

# Wisconsin Crop Manager

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## Soybean Aphid Alerts and Updates, Economic Threshold Populations in Western Wisconsin, Populations Variable Elsewhere – Monitor for Population Increase

**Eileen Cullen, Extension Entomologist, UW Entomology Department**

In Western Wisconsin this week, LaCrosse, Buffalo, and Vernon counties are experiencing extremely high (800 - 1000+ aphids/plant) soybean aphid populations. UW Extension, consultants and growers are treating fields in these areas where aphid densities have reached or are exceeding threshold of 250 aphids/plant over 80% of the field. Steve Huntzicker, UW-Extension La Crosse Agricultural Agent, observed soybean aphid densities have increased to exceed threshold in many fields between 20 July and 25 July. In addition, the soybean aphid suction trap located in Eau Claire, WI (western WI) registered high winged soybean aphid numbers (57) on 20 July, indicating significant field populations generating winged females.

Statewide, the WI Pest Survey (WI DATCP) completed a systematic survey to estimate peak soybean aphid population

densities. Overall, soybean aphid densities are erratic statewide, with economic populations (exceeding the economic threshold of an average of 250 aphids/plant throughout 80% of the field) scattered throughout the southeast, south central and west central portions of the state.

Moderate populations, 100-250/plant, were detected in some Dane, Green, Racine, Rock and Walworth County fields in the south central and southeast regions. As soybean aphid populations continue to increase, many fields in these areas have potential to develop economic populations in the week or two ahead. Non-economic populations of fewer than 100 aphids/plant were detected in Columbia, parts of Dane, Dodge, Kenosha, Lafayette, and Racine and Washington counties in southern WI. Low populations were also noted in eastern WI (Brown, Calumet, Fond du Lac, Outagamie, Sheboygan and Winnebago). -Survey Information Courtesy of WI DATCP, Wisconsin Pest Bulletin

<http://pestbulletin.wi.gov/index.jsp>

2007 Soybean Aphid Scouting and Management Recommendations

University of Wisconsin Extension Soybean Aphid Scouting and Management Recommendations were posted in the July 12th 2007 Wisconsin Crop Manager newsletter, Vol. 14, No. 19, July 12th, 2007. You may visit the link below for full details.

<http://ipcm.wisc.edu/WCMNews/tabid/53/EntryID/330/Default.aspx>

Soybean fields should be evaluated without delay if soybean aphid populations are to be optimally controlled. Foliar sprays are most effective in reducing aphid numbers and minimizing resurgences when applied during the R2 (full bloom) to R4 (full pod) stages of soybean growth. Spraying at or beyond R6 (full seed) has not been shown to prevent yield loss. To assess soybean aphid densities, examine 20 to 30 plants over 80% of the field. Closely inspect all parts of the plants for aphids, particularly the stem, newest trifoliates, and undersides of the lower leaves. Treatment is warranted when the economic threshold of 250 aphids per plant on 80% of the plants is exceeded. – WI DATCP Wisconsin Pest Bulletin

<http://pestbulletin.wi.gov/pests.jsp?categoryid=32&articleid=800&issueid=89>.

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## Volunteer wheat in summer seeding alfalfa

Mark Renz, Extension Weed Scientist

As wheat is currently being harvested, I have received several inquiries with regard to volunteer wheat management in summer seedings of alfalfa. During harvesting of wheat, some seeds fall to the ground and germinate with the alfalfa seed. Volunteer wheat seedlings have some benefit as they can provide suppression of other weeds, protect alfalfa seedlings from blowing dust, and minimize soil erosion. Unfortunately they also compete with seedlings alfalfa plants and can suppress development and reduce establishment. Large infestations have been documented to reduce first cut alfalfa yields by 80% the following spring (Ott et al. 1989) and if conditions are dry, competition for soil moisture has been suggested to reduce alfalfa stands the following spring. While wheat does have good forage value, plants need to be harvested at the boot stage, and this is often not an ideal stage for alfalfa harvest, further reducing yield. Obviously the decision to manage volunteer wheat should be dependant upon the density within the field. As a rule of thumb, researchers have recommended that plants be managed if 3-4 plants are seen per yard.

Volunteer small grains have historically been a problem in fields are disked, chisel plowed, or no-till seeded. These plants are less likely to germinate and be competitive if fields are moldboard plowed before seeding alfalfa, so if possible adjusting your land preparation may be all that is needed. Several herbicides are also available that are effective on volunteer wheat and other small grains. Options include pre plant incorporated herbicides (PPI) and post-emergent (POST) herbicides. *The advantage of POST herbicides are that this allows for scouting to occur and determine if thresholds of weeds are high enough to warrant management.*

Below is a summary of options that have been researched and observed to provide control of volunteer wheat. Please consult the 2007 Agronomy Pest Management in Wisconsin Field Crops (A3646) or the specific label for more information:

**TILLAGE:** Prepare field by moldboard plowing before seeding alfalfa in the summer.

### PPI OPTIONS:

1. EPTC (Eptam): Eptam can be used and is labeled for use and effective at rates of 2.25 pts/A (of Eptam 7E). Since this is a pre plant incorporated treatment it is critical to apply Eptam to a smooth, dry seedbed just before planting and immediately incorporate to a depth of 2 to 3 inches to prevent herbicide loss through evaporation. Where possible, simultaneously apply and incorporate Eptam in one operation.

### POST OPTIONS

1. Clethodim/Sethoxydim (Poast Plus/Select) Poast Plus or Select (plus appropriate additives) are very effective and relatively cheap if applied when wheat is 4 to 6 inches tall and actively growing. Best control is seen if treatments occur when wheat is 4

to 6 inches tall and actively growing. Do not wait until the spring or early summer to treat as plants often are much larger and cold weather will reduce the effectiveness of these herbicides. Poast Plus and Select also kill volunteer oats, but oats usually die during the winter and seldom require treatment.

2. Imazamox (Raptor): Raptor applied with the appropriate additives has good control of broadleaf and grass species if applied at the correct stage of development of target weeds. For volunteer wheat apply 5 fl oz./A when plants are 2-4 inches tall. Do not make applications until the alfalfa plants have developed at least two trifoliolate leaves. This product should be selected if fields have extensive broadleaf and grass weeds as the cost of Raptor is typically two times as much as the previous options.

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### REFERENCE:

Ott, P.B., J.B. Dawson, and A.P. Appleby. 1989 Volunteer Wheat (*Triticum aestivum*) in Newly Seeded Alfalfa (*Medicago sativa* L.). Weed Technology 3:375-380.

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## Vegetable Crop Update - #9

### Potato and Vegetable Crop Update

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

**Potato** – Potato crop has bulked rapidly relative to other growing seasons across much of the state. Depending on your location, the crop appears to be 7 to 14 days ahead of typical growing seasons. The challenge is managing the crop to take advantage of the 5 or more weeks of potential bulking in this year's potato crop.

We had dug Russet Norkotah potatoes to determine bulking and showed them during the field day on July 18. Colorado 8 still averages more tubers per plant with 12 compared to only 11 tubers per plant on standard Russet Norkotah. Average tuber sized increased 60 to 70 percent with Colorado 8 tubers averaging 3.4 oz/tuber and standard tubers averaging 4.1 oz/tuber. Average yields across the lines are currently 380 to 420 cwt per acre.

Round white potatoes are also bulking rapidly. Average tuber set for round white potatoes varies by varieties with Snowden having just over 11 tubers/plant, Dakota Crisp and W2310 having 13 tubers/plant. Average tuber size is just over 4 oz indicating most tubers are greater than 2" in diameter. Total yield varied over sampling dates, but recent information suggests yields of 375 to 400+ cwt/A on round white potatoes.

Russet Burbank potatoes are averaging 13 tubers per plant in research at Hancock. Average Russet Burbank tuber size is approximately 3.5 oz/tuber with some potatoes exceeding 10 oz in size. Estimated yield based on average tuber size, tuber number, and plant spacing is approximately 400 cwt/A. Tubers still need to bulk to optimize processing grade and improve Russet Burbank yields.

Clearly, measured potato size is encouraging considering we are still in late July. The crop has certainly entered the late bulking stage promoting the most rapid tuber growth. Some vines are beginning to senesce. The vine senescence appears to be due to the natural maturation of the crop in some varieties while other fields show evidence of early dying. The crop still has potential to increase size and yield depending on the relative vine health, variety, and crop status.

We are now 75 days after potato emergence and close to 45 days prior to vine-killing for the latest crop harvested in WI. Supplemental fertilization 80 days after emergence or within 45 days of vine-killing has been shown to have little impact on yield, but can delay the senescence of vines and maturation of tubers. With few leaching rains occurring during 2007, the need for supplemental nitrogen has been limited and should be based on petiole nitrogen levels.

Now that the crop is in the late bulking stage, the crop is less sensitive to drought stress. Drought and heat stress can cause reduction in tuber bulking leading to lower specific gravity.

Heat during the last 2 weeks of July in 2006 reduced specific gravities in some potato crops. In contrast, wet soils can cause opening of lenticels and promotion of tuber diseases. Prevent overwatering and continue to apply irrigation every other day until vines senesce resulting in lowering of ET and decreased demand for irrigation.

Bruise management in early vine killed potatoes will require maintenance of soil moisture. Hot sunny conditions can result in evaporation from potato hills. Inspect hill moisture regularly to maintain soil moisture above the AD level. To minimize black spot bruise in early dug potatoes, 0.2" of water may have to be applied every 3 to 4 days on

sand to prevent dehydration of tubers and increase in black spot.

**MH-30 use in potato.** Several people have asked about application of MH-30 to potato. Label indicates MH-30 should be applied when tubers reach 1.5 to 2" in diameter up to 2 weeks before vine killing. Many potatoes in Central WI have reached the minimum size necessary to treat, but we are still 7 to 10 days ahead of typical application date.

Most of you know that applications to 2" diameter Russet Burbank and other varieties will improve tuber shape and ultimately US No. 1 yield with little effect on total yield. Most questions surround use of MH30 on alternative varieties such as Gold Rush, Freedom Russet, Silverton, and others.

MH-30 had little negative effect on total yield across the different varieties with the exception of White Pearl in 2005. MH-30 tended to increase US #1 yield of Freedom and Gold Rush when applied to tubers 1.5 to 2" in diameter (mid July and early August timing) whereas Silverton was unaffected.

MH-30 also tended to increase size of Freedom Russet, but had little effect on tuber size of Gold Rush or Silverton (data not shown).

MH-30 was applied at label rates in this experiment. Be cautious when applying MH-30 as applications during warm weather can increase crop damage following application. In addition, crop stress has been observed to lead to premature vine senescence. We did not observe crop phytotoxicity in these experiments.

**Table 1.** Influence of MH 30 application timing on yield of various potato varieties in 2005 and 2006.S

**Table 1.** Influence of MH 30 application timing on yield of various potato varieties in 2005 and 2006.

Treatment	Variety	2005 Yield				2006 Yield					
		Timing	Total Cwt/A	US #1 Cwt/A	B % Total	Cull % Total	Timing	Total Cwt/A	US #1 Cwt/A	B % Total	Cull % Total
	Freedom	Untreated	367.1	328.5	6.1	4.6	Untreated	665	485.8	4.7	22.2
	Freedom	13-Jul	432.7	368.9	7.8	6.9	12-Jul	672	507.4	3.4	21.0
	Freedom	3-Aug	418.2	378.1	4.2	5.3	31-Jul	688	535.8	2.8	19.1
	Freedom	17-Aug	424.3	375.8	6.1	6.0	14-Aug	724	547.6	4.6	19.7
	Goldrush	Untreated	363.6	315.5	7.1	6.3	Untreated	607	399.2	5.5	28.8
	Goldrush	13-Jul	390.4	335.1	7.7	6.6	12-Jul	548	392.7	7.5	20.9
	Goldrush	3-Aug	439.1	395.3	5.6	4.8	31-Jul	603	435.4	3.3	24.3
	Goldrush	17-Aug	401.8	355.4	6.6	5.1	14-Aug	576	387.8	4.3	28.3
	Silverton	Untreated	469.6	435.9	4.2	2.8	Untreated	569	425.3	2.8	22.5
	Silverton	13-Jul	422.3	379.3	7.4	5.0	12-Jul	589	467.3	5.2	15.4
	Silverton	3-Aug	469.9	433.5	3.7	3.9	31-Jul	588	457.5	1.8	20.4
	Silverton	17-Aug	431.9	398.4	4.1	3.5	14-Aug	585	434.4	2.8	23.1
	White Pearl	Untreated	386.8	344.5	8.7	3.2	Untreated	643	477.4	10.0	15.6
	White Pearl	13-Jul	342.8	294.0	10.1	4.0	12-Jul	582	461.6	10.5	10.2
	White Pearl	3-Aug	327.0	282.3	8.4	5.4	31-Jul	633	481.8	8.9	14.8
	White Pearl	17-Aug	344.7	307.5	7.7	3.2	14-Aug	563	426.9	11.7	12.5
<b>LSD</b>			<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

## Vegetable Insect Update

**Russell L. Groves, Vegetable Entomologist, Applied Insect Ecologist, UW-Madison,**

**Snap Beans** - As reported in previous newsletters, problematic populations of potato leafhopper (PLH) continue to remain a threat in commercial snap beans. In the late planted snap bean crop, populations of adult PLH are increasing on these young plants and are nearing thresholds with an average of 0.8 adults / sweep at the Arlington Agricultural Research Station. In mid-season plantings, adult PLH numbers have exceeded thresholds in several areas with populations as high 1.8 adults / sweep in the central sands production area. Resulting injury from adult and immature feeding is described as 'hopperburn' with damage to the vascular tissues. Control of these populations can be achieved using a range of synthetic pyrethroids identified in the UW extension bulletin A3422. High populations of these insects continue to persist in the alfalfa crop and the prevailing warm and dry weather conditions are conducive to continued population growth and nymphal development. Crop scouts should continue to monitor for populations of these damaging insects in susceptible crops.

Increased adult captures of European corn borer (ECB) have been observed over the last week and the current conditions are again very conducive to increased dispersal as well as population growth. Elevated adult numbers were observed at several black light trap locations across the state during the last week averaging 10.2 moths / site during this interval. The first summer moths of the ECB will have emerged once 1400 DD50 have accumulated and the first eggs will have been laid at 1450 DD50. The treatment period for the summer generation is between 1550-2100 DD50. This means that the moths should be flying in an area southwest of a diagonal line that extends from just north of La Crosse down to Madison and east to Racine. Adult moths resulting from the second generation become more prevalent when the 1,550 GDD threshold has occurred.

**Potatoes** – Populations of Colorado potato beetle (CPB) summer adults have now fully emerged at several locations throughout the central sands vegetable production areas. Adult beetles have begun to feed aggressively and have initiated egg laying in the developing potato crop. It is absolutely crucial for growers to plan for control of this 2nd generation CPB in a resistance management context. This generation is almost certainly the most difficult to control. Anyone growing potatoes should monitor their crop regularly and carefully as these summer adults can cause severe defoliation. Recall that flowering plants can withstand only 5-10% defoliation while the established treatment thresholds post-bloom increase to 30% before yield is affected. If neonicotinoid compounds have been used at-planting or as foliar sprays against the 1<sup>st</sup> generation of CPB, then 2nd generation CPB management options must not include another compound in this Mode of Action (MoA) class (Class 4). In the event that 1) no systemic or foliar nicotinyl insecticides have been used previously against the 1st generation of CPB and 2) the current crop was rotated >¼ mi. away from any previous crop receiving an at-plant systemic nicotinoid compound, foliar applications of thiamethoxam

(e.g. Actara®), imidacloprid (e.g. Provado®, Pasada®, Picus®, NuPrid®), and acetamiprid (Assail®) are excellent options for control of 2nd generation CPB populations. Unfortunately, few highly effective control options remain for 2nd generation CPB in the absence of foliar nicotinoids. As noted in an earlier newsletter, indoxacarb (Avaunt®) may be a first step towards the control of the 2nd generation adults. Subsequent control of immature stages of 2nd generation CPB (small-large larvae) may also be achieved with successive, full rate applications of abamectins (Agri-Mek®, Abba®) spaced one week apart. Also, localized susceptibility remains for other classes of chemicals including the organophosphate, phosmet (Imidan®), the carbamate, oxamyl (Vydate®), and the chlorinated hydrocarbon, endosulfan (Thiodan®). At specific field locations, however, historical insensitivity to these materials may be well documented and their respective use may produce only limited success with control. Finally, a large proportion of CPB populations in Wisconsin possess resistance to the synthetic pyrethroid class of chemicals and growers need to be cautious when considering use of these materials for beetle control. A single, full rate application of this chemical class may provide some control, but consecutive use of materials in this class will likely be met with very limited success.

**Cucurbits & Melons** – Increases in populations of cucumber beetles (striped and spotted) during late June have now resulted in a significant amount of bacterial wilt in susceptible vine crops. Adult beetles which have fed on the foliage and the developing fruit have been responsible for transmitting the bacterium *Erwinia tracheiphila*, to susceptible crops. In a very short period after an infectious beetle has fed, leaves and petioles will then begin to wilt, and the disease progresses through lateral shoots and eventually affects the entire plant. Cucumbers and muskmelons are affected most severely. Direct control of the insect vector (carrier) is the most effective form of disease control. Insect control should include practices that are not directly harmful to domestic or wild pollinator species of bees. Pest control products that contain the active ingredient carbaryl should be avoided when attempting to control cucumber beetles while conserving pollinators. To minimize the threat of bacterial wilt in the coming season, consider rotating affected vine crops to more distant areas of the farm or onto other management units where possible. Further, to limit the overwintering success of the striped cucumber beetle, practice clean culture with respect to unmanaged fence rows, grassed waterways, or non cultivated acres by moving vegetation close to the soil before late fall.

## Vegetable Disease Update

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

**Potato:** Another week deeper into the growing season and still there are no reports of late blight in Wisconsin or the US. We continue to see a steady increase in late blight severity values indicating that if inoculum is present in the state, we would see disease severity increasing. Growers need to be vigilant and pay attention to any abnormal plant symptoms.

Growers are well aware of late blight symptoms, but if there are any questions regarding symptom identification, collect a sample for diagnosis.

Early blight continues to increase in severity as tuber bulking continues. Spray programs with a solid protectant program should be continued for the rest of the season. In another week, we should be finished with strobilurin treatments and the remaining sprays should rely on protectant fungicides such as mancozeb, metiram, chlorothalonil or TPTH.

Remember to circle **Monday, August 20, 10am to 2 pm** as the date when Vaughan James will be present in our research plots at Hancock if you would like to see how our various fungicide programs controlled early blight this year. There should be a nice separation of treatments by that time according to their ability to provide season-long control of early blight.

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 threshold

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

Weather Station Site	Planted:	50% EMERGENCE	P-Days	Severity Values	Calculation Date
Antigo area	Early - May 8	May 31	<b>382</b>	<b>26</b>	7/23/07
	Mid - May 21	June 10	307	19	7/23/07
	Late - June 1	June 18	249	19	7/23/07
Grand Marsh area	Early - Apr 16	May 12	<b>516</b>	<b>34</b>	7/23/07
	Mid - Apr 20	May 18	<b>483</b>	<b>34</b>	7/23/07
	Late - Apr 27	May 28	<b>418</b>	<b>34</b>	7/23/07
Hancock area	Early - Apr 16	May 8	<b>519</b>	<b>24</b>	7/23/07
	Mid - Apr 24	May 14	<b>478</b>	<b>24</b>	7/23/07
	Late - May 2	May 23	<b>425</b>	<b>24</b>	7/23/07
Plover area	Early - Apr 14	May 8	<b>546</b>	<b>40</b>	7/23/07
	Mid - Apr 20	May 15	<b>498</b>	<b>40</b>	7/23/07
	Late - May 2	May 22	<b>454</b>	<b>40</b>	7/23/07
Spooner	Mid - May 4	May 30	<b>412</b>	12	7/23/07

### Other Vegetable Crops:

#### Cucumbers, Melons, Pumpkins and Other Cucurbits –

##### Disease Alert –

This past week, downy mildew was reported on processing pumpkins in central Illinois. In addition, Michigan State pathologists are reporting downy mildew on cucumber in central and southeast areas of their state. Wisconsin growers need to be alert for the first signs of this potentially devastating disease and treat accordingly. Remember that there are two distinct diseases we refer to as mildew – powdery mildew that occurs each and every year and downy mildew that has been a severe problem for the past few years in states to our east and south.

Let's review the key symptoms - Powdery mildew is recognized by its own distinct signs and symptoms including white powdery growth that occurs primarily on the upper leaf surfaces. Infected leaves are covered with the white powdery fuzz and eventually wither and die. In contrast, downy mildew appears as small yellow to brown somewhat angular lesions. Affected leaves have a mottled appearance with numerous yellow angular lesions best observed on the undersides of leaves. Also, on the underside of the downy mildew lesions, a dark purplish/gray fuzz often appears during wet or humid conditions. This is most commonly observed in the early morning. Both diseases are capable of rapid spread with downy mildew being the most serious and

destructive of the two diseases. The control measures are quite different for the two diseases. For management of downy mildew, registered products include Previcur Flex, Forum, Ranman, or Tanos, each mixed with chlorothalonil or mancozeb. Gavel (already contains mancozeb) can also be used, but does not need a tank mixed companion product. For powdery mildew, consider a long list of materials that includes Flint, Pristine, Nova, Topsin-M, Procure, Quadris, Amistar or Cabrio.

While we have not seen downy mildew in Wisconsin yet this year, protective sprays are suggested at this time, particularly if we get into a rainy and cool period. Suspect samples should be brought in for diagnosis. We should also note that downy mildew did make an appearance in central Wisconsin late in the growing season last year on commercial cucumber fields. I fully expect that we'll see downy mildew reappear in Wisconsin this year, given its appearance this early in the season in bordering states.

**Curcubit Virus Diseases** – Stunted vines, leaf mottling and poor fruit set are all symptoms of virus infection. In the past few years, cucumber mosaic virus has caused widespread losses on a wide range of crops including pumpkins, squash and snap beans. We received the first reports of virus infection this week on late planted pumpkins. Cucumber mosaic virus is spread primarily by aphids in a non persistent manner. Insecticide sprays for aphid control on cucurbits haven't shown much effect on virus incidence in the past since the aphid vectors carrying the virus are feeding and probing on both weeds and crop plants as they move through an area. Given the wide host range of cucumber mosaic virus that includes many common plants growing in field borders, control of virus transmission to crop plants is very difficult.

**Snap Beans** – Fields receiving intense rain and blowing soil are at risk from outbreaks of bacterial brown spot. Prompt reaction immediately after a storm by spraying a fixed copper material may help to reduce losses on these injured plants. Breeders have been making excellent progress in developing improved varieties with better resistance to bacterial brown spot. It pays to know the susceptibility of the variety you plant and to treat these fields accordingly.

