

Wisconsin Crop Manager

Volume 14 Number 19 --- University of Wisconsin Crop Manager --- July 12, 2007

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Online copy available at <http://ipcm.wisc.edu>

In our UW Madison entomology field crop small plot research plots (soybean host plant resistance, aphid-virus interactions, and organic transition) located at Arlington and West Madison, WI we have not reached the economic threshold of 250 aphids per plant to date. For example, population densities are ranging between 2 and 65 aphids/plant on average at West Madison, with nearly 100% of our plots infested. Therefore, there is certainly a well distributed source population and if densities increase over the next week or two it should be plot wide. UW Entomology colleagues Scott Chapman, PhD and Bryan Jensen, IPM coordinator, and I have not applied insecticide to our soybean aphid efficacy trials to date either, as plots are below threshold.

From commercial fields statewide, here are reports I am receiving this past week. All reports are based on whole plant counts conducted on 20-30 plants per field throughout field. Bill Halfman, Agriculture Agent, UW Extension Monroe County, scouted five soybean fields July 9th, all at R1 growth stage, with wooded field borders and on lighter textured soils. Soybean aphid populations in two fields were extremely low. Three of the fields were hovering at the 250 aphids/plant economic threshold. Bill is watching the fields to monitor for increase over the next week.

Krista Hamilton, WI DATCP Pest Survey, and the Pest Survey team scout approximately 60 soybean fields each week statewide. Krista reported this morning that although a few scattered fields in the statewide survey have been found at or above threshold, no major outbreaks so far and no field averages have exceeded 500/plant. On July 6th, WI DATCP recorded their first threshold field of the season in Jefferson County at 280 aphids/plant on 100% of the plants. No other economic populations in 57 soybean fields surveyed the first week of July. For current updates, which will post Friday July 13th please visit the WI DATCP Wisconsin Pest Bulletin <http://pestbulletin.wi.gov/index.jsp>

2. USDA IPM PIPE Website

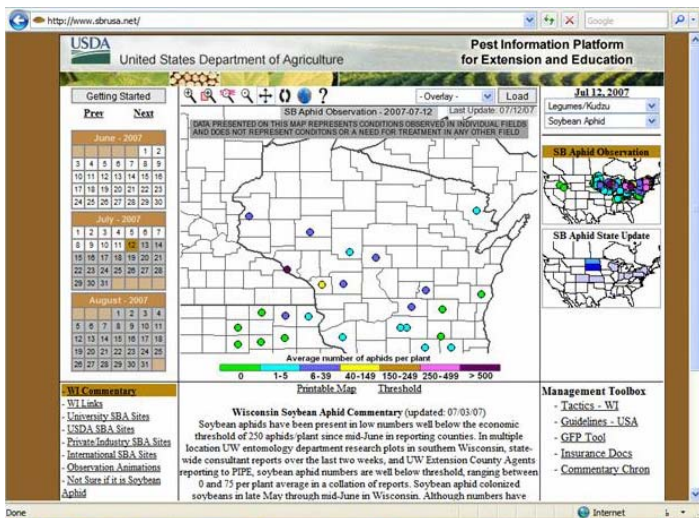
The USDA IPM PIPE website is up and running with weekly soybean aphid reports from multiple locations within WI and throughout the U.S. *The Pest Information Platform for Extension and Education (PIPE)* <http://www.sbrusa.net/> began with sentinel plot monitoring throughout the U.S. for soybean rust. Since 2006, PIPE has expanded to include soybean aphid.

Soybean Aphid Updates for Wisconsin – Important to Scout Fields

Eileen Cullen, Extension Entomologist, UW Madison Entomology Department

1. Soybean Aphid Field Densities Reported for WI through July 12, 2007

Soybean aphid densities in commercial fields and UW Entomology research plots are summarized here from a variety of sources. Overall, field densities are low and have not reached economic threshold levels. A few scattered fields have reached threshold, one USDA IPM PIPE soybean sentinel plot in Buffalo County exceeded threshold this week (see map with this article), but no major outbreaks to date <http://www.sbrusa.net/>.



USDA IPM PIPE soybean aphid map for Wisconsin, current for July 12th 2007.

Data presented on this map represents conditions observed in individual fields and does not represent conditions or a need for treatment in any other field.

Soybean Aphid Scouting and Management Recommendations 2007

Eileen Cullen, Extension Entomologist, UW Madison Entomology Department

This article accompanies “Soybean Aphid Updates for Wisconsin – Important to Scout Fields” in this issue. Please visit the UW Madison Soybean Plant Health Web Page for more information on soybean aphid. Here are complete links.

UW Madison Soybean Plant Health Soybean Aphid Resources

- Soybean aphid
<http://www.plantpath.wisc.edu/soyhealth/aglycine.htm>
- Soybean Development Stages and Soybean Aphid Thresholds
<http://www.plantpath.wisc.edu/soyhealth/pdf/sbrthresholds05.pdf>
- Soybean Aphid Management Recommendations 2007
<http://www.plantpath.wisc.edu/soyhealth/aphids/mgmt04.htm>
- Soybean Aphid Parasitoids in Wisconsin
<http://www.plantpath.wisc.edu/soyhealth/aphids/sbanatenemy.htm>
- Soybean Aphid Biological Control
<http://www.entomology.wisc.edu/sabc/>

UW-Extension Scouting Recommendations, Economic Threshold and Plant Stages

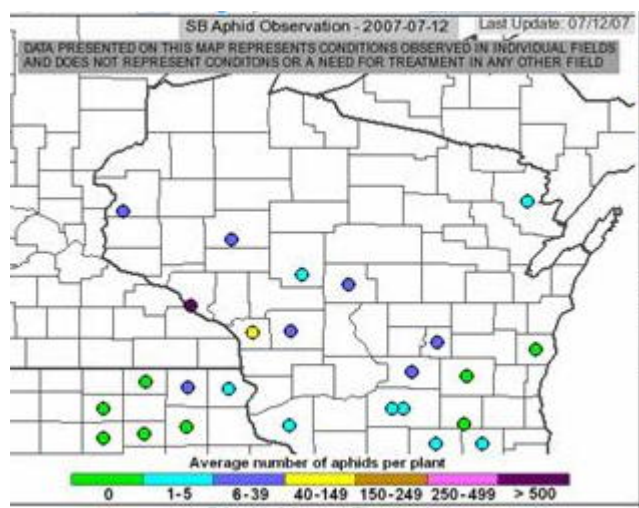
If you have not started scouting soybean fields for soybean aphid, now is the time to begin and continue through pod set and development through R5. Check 20 to 30 plants per field, covering at least 80% of the field. Pay particular attention to late-planted fields, or fields under moisture stress. Examine the entire plant, particularly the new growth at the top and side branches.

Use an economic threshold of 250 aphids per plant and determine whether populations are increasing. This action threshold should be based on an average of 250 aphids per plant over 20-30 plants sampled throughout the field. At least two field visits are required to determine if soybean aphid populations are increasing.

- The UW Nutrient and Pest Management program published a *Visual Guide to the Number of Soybean Aphids per Leaflet*. Each soybean leaflet has a specific number of aphids displayed to help you count. Copies can be ordered from the NPM Program at 608-265-2660 or you can print one from the web at www.plantpath.wisc.edu/soyhealth/pdf/sba_scout.pdf.

Instructions are provided on the home page www.sbrusa.net for navigating the site, both Soybean Rust and Soybean Aphid interfaces. The soybean aphid map has its own color coded map where you can track aphid population densities regionally and nationally. Check the drop-down menu in the upper right corner of the PIPE homepage. Then using the zoom tool at the upper left of screen you can select Wisconsin to zoom in for an update of statewide aphid densities. You can also read a summary of soybean aphid reports and scouting and management advisories written by myself. UW extension plant pathologist, Craig Grau provides commentary for the soybean rust interface of the USDA IPM PIPE website.

UW Extension County Faculty from across Wisconsin report to the USDA IPM PIPE soybean aphid map each week. The map displays population densities for the sentinel plot field in each county. These are commercial fields and 20 plants are sampled from throughout the field. Below I have posted the most current WI map (updated July 12th 2007). Similar to reports mentioned at the beginning of this article, the USDA IPM PIPE map for Wisconsin shows soybean aphid population densities ranging between 1-5; 6-39, or 0 per plant. Two sites on the map are higher at LaCrosse (40-149/plant rating) and Buffalo County (>500/plant), respectively.



In replicated research trials, the economic threshold of 250 aphids per plant has worked well in R1 (first bloom) to R5 soybeans. The threshold incorporates an approximate 7-day lead-time between scouting and treatment to make spray arrangements or handle weather delays. Spraying at or beyond R6 has not been documented to increase yield.

- To determine if an aphid population is actively increasing, check over several visits. Conditions that favor aphid population growth are cool temperatures, plant stress, particularly drought stress, and a lack of aphid predators.
- Check for mummies and winged females. Do not spray if mummies are numerous or a majority of aphids are winged or developing wings, an indication that the aphids will soon leave the field.
- Plants are likely to be considerably above threshold if stems or pods are covered with aphids and honeydew, sooty mold covers the bottom leaves, and plants are stunted. Insecticide treatment is probably still of value, but the optimal time for treatment (greatest economic return) is past.
- If you are using the speed scouting method, be aware that this method tends to be conservative. Speed scouting is a binomial sampling plan developed at the University of Minnesota and validated through the regional soybean aphid project. A binomial sampling plan is based on a specific worksheet tally leading to one of three decisions (do not treat, treat, resample field in 5-7 days). Speed scouting takes less time than traditional whole plant sampling, but because it tends to overestimate, do not spray unless a positive treatment decision occurs for TWO weeks running. A worksheet is required for the speed scouting method. You can print one from the University of Minnesota Aphid Speed Scouting webpage http://www.soybeans.umn.edu/crop/insects/aphid/aphid_sampling.htm which also has an overview, examples, and frequently asked questions about aphid speed scouting. This sampling plan was created and intended for use for commercial soybeans in central and southern MN. Because data was not collected past seed set, UMN recommends using this sampling protocol only up to pod set on fields with 30" rows.

UW-Extension Management Recommendations

If treatment is necessary, consider the product choices for your situation. Aphid kill, residual, and yield gains can vary among individual insecticides and application conditions.

- Pyrethroids (e.g. Warrior, Mustang Max, Asana, Baythroid) have a relatively longer residual, and are most effective at temperatures below 90°F. Organophosphate products (Lorsban) have a fuming action, and may work better in heavy canopies or at higher temperatures.
- Tank mixes of insecticide, fungicide and/or herbicide are not generally recommended. Soybean aphid, disease and weed pests do not all appear at the same

time at economically damaging levels, so a single tank mix, while convenient, will not provide satisfactory control of all three pest types. Additionally, sprayer specifications such as water volume, nozzle type (droplet size), and pressure must be optimized for each pest situation.

- Good coverage is important. Higher spray volumes and higher pressure help to move the insecticide down into the canopy.
- Adding insecticide to early-season glyphosate application as "insurance" is not recommended unless aphids are at threshold levels and actively increasing.

Leave an unsprayed check strip to compare against sprayed areas to determine the performance of the insecticide and the value of the treatment.

Communicate treatment plans to beekeepers and follow precautions to minimize bee kills. In areas with concern about honey bees, read insecticide labels carefully to determine risk to bees and take necessary precautions (for example, do not apply during hours in which bees are actively foraging).

Speed Scouting References

Hodgson, E. W., E. C. Burkness, W. D. Hutchison, and D. W. Ragsdale. 2004. Enumerative and binomial sequential sampling plans for soybean aphid (Homoptera: Aphididae) in soybean. *Journal of Economic Entomology* 97(6): 2127-2136.

Field Validation of Speed Scouting for Soybean Aphid. May 2007. Plant Management Network. E.W. Hodgson, B.P. McCornack, K.A. Koch, and D.W. Ragsdale (MN), K.D. Johnson and M.E. O'Neal (IA), E.M. Cullen and H.J. Krauss (WI), C.D. DiFonzo (MI) and L.M. Behnken (MN). http://www.soybeans.umn.edu/pdfs/2007/aphid/Field_Validation_of_Speed_Scouting_for_Soybean_Aphid_5-11-07.pdf

Wisconsin Crop Diagnostic Training Center - 2007 Workshops

Dan Heider, UW-Integrated Pest Management Program

There is still time to register for the following workshop, but don't delay! Register today!

Crop & Pest Management Workshop – July 24, 2007

- *Registration Fee: \$45*
- *CCA CEU's: 1.5 nutrient mgmt, 4.5 pest mgmt, 1.5 soil & water mgmt.*
- *Location: Arlington Ag Research Station*
- *Times: Program runs from 8:15 – 3:30. Lunch and refreshments are included in registration fee.*

Topics covered:

Corn Plant Health

- Fungicides and field corn - what have we learned thus far?

- Corn seed treatments—do they make a difference?
- Corn viruses—just how prevalent are they and should you be concerned?

Corn Soil Management & getting the most out of your starter

- Investigate the interaction of tillage and starter fertilizer placement
- Evaluate corn roots and soil health in each tillage system.

Corn Insects

- As corn acreage expands will insects lead the charge?
- Will the conversion of marginal ground back into production present new challenges?
- Corn rootworm control and resistance management.

Strategies to improve nitrogen use efficiency in corn

- As nitrogen prices prices soar, what can you do to maximize nitrogen use
- Explore sidedress and foliar applications of nitrogen on silt loam soils.

Does Weed Biology have a role in today's glyphosate based weed management

- Can the use of preemergence herbicides improve weed control and serve as a sound resistance management strategy?
- What about the use of residual postemergence herbicides tank mixed with glyphosate?

To register now or for additional information contact Dan Heider at (608) 262-6491 or via email at djheider@wisc.edu.

Vegetable Crop Update - #7

Announcements:

UW Lelah Starks Elite Foundation Seed Potato Farm Tour, Friday, July 13, 10:30 a.m., Cty Road K, Rhinelander, WI.

Central Wisconsin Potato Field Day, Hancock Agricultural Research Station, Wednesday, July 18, 9:00 a.m., Hancock, WI.

Langlade County Potato Field Day, Langlade County Research Farm, Thursday, July 19, 1:00 p.m., Antigo, WI.

Potato and Vegetable Crop Update

– Alvin J. Bussan, UW-Madison, Department of Horticulture

Crops continue to develop rapidly across the state. Precipitation over much of the state has improved the status of many non-irrigated vegetable crops. Planting will be wrapping up over the next 10 or so days for short season summer crops such as cucumber and snap bean. Pea harvest is wrapping up while early season potato harvest has begun in earnest.

Potato. Potato crop continues to develop and bulk ahead of pace. We are well beyond 1" diameter potatoes in many of the growing regions with some early developing potato varieties have tubers in excess of 2" in diameter. Crop continues to look healthy for the most part as Walt attests to

in his update. Early dying is beginning to cause vine decline in non-fumigated plots at Hancock.

We began taking tuber bulking samples in fresh market potatoes last week at the Hancock Ag Research Station. We sample 24 plants for each variety and counted and weighed tubers > 0.5" in diameter when estimating bulking. Standard Russet Norkotah averaged 11 tubers per plant with an average tuber size of 2.7 oz. Line 8 Russet Norkotah average 14 tubers per plant with an average tuber size of 2.0 oz. Estimated yields if planted at 12" in-row spacing are currently 280 and 258 cwt per acre for Standard and Line 8 Russet Norkotah, respectively based on preliminary data.

Bulking estimates are being collected today for chip and processing potatoes at Hancock. Russet Burbank have had tubers greater than 2" in size upon visual inspection while Bannock Russet tubers are 1.5" in diameter. Red Norland potatoes planted in early May on the muck have tubers well over 2" in diameter. Potato planting on muck appears to have been finished over the last part of June.

You may well beginning to think about timing of MH 30 applications, with tubers well over 1" in diameter and some crops beginning to approach tubers sizes of 2" in diameter. Monitor tuber size and consider climatic conditions when determining timing for MH 30 applications and follow label instructions.

Potato crops are using approximately 0.5" of water every other day. Inspecting hills just in front of the irrigation system shows the crop is certainly using moisture in the tuber zone.

Fresh Market Vegetables. Some of the heavy rains last week caused some physical damage on some canopies especially on vine crops. Most of the vine crops are well into fruit set. If you don't seed developing fruit on melons or cucumber you may want to make sure plenty of pollinators are available to improve fruit set. A key aspect is to evaluate your insect management program to make sure any applied pesticides are not interfering with pollinator activity.

A number of crops are ripening fast. During early harvests remove fruit with visible defects such as sun scald, blossom end rot, cat-facing, or physical damage and dispose of them outside of the field. These fruit can continue to draw on energy from the plant at the expense of other fruit with better quality.

Worried about herbicide carryover?

Jed Colquhoun, Extension Weed Specialist; University of Wisconsin – Madison, Department of Horticulture

We have had a few recent crop injury situations where herbicide carryover into potato and vegetable crops has been questioned. One simple method of initial investigation is an herbicide bioassay. With an herbicide bioassay, crop seeds are grown in pots using soil from the field. This simple and economical test allows growers to screen for potential herbicide carryover. (A laboratory analysis, by contrast, is often very costly and the results are difficult to interpret in terms of rotational crop safety.) Bioassays are not fail-proof: climatic conditions in the field, such as available moisture,

often differ from plants grown indoors in pots. Also, keep in mind that a “safe” herbicide bioassay is not a substitute for the rotational restrictions listed on the crop label – always follow the label restrictions regardless of bioassay results. Consider the following “recipe” when conducting herbicide bioassays:

1. Collect soil from the top 3 to 5 inches in several areas of the field and thoroughly mix samples. Sample from areas that may have high residual herbicide, such as in head-row turnarounds and field corners, and analyze these soils separately as a worst-case scenario. Representative, thorough sampling is critical to an accurate bioassay.
2. Fill several flower pots or similar containers with sample soil.
3. Plant the crop species that is planned for the field, or a crop that has a long rotational restriction listed on the herbicide label. Thin plants to one per container after emergence.
4. Place pots indoors and provide uniform light and water. Uniform natural light is better than artificial light, if possible.
5. About 2 to 3 weeks after emergence, evaluate the bioassay plants for symptoms of damage from the suspected herbicide. For descriptions of herbicide symptomology, consider starting with the “Herbicide Mode of Action Key for Injury Symptoms” publication that can be downloaded from the Wisconsin Integrated Pest and Crop Management publications web site at:
<http://ipcm.wisc.edu/Publications/tabid/54/Default.aspx>.

Vegetable Disease Update

W. R. Stevenson, Department of Plant Pathology, UW-Madison

Potato: The past week has been interesting in terms of weather and favorability for disease. During the last few days, we’ve seen severity values rising rapidly, especially in the Plover and Grand Marsh areas. This indicates that weather conditions have been highly favorable for the development of late blight if inoculum is present. At this point in the growing season, there are no reports of late blight in Wisconsin and none that I’m aware of in the U.S. Given the distribution and damage related to late blight just a few years ago, it’s pretty amazing to say that at the moment, late blight is a non issue, although I say this very quietly. It took a few years for the entire country to finally have all of the growers on the same page of control, but apparently a nationwide focus on late blight is paying off. It’s nice to see the Wisconsin industry once again leading the pack! For the week ahead, Wisconsin growers should focus on thorough coverage of vines with protectant fungicide for the management of early blight. These sprays will also be effective on late blight if inoculum is present. We are seeing a slow but steady increase in early blight, but at this point, disease pressure is low. Focusing on those early blight sprays will be helpful since the next three weeks are critical to late season control of early blight.

We are still seeing pockets of hail injury, which in some cases is severe. Treating with a broad spectrum fungicide along with a fixed copper material will help to get the plants back on their feet without further loss due to secondary invasion by soft rotting pathogens.

P-Day and Severity Value Accumulations are listed in the table on page 106 (next page). I’ve highlighted those P-Day and Severity Value totals that are above potato treatment thresholds.

Visit our web site at
<http://www.plantpath.wisc.edu/wivegdis/index.htm>
where you can find updated P-Day and Severity Value information throughout the growing season.

Other Vegetable Crops:

Tomatoes – While Septoria leaf spot began to appear about two weeks ago in southern WI, I note that treatment with a mixture of protectant fungicide such as chlorothalonil or mancozeb tank mixed with one of the strobilurin fungicides is highly effective for control of this defoliating disease. Early blight is now beginning to appear on untreated foliage and this same fungicide program will also control this disease.

Symptoms of walnut wilt were reported during the past week on a market garden in central WI. Rapid wilting of individual plants coupled with vascular discoloration were key symptoms. The grower had planted a tomato variety resistant to Verticillium wilt and reported that there were several black walnut trees adjacent to his tomato planting. Since walnut roots produce a powerful toxin called juglone and tomatoes are highly susceptible to this toxin, the diagnosis was pretty simple. While it’s too late for the affected plants, moving next year’s planting a safe distance away from the walnut trees will hopefully avoid a repeat appearance of this problem.

Carrots – Symptoms of Cercospora and Alternaria leaf blights are beginning to appear on commercial carrot plantings. Treatment with chlorothalonil alone or mixed with one of the strobilurin fungicides will help to curtail spread and gain control. Left untreated, these diseases can lead to premature defoliation, loss in yield and quality and weakening of the petioles that are needed for harvest.

Peppers – I expect to see samples of pepper sunscald within the next few days where the upper exposed surfaces of the earliest set peppers are brownish white and watersoaked. Eventually these injured areas dry and are often colonized with secondary fungi giving the sunscald wounds a black color. Fruit with sunscald injury should be removed as they will not be marketable. Later as the plants produce more foliage, newly set fruit will be protected from direct exposure to the sun.

(P-Day and Severity Value Accumulations are listed on the next page)

P-Day and Severity Value Accumulations are listed in the table below. I've highlighted those P-Day and Severity Value totals that are above potato treatment thresholds.

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations

	Planted:	50% EMERGENCE	P-Days	Severity Values	Calculation Date
Antigo area	Early - May 8	May 31	284	21	7/09/07
	Mid - May 21	June 10	209	14	7/09/07
	Late - June 1	June 18	150	14	7/09/07
Grand Marsh area	Early - Apr 16	May 12	412	25	7/09/07
	Mid - Apr 20	May 18	379	25	7/09/07
	Late - Apr 27	May 28	314	25	7/09/07
Hancock area	Early - Apr 16	May 8	422	19	7/09/07
	Mid - Apr 24	May 14	381	19	7/09/07
	Late - May 2	May 23	328	19	7/09/07
Plover area	Early - Apr 14	May 8	440	32	7/09/07
	Mid - Apr 20	May 15	392	32	7/09/07
	Late - May 2	May 22	347	32	7/09/07
Spooner	Mid - May 4	May 30	306	9	7/09/07