensen, University of Wisconsin Integrated Pest Management Program, takes you into the field to show you how to scout and manage potato leafhopper in alfalfa fields. Start scouting 5-7 days after first cut. Weekly Scouting — 20 sweeps at 5 locations in each field. Because leafhopper population densities vary from year to year and from field to field, the only way to accurately determine damage potential is by monitoring fields on a weekly schedule. Damage symptoms appear as stunting and as yellowing of the leaves in a v-shaped pattern starting at the tip of a leaf.

Refer to UWEX publication A3646 Pest Management in Wisconsin Field Crops for management practices.

For more information:
http://ipcm.wisc.edu/download/pubsPM/PHL-alfalfa-Cut-Scout.pdf
http://labs.russell.wisc.edu/cullenlab/
http://datcpservices.wisconsin.gov/pb/

http://learningstore.uwex.edu/Pest-Management-in-Wisconsin-Field-Crops2012-P1…

or your local UWEX agent.

Click here or on the image below to watch this video.

Wisconsin Pest Bulletin 6/28/12

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

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

http://datcpservices.wisconsin.gov/pb/pdf/06-28-12.pdf

UW Extension/Madison Plant Disease Diagnostic Clinic (PDDC)

Brian Hudelson, Ann Joy, Amanda Zimmerman, Adam Greene, Andrew Pape, Plant Disease Diagnostics Clinic

The PDDC receives samples of many plant samples from around the state. The following diseases/disorders have been identified at the PDDC from June 16 through June 21, 2012:

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
FORAGE CROPS			
Alfalfa	Root/Crown Rot	*Pythium* sp., *Fusarium oxysporum*	Rock
FRUITS			
Apple	Root/Crown Rot	*Phytophthora* sp.	Racine
Blueberry	Cytospora Canker	*Cytospora* sp.	Bayfield
	Phomopsis Canker	*Phomopsis* sp.	Bayfield
	Root/Crown Rot	*Pythium* sp., *Fusarium* sp., *Cylindrocarpon* sp.	Bayfield
Raspberry	Root/Crown Rot	*Pythium* sp.	Dane

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